

Behaviour change for community fire safety

Insights and recommendations

Brandveiligheid begint bij jezelf



Scientific Research Council of the Netherlands Fire Service



BRANDWEER

Nederland





Contents

	Summary	5
	Introduction	10
	Part A	
Chapter 1	Why the fire service opts for community fire safety	14
Chapter 2	The basis for community fire safety: facts about fires in the home	20
Chapter 3	Community fire safety: the citizen's perspective	30
Chapter 4	How the fire service is now focussing on community fire safety	40
	Part B	
Chapter 5	Community fire safety abroad: measures that have been found to work	48
Chapter 6	Bringing about a change in behaviour in the social safety domain	56
Chapter 7	Pilot schemes for influencing behaviour with a view to ensuring community fire safety	66
Chapter 8	The new way to persuade: causing people to act	74
	Part C	
Chapter 9	A good discussion: lessons for community fire safety	82
Chapter 10	In conclusion: the Council's view	88



Summary

●●● About this collection

In recent years, the Netherlands fire service has been paying extra attention to achieving *community fire safety* by stimulating citizens, companies and institutions to give more consideration to the risks of fire in their own residential and work environments. However, community fire safety is only possible if citizens start behaving differently. The Scientific Research Council of the Netherlands Fire Service (Wetenschappelijke Raad Brandweer) has compiled this collection to provide a summary of recent scientific and other views of how to optimally bring about this change in behaviour, focussing on a fire-safe, residential environment.

This collection features eight articles by various experts on community fire safety and on changing behaviour (see 1 to 8 below). Based on this, the authors, actual firefighters, and the Scientific Research Council of the Netherlands Fire Service held ‘a good discussion’ (see 9). And finally, the Council used the knowledge thus gathered to formulate their opinion and advice regarding community fire safety (see 10).

●●● The individual articles in outlines

1. Why community fire safety (Renske Postma)

In recent years, the Dutch fire service regions have pondered the question of how to bring about even fewer fires, fewer casualties, and less damage and loss. According to the philosophy of a ‘Fire service for tomorrow’ and the ‘Fire safety is a co-production’ policy document, progress can be made amongst others by stimulating ‘community fire safety’.

2. Facts about fires in the home (Margrethe Kobes)

In 2013, 115,000 claims of damage due to fire in the home were reported to insurance companies in the Netherlands. Figures from Statistics Netherlands show that the fire service had been called in on only a small number of those fires: in the same year, the fire service registered 6,500 reports of fires in the home. The figures provided by Statistics Netherlands seem to indicate that the number of fires in the home has dropped considerably since 2000. However, these figures are not reliable enough to be certain. The causes of most fires in the home recorded by Statistics Netherlands are not known. There is slightly more information available about fires with fatal casualties (approx. 35 a year) or where people get injured (currently some 400 a year). Smoking is one of the main causes of fires in the home with fatalities. Fatal

casualties of fires in the home are mainly elderly people (aged 60 years and older), people who are sleeping, and people of limited mobility. These fires mainly start in furniture with foam rubber (bed, sofa) and clothes. Fires in the home where people only get injured are often due to cooking or a defective electrical appliance. Smoke detectors are found to not always be able to prevent people from falling victim to a fire: the noise does not wake all people, some people are not sufficiently mobile to escape, or the fire spreads too quickly due to highly flammable materials in mattresses, etc. Since the data as to fires in the home is incomplete, it is difficult to find a reliable basis for community fire safety.

3. The citizen's perspective (Marnix Eysink Smeets and David Ambachtsheer)

There are lots of small and large risks in our living environment. Citizens mainly assess those risks instinctively and based on general rules of thumb that are often not justified (heuristics). They play down small risks and only pay attention to the major threats (*optimism bias*). This looks like an effective survival strategy. Most people see fire in the home as a minor risk that is not a priority for them. As there are other risks they find more important, their motivation to pay extra attention to community fire safety is slight. If the fire service wishes to encourage people to make their environment fire-safe, or more fire-safe, e.g. in case of people who run an increased risk, the characteristics of the target group and the context will have to be considered carefully when selecting which measures to take.

4. How the fire service is now focussing on community fire safety (Renske Postma and Krista Schram)

Since 2010, all the Netherlands fire service regions have been carrying out interventions in order to stimulate community fire safety awareness among citizens. The range of interventions is extensive but hardly any good evaluations are available. Checks in people's homes, information meetings, and fire safety lessons are the most common forms of intervention. Knowledge transfer is a central aspect of these interventions. The few studies that have been conducted show that this may indeed lead to more knowledge about fire safety, at least in the short term. Even less is known about the question of whether that brings about a lasting effect that also actually results in *fire-safe behaviour*. Two types of intervention seem to be promising for an actual change in behaviour: letting people find out by themselves what behaviour is effective with certain risks, and applying new techniques of influencing people that take advantage of automatic behaviour.

5. Community fire safety abroad (Nancy Oberijé)

Interventions to stimulate a fire-safe behaviour by citizens are also carried out in other countries but hardly any reliable evaluations of this are available either. All in all, an international literature study revealed three types of measures that yield positive effects: education in schools, home visits in combination with fitting smoke detectors and training in a safety village. Making an escape plan

was an important aspect of both the educational programmes and the home visits. A large-scale Canadian programme with home visits in high-risk districts resulted in a considerable decrease in the number of fires there. A safety village enables both adults and children to recognise the hazards as well as what constitutes effective behaviour (the Netherlands RISK Factory is based on this). These interventions, as applied in other countries, may not be equally effective in the Netherlands: the residential and living situation and the culture in our country are different and these aspects are also decisive for the results.

6. Bringing about a change in behaviour in the social safety domain (Karin Bongers)

Parties in the social safety domain would also like to influence how people behave. In recent years, there have been an increasing number of experiments regarding new ways to influence behaviour. Different interventions have been tested in the public domain that take advantage of automatic behaviour, such as large pictures of 'watchful eyes' to push back bike theft (Cycle thieves, we are watching you!) and pictures of a library in quiet train carriages in order to try and get people to talk less there. These interventions are demonstrably effective. One thing that has been learnt from these interventions is that a proper understanding of the issue at stake, the target group, and the reasons why the target group exhibits or fails to exhibit a certain behaviour, is essential in order to make interventions successful.

7. Pilot schemes for influencing behaviour with a view to community fire safety (Bert Pol)

Some fire service regions have conducted pilot schemes involving new ways to influence behaviour. It was then studied if these interventions actually led to *fire-safe* behaviour. Three pilot schemes were successful at getting students to act more fire-safely by using stickers that took advantage of their subconscious behaviour (*nudging*). The sticker said, for example: 'Most students ensure that their smoke detectors work properly. ...' This resulted in social validation: the students subconsciously wanted to belong to the 'most students' and that is why they conducted the corresponding behaviour. These kinds of intervention can be applied in public or communal areas, such as the lobby of an apartment building or a healthcare institution. A pilot with checks in people's homes, where the fire service dropped by twice within a short span of time, also positively influenced people's behaviour: the homes were significantly more fire-safe on the occasion of the second visit. A pilot with lesson materials for children led to the recommendation to give the children assignments to do at home (ask at home if there are any smoke detectors, if there is an escape route), in order to enlarge the effect on behaviour. Mass media campaigns generally only have a very limited effect on behaviour. An aspect that should be given attention in all interventions is the large group of low-literacy people who might constitute an important risk group.

8. The new way to persuade: causing people to act (Rick van Baaren and Lynn Voogt)

A recent new movement in changing behaviour has stepped back from subconsciously influencing behaviour (*nudging*) to persuading people so that they will actually carry out their plans. Two techniques are used for this: implementation intentions and *self-persuasion*. An implementation intention is a concrete agreement with oneself: 'I clean the extractor hood every last day of the month', 'I replace the batteries in the smoke detector on 1 January'. The key to *self-persuasion* is that people have to come up with arguments themselves as to why they should conduct a certain behaviour. So don't just say "You shouldn't smoke, because that is bad for you", but ask "Why is it good to not smoke?" In this way, you prevent 'Yeah, but' responses and you make not carrying out the corresponding behaviour really annoying. Both techniques have been found to have a significant effect on behaviour, making them suitable for use in various situations, for example in home visits, fire safety lessons, and in a safety village/RISK Factory.

●●● Good discussion and advice

9. A good discussion (Renske Postma)

How can the fire service, given all that has been learnt from the previous articles, further improve its efforts to achieve community fire safety? That was the key

question in 'A good discussion' with the authors of the articles and those employees who make active efforts for community fire safety. According to the participants, the articles underline the importance of carrying out proper studies and adequate measurements, while at the same time offering theoretical principles in order to effectively influence behaviour. This may be the prelude to a next step of further deepening the level of knowledge, and a new phase in community fire safety. Most participants think that a fundamental change in course is required in this new phase: working with one joint strategic plan, structurally collecting data about fires, including fires in the home, measuring and studying the effects of interventions, and taking the characteristics of the target groups into account better when selecting interventions.

10. Advice from the Scientific Research Council of the Netherlands Fire Service (Marnix Eysink Smeets)

The Scientific Research Council of the Netherlands Fire Service (Wetenschappelijke Raad Brandweer) has come to the following conclusions, based on the above articles:

- The fire service measures too little and knows too little to be able to successfully design and implement community fire safety: its information systems and management are not as they should be.
 - Partly as a result of this, we do not know enough
-

about what groups are the most vulnerable to fire safety risks and, in this regard, what behaviour involves the most risks.

- The assumptions on which policies are based (the 'policy theory'), are not yet sufficiently supported by scientific evidence.
- A tradition of *evidence-based practice*, i.e. structurally working such that people learn from their daily practice, has not really been developed yet.

The main conclusion of the Council is that an effective attempt to achieve community fire safety requires a specific change in behaviour from the fire service itself: the fire service will have to set to work much more **methodically** and also much more with a **learning** focus. By this, the Council means: ensuring good information, using this information to establish which are the target groups where the most gains can be achieved through community fire safety, thoroughly analysing the characteristics of those groups and situations, selecting appropriate interventions whose effects are known or that seem to offer good chances of success based on all the available knowledge, properly evaluating the effects, and learning from the results.

The Council deems it important that it is made very clear what exactly the drive is for community fire safety and what the subject matter is that forms the

basis for this drive. More than ever today, efforts to improve prevention seem to serve strategic goals (going along with the general trend, suggesting probable savings). The danger is that people are too optimistic about the real effect. The fire service will have to raise the level of its information systems and management in order to achieve a sound knowledge basis; for now, the information on fires in the home, causes and casualties is not complete or reliable enough.

The Council recommends a two-track policy for the future: 1) continuing with initiatives for community fire safety, but then geared more towards target groups, using scientific evidence and knowledge of the target group and with proper evaluations, and, 2) in the meantime, plotting a strategy with all the fire service regions together in order to achieve a sustainable tradition of methodical working in 'Community Fire Safety 2.0'. The Council recommends communicating realistic expectations about community fire safety: there is no reason why it should be automatically expected that community fire safety would enable savings to the fire service budget or a considerable drop in the number of casualties. However, citizens' fire safety can increase in a number of cases.

Introduction



● ● ● **Community fire safety: a matter of a change in behaviour**

Putting out fires is, and continues to be, important for our fire safety, but it is not enough. That was the result of the philosophy of a 'Fire service for tomorrow' in 2010. Investing in ways to extinguish fires even better is necessary in order to achieve fewer fires and fewer casualties, but something else was found to be needed as well: citizens actively trying to create a more fire-safe environment. Citizens can and should be more aware of the risk of fire; they should prevent fire from occurring as much as possible and should then know how to act if a fire does occur.

Community fire safety calls for a change in how people behave. For example: people should stop leaving candles on in a room when they leave the room, they should install smoke detectors and check them regularly, devise escape plans to be prepared for a possible fire, and know how to put out a frying pan fire. In recent years, all the fire service regions have taken initiatives to stimulate community fire safety. The main focus is on providing information and installing smoke detectors. But people's behaviour is not so easily influenced. We carry out the majority of our actions often unaware of what we are actually doing. Does education still have any effect? And if not, what would be an effective tool to make people behave in a more fire-safe way? The Scientific Research Council of the Netherlands Fire

Service finds it important that the knowledge in this field is made publicly available.

● ● ● **Goal: bringing together new knowledge about changing behaviour in one collection of articles**

The Scientific Research Council of the Netherlands Fire Service has compiled this collection to share the latest perspectives and knowledge about changes in behaviour and the lessons to be learnt from that for the fire service. The fire service can use these perspectives and this knowledge to take new steps towards effectively promoting community fire safety. The last chapter of this collection features a recommendation by the Scientific Research Council regarding these new steps and based on the knowledge in this collection.

Other organisations, such as the police and municipalities, are also working towards a 'safe environment'. For example, these organisations try to influence people's behaviour in order to improve social safety and security on the streets or to prevent houses being burgled. Through this collection, the Scientific Research Council also wishes to make the knowledge about changes in behaviour accessible to these organisations, since exchanging knowledge and experiences will benefit all parties.

In essence, the collection consists of three parts:

Part A: How are the fire service and citizens now dealing with community fire safety?

Part B: What do recent studies say about the possibilities and impossibilities of bringing about a change in behaviour?

Part C: How can the fire service effectively stimulate community fire safety?

Composition of the editorial board for this collection:

Marnix Eysink Smeets (Chair)	Professor of Security Perceptions at Inholland University of Applied Sciences Member of the Scientific Research Council of the Netherlands Fire Service
Menno van Duin	Professor of Crisis Management at the Netherlands Institute for Safety Member of the Scientific Research Council of the Netherlands Fire Service
Marjan Heijman (Secretary)	Secretary of the Scientific Research Council of the Netherlands Fire Service
Nancy Oberijé	Senior researcher at the Netherlands Institute for Safety
Hilda Raasing	Managing Director/Fire Chief of the Zaanstreek-Waterland safety region Portfolio Manager for Community fire safety on behalf of the Dutch Board of Fire Chiefs
Renske Postma (general editor)	Copywriter and general editor

● ● ● How this collection was brought about

This collection was an initiative of the Scientific Research Council of the Netherlands Fire Service. Authors from various specialist fields and organisations contributed by writing one or more articles. This was a deliberate choice to ensure that the approach to the collection as a whole would be sufficiently broad. The authors are all employed by the fire service, knowledge institutions and consultancies.

An editorial board was set up to manage the content and assure the quality of this collection. The editorial board established the list of contents for the collection and asked external authors to write articles about certain subjects. Parts A and B of this collection are the results of this. In addition, the editorial board organised a discussion with the authors, some members of the Scientific Research Council, and representatives of the Netherlands Fire Service about what the fire service can learn from the articles. The Scientific Research Council has used the results of this discussion in order to draw up a recommendation as presented in Part C.

● ● ● Justification

The editorial board opted for short articles that would be easy to read. Therefore the focus in this collection is on the main results of scientific studies and the lessons to be learnt from them. The underlying analyses, research methods and data summaries are not included in this collection, but they are referred to in the bibliographies accompanying every article.

1

Why the fire service opts for community fire safety

Renske Postma, Tekstbureau Met Andere Woorden

Over the years, the Dutch fire service has always focussed on several links in the safety chain. In particular, attention has always been paid to repression (fighting fires) and prevention (preventing fires). Two documents have shed a new light on these subjects in recent years: the philosophy of a 'Fire service for tomorrow' and the 'Fire safety is a co-production' policy document. These documents show that gains can be achieved in the fields of repression as well as prevention. An area where a lot can be gained in this respect is that of 'community fire safety'. This can be achieved by stimulating citizens, companies and institutions to give more consideration to the risks of fire in their own residential and work environments.



●●● Fewer fires, fewer casualties, less damage and loss

The above heading is the goal of the fire service as described in Dutch law. Repression is essential for this: acting fast and efficiently in the event of a fire. Over the centuries, the fire service has been able to make use of ever-better materials and achieve an ever-better trained fire service personnel. Regulations on fire safety have always been important in this respect. For instance, municipal fire ordinances already existed as early as the 15th century. Recent rules for example concern the use of fire-safe materials in houses and flats and other buildings, smoke detectors in new build homes and good escape routes. Throughout the ages, citizens have always been required to do their share as well, both as regards repression and prevention.

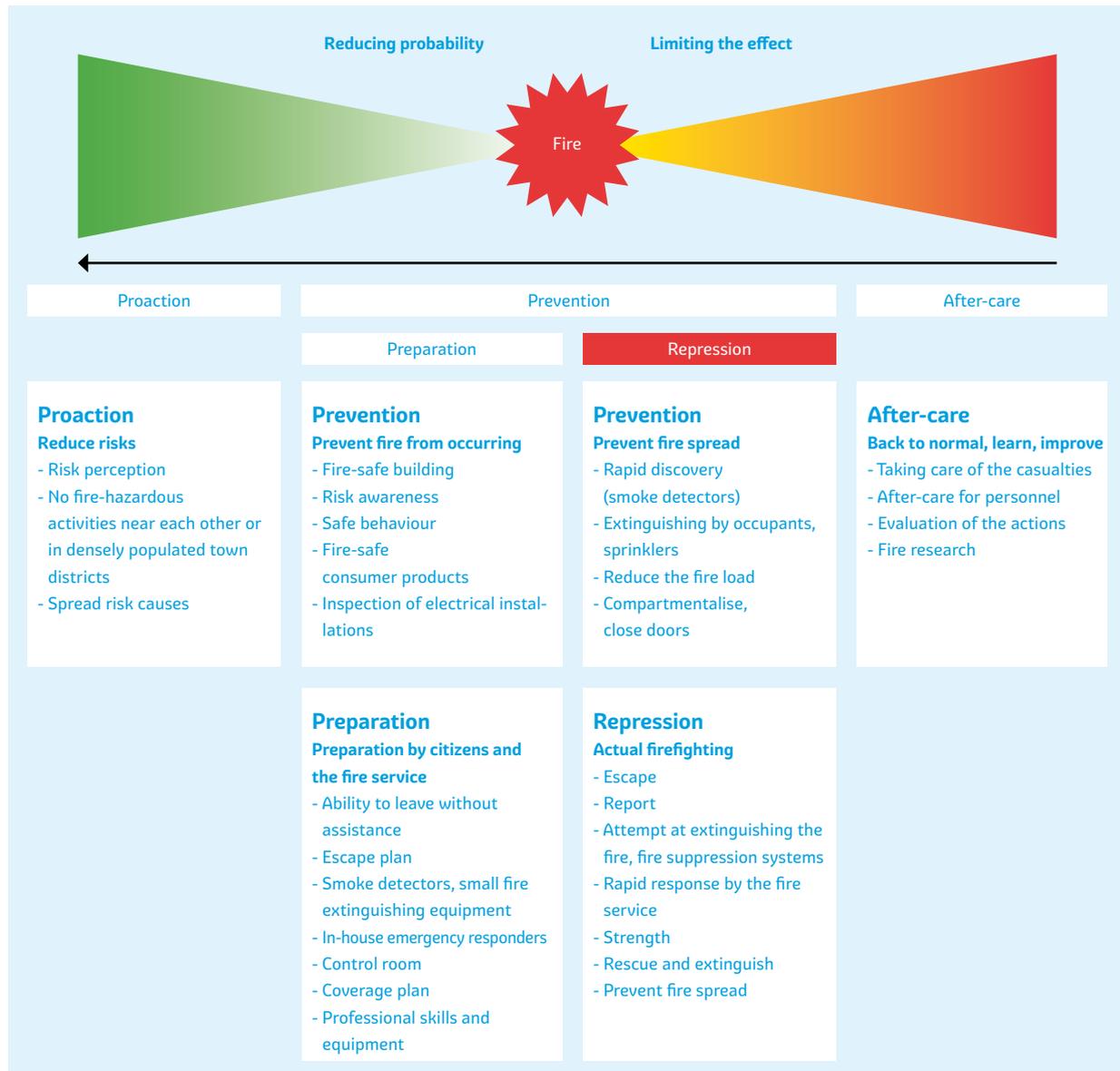
In recent years, the Dutch fire service regions have pondered the question of how to bring about even fewer fires, fewer casualties, and less damage and loss. In the philosophy of a 'Fire service for tomorrow', the fire chiefs state that, on the one hand, this requires innovations in the field of repression, and on the other hand, this calls for a greater focus on 'community fire safety' (Netherlands Fire Service 2010). The document entitled 'Fire safety is a co-production' provides an analysis of the entire safety chain, based on fires in the home (RemBrand 2015 project group). This also reveals that if people behave in a more fire-safe manner, this can bring important gains, on top of

the positive effects of fast discovery and reporting of fire made possible by initiatives such as installing smoke detectors. The focus on fires in the home was chosen because these fires claim the most casualties. Both documents were adopted by the Safety Council (Veiligheidsberaad).

The philosophy of a 'Fire service for tomorrow' has provided a new business model for the fire service: the continuity concept. Its essence is that the fire service, together with other parties, should safeguard continuity in society to the greatest extent possible. Various parts of our contemporary society are highly interwoven, meaning that minor disruptions will spread quickly to other regions and activities, disrupting the continuity of our daily lives and even leading to large-scale social disruption. But at the same time, our contemporary society accepts fewer disruptions. This makes it even more important that attention is also paid to preventing and quickly discovering fires.

●●● The bow tie: visualising the entire safety chain

A commonly used visualisation of the safety chain is that of a bow tie, with the knot representing the safety incident (a fire in this case). The emphasis of the fire service's activities is to the right of the knot in the bow tie: in the phases of repression and after-care.



Active efforts in all the links of the safety chain will be necessary in order to contain the fire risk. Source of illustration: RemBrand 2015 project group

The prevention activities that the fire service performs are also mainly located to the right of the knot in the bow tie, in the right-hand half of the safety chain: installing smoke detectors and sprinklers and any other activities to prevent fire from spreading. These activities are, and continue to be, very important for fire safety. The left-hand half of the safety chain features such aspects as fire-safe building, occupants' fire-safe behaviour, and fire-safe furniture. Many players have a role in these links and the fire service's role is less easy to identify.

It is clear that citizens and companies hold an important key to preventing fires in the home and other fires, and also in acting safely should a fire still break out. They can fit out their living and working environments with an eye to optimum fire safety and ensure that they know what to do if fire should still break out. This is designated by the notion of *community fire safety*. The fire service can stimulate and advise citizens and companies as regards community fire safety, but - contrary to when fighting fires - the fire service is not in control in this phase.

The 'Fire safety is a co-production' document emphasizes that active efforts by all the links in the safety chain are necessary in order to reduce the fire risk. The links do not work according to the principle of 'communicating vessels': more active effort in the field of community fire safety is no substitute for the efforts required for repression, for instance.

● ● ● Community fire safety

The Dutch notion of *Brandveilig leven* (Community fire safety) originates from the English *community safety*. In the late twentieth century, the Liverpool fire service started a campaign to improve people's ability to leave a burning building without assistance. This was part of an integrated safety initiative in one of Liverpool's town districts that had fallen victim to a negative crime trend. Due to the many fires in the home, the fire service was the only public body that still got past people's front doors. The fire service decided to carry out checks in people's homes: visiting people at home in order to check the fire safety situation and give recommendations for improving it. Not only did the number of fires in the district decrease drastically, but this also led to less crime.

Inspired by this *community safety* initiative, the Netherlands fire service initiated its first activities to promote 'community fire safety' in 2000. 'A fire service for tomorrow' caused these activities to gain momentum. By focussing on 'community fire safety', the fire service now wishes to improve citizens', companies' and institutions' awareness of the risks of fire and make them act more fire-safely. The fire service has set three goals in this respect:

- preventing fires (e.g. not leaving burning candles unsupervised, using safe power cords);
- quickly discovering fire (e.g. installing smoke detectors);



- slowing down fire spread (e.g. installing sprinklers, keeping doors closed);
- knowing what to do if fire breaks out (e.g. preparing escape routes, staying away from smoke).

● ● ● From community fire safety to a safe environment

Community fire safety calls for a change in how people behave. The fire service is using different interventions for this (see chapter 4). Working together with other parties that are able to influence people's fire safety behaviour and ensuring fire-safe home interiors are essential in this respect. Examples of such parties are municipalities, the Dutch Burn Association, housing associations, healthcare providers, the police, municipal health services and other authorities and institutions that visit people in their homes. One of the conclusions of the RemBrand project group (2015) is that good fire safety can only be achieved as part of a co-production among several parties. Furthermore, the focus on 'a safe environment' can also be recognised in other sectors of society. For

example, municipalities try to influence citizens' behaviour in order to improve social safety and security, fight crime and prevent burglaries. Linking the activities for 'a safe environment' together is an obvious step: this enables the social effectiveness of these activities to be enhanced and it reduces the risk of citizens being overexposed to activities and messages. The philosophy of a 'Fire service for tomorrow' therefore provides for a development programme for moving from 'community fire safety' to 'a safe environment'. This would bring 'community fire safety' closer to the initiative it was derived from: *community safety*.

Bibliography

Netherlands Fire Service (2010). De Brandweer over morgen. Strategische reis als basis voor vernieuwing. (Fire service for tomorrow. A strategic journey as the basis for innovation)

RemBrand project group (2015). Brandveiligheid is coproductie. (Fire safety is a co-production.)

The basis for community fire safety: facts about fires in the home

Margrethe Kobes, senior researcher at the Fire Service Academy (IFV)

Community fire safety features high on the fire service's agenda. Private citizens, companies, institutions and the government all have their own roles in preventing fire. Together with them, the fire service wants to ensure that we are all better aware of the risks and that we know what to do in order to make our home environments safer. The fire service has therefore taken all kinds of initiatives throughout the Netherlands to promote community fire safety (www.brandweernederland.nl). But what exactly is the extent of the problem regarding fire in the domestic environment, who are the people affected, and what factors can be influenced in order to make the domestic environment safer? This chapter outlines the characteristics of fires in the home in order to create a basis for community fire safety.



●●● General figures about fires in the home

There are several different sources of information about fires in the home. These include the Risicomonitor Woningbranden (Residential Property Fire Risk Monitor) from the Dutch Association of Insurers (reports of fire damage received by insurers), the Statline database of Statistics Netherlands (reports received by the fire service), the database of the Netherlands Fire Service (data gathered by the Teams Brandonderzoek (Fire Research Teams) of the Netherlands Fire Service) and the database of the Netherlands Institute for Safety (about fatal fires in the home).

The Residential Property Fire Risk Monitor (Dutch Association of Insurers 2014) shows that insurers receive some 117,000 reports of damage due to fire every year. This would mean that 1 in 65 flats or houses incur some degree of fire damage every year. This damage can range from scorch marks or fires that could be put out by the occupants themselves, or that went out by themselves, to larger fires where the help of the fire service was required. In 2013, the Stichting Salvage foundation provided assistance in connection with some 3,000 fires in the home, for example by arranging temporary housing or shelter and taking measures to contain the damage and loss as much as possible. The data of Statistics Netherlands indicates that, on average, the fire service is alerted to 6,500 indoor fires in residential buildings a year (www.statline.cbs.nl),

i.e. to approx. 6% of the fire damage reported to the insurers. The causes of no fewer than three in five fires in the home recorded by Statistics Netherlands are not known. The Fire Research Teams of the Netherlands Fire Service collected data on almost 1,000 fires in the home in the period from 2010 to 2012 (Kobes 2014). The fires studied were selected based on their possible learning aspects. This database comprises fewer fires in the home than the statistics compiled by Statistics Netherlands, but it offers a better understanding of the characteristics of the fires in the home and it shows the causes of a large number of those fires. In the period from 2008 to 2012, the Netherlands Institute for Safety (IFV) collected data on 148 fatal fires in the home that claimed a total of 160 lives (Groenewegen et al. 2013). Other than Statistics Netherlands, IFV does not include any fires in its records that were caused deliberately, for instance in the context of murder or suicide, but fatal fires in the home where the fire service did not render assistance are included in this dataset. An example of this are fires in the home that had already gone out by the time they were discovered by passers-by or other parties.

The question is how reliable - and subsequently how useful - the data from the different sources is. Every dataset has its limitations. For example, the fire service was not alerted in the majority of the cases of fire damage reported to the insurers (94%). The Residential Property Fire Risk Monitor provides little information as to the causes

of these fires. A British study shows that fires in the home that were not reported often did not lead to severe damage or loss or injuries (British Crime Service 2004). But not all the fires are minor fires: fatal fires where the fire service has not been involved occur in the Netherlands every year (Groenewegen et al. 2013). Furthermore, an analysis by the British Home Accident Surveillance System showed that the fire service had not been alerted in just under half of all incidents involving fire casualties (Marriott 1993). This is possibly also the case in the Netherlands. The figures of Statistics Netherlands are not complete either. This is because not all the fire service organisations provide Statistics Netherlands with information about the reports received and turnouts. Therefore, the data of Statistics Netherlands is partly

based on data recorded by the fire brigades and partly on extrapolated data (estimates). Statistics Netherlands has explicitly stated that its data on fires in the home for 2009 is not sufficiently reliable. The trend in the number of fires in the home since 2000 suggests that the number of fires in the home registered since 2004 has decreased from about half to one third of the total number, whereas the number of indoor fires in other buildings (including the category of 'unknown') has increased. These two categories jointly still make up some 70% of the total number of fires a year. It is not clear whether the decrease suggested has actually occurred or is the consequence of the method used to collect data and a shift from fires in the home to the category of 'unknown'.



Recorded number of indoor fires: in residential buildings, in other buildings and all indoor fires jointly (according to: www.statline.cbs.nl)

More is known about the fires in the home studied by the Fire Research Teams and this collective data forms a sufficiently large sample for the situation in the Netherlands. However, this dataset is also subject to some limitations. Firstly, most of the data on the years to 2012 only concerns four of the total number of 25 safety regions. Furthermore, the fires have been selected for their possible learning aspects, i.e. they have not been chosen on a non-specific basis. This means that it is not certain that this data is representative of the situation throughout the Netherlands.

The dataset on fatal fires in the home is the most representative for this category of fires. This set offers a wide range of data for all unintentional fires in the home that claimed lives. However, fatal fires in the home only cover a small and highly specific part of all fires in the home, i.e. only those where lives were lost. The data cannot be used to gain a further understanding of fires in the home that did not claim any lives, nor can it be stated to any degree of certainty which factors were decisive in the fatal outcome. This would require a reliable comparison to non-fatal fires in the home, but the details required for this are not available at this point in time.

This means that finding a reliable basis for 'community fire safety' is difficult. The quality of fire statistics in the Netherlands should also be looked at in more detail. However, the current information does give a first general look at the factors that are relevant to

community fire safety. A summary follows below. This is generally based on data about fires in the home from the dataset of the Netherlands Fire Service (Kobes 2014) and the IFV's data on fatal fires in the home (Groenewegen et al. 2013). Where use has been made of the dataset of Statistics Netherlands, this has been explicitly indicated.

● ● ● The casualties of fire

Number of casualties

According to the data of Statistics Netherlands, on average, 35 people die as a consequence of a fire in the home every year. IFV has recorded an annual average of 45 fatalities due to fires in the home, 32 as a result of unintentional fatal fires in the home. About 1 in 3,300 fires in the home reported to insurers claim lives unintentionally; the same goes for 1 in 200 fires in the home reported to the fire service. The number of people injured due to fires in the home has decreased from about 800 in 2000 to 400 in 2013 (Statistics Netherlands 2014 and previous years).

The ages of the casualties

In general, the ages of casualties of fires in the home are not known. The majority of fatal casualties of fires in the home are aged 60 or more. This age category comprises approximately one fifth of the population of the Netherlands; about half of all the casualties of fatal fires in the home are in this category.

Attentiveness and mobility of casualties

There is no general data on the degree of attentiveness and mobility of the people present at fires in the home. It is known that slightly more than half of all fatal casualties of fires in the home were probably asleep when the fire started.

The respondents in the study into fatal fires in the home (especially fire researchers and crew commanders) think that late discovery and rapid fire growth are decisive factors for a fire being fatal in situations where casualties were presumably asleep. Where casualties were presumably awake, limited mobility is suggested as the main factor. Over one third of the people who lost their lives in fires in the home, and whose degree of mobility was known, had limited mobility or were not mobile at all if they were not assisted.

●●● The occurrence of fire

Type of dwelling

About two thirds of all fires in the home occur in an apartment or flat, although these types of dwelling only make up one third of all the dwellings in the Netherlands (www.statline.nl).

Around half of all fatal fires in the home and fires in the home that claim casualties occur in such dwellings.

Causes of fires in the home

According to the data of Statistics Netherlands, most fires in the home (about 50%) are caused by a defect in, or faulty use of, a device or product. This category includes both fires in the home with a technical cause and fires in the home caused by people's actions.

Other categories are (in order of their importance): over-heating/self-heating, arson, activities that pose a high risk of fire, smoking, fireworks, and children playing with fire. The fires in the home whose causes are unknown have not been included in this analysis, which gives a distorted image. In 2000, the causes of four in five fires in the home were known, but in 2013 this was the case for only two in five fires in the home. Data from the Netherlands Fire Service shows that the causes of 85% of the fires in the home are known. Two thirds of these fires in the home were caused by human actions, with cooking being the main cause, followed by arson and smoking. About one in four fires in the home were caused by a defect in (specifically electrical) appliances, i.e. they have a technical cause. A small number of fires in the home was caused by technical defects to the building, e.g. shorting in the electrical installation or the flue overheating or starting to burn.

The causes of 80% of the fatal fires in the home are known. Here, smoking was the main cause, followed by short circuits and cooking.

This means that most fires in the home are caused by defects in electrical appliances and cooking, but

these fires lead to a relatively small number of fatal casualties. Smoking however causes only a small percentage of all fires in the home, but these fires involve the greatest risk of dying.

Room and object where a fire starts

There are also distinct differences between the room where the fire started in fatal fires in the home and non-fatal fires in the home: most fires in the home start in the kitchen. Fires that start in a living room or bedroom are much less common, but they claim lives more often. This is partly due to the materials that catch fire. The probability of a fatal injury is specifically high if the fire starts in clothes, or in objects that contain foam rubber, such as upholstered furniture and mattresses. Burning foam rubber generates a lot of highly toxic smoke and it causes fast fire growth. When clothes are on fire, flames are in direct contact with skin, causing burns. This means that the selling, and using, of fire-safe furniture, mattresses and clothes, especially nightwear, require permanent attention.

●●● **Discovering the fire**

Discovery

In general, it is not known who discovered a fire in the home. However, information is available about this for fatal fires in the home. In about one in four incidents, these fires were discovered by the occupants, in one

in three cases they were discovered by neighbours, and in about one in four cases they were discovered by bystanders or passers-by. It is not known who discovered the other fatal fires in the home.

Presence and functioning of smoke detectors

The data of the Netherlands Fire Service (fires in the home with/without casualties) and IFV (fatal fires in the home) shows that smoke detectors were present in one third of the dwellings where there was a fire in the home. In one in five fires in the home there was a working smoke detector (that applies to well over two thirds of all fires in the home where smoke detectors were present).

In two thirds of the fatal fires in the home with a working smoke detector, the casualty had a reduced ability to leave a building without assistance. In the other cases, the casualty was asleep and/or a mattress or upholstered furniture caught fire due to smoking (Kobes & Groenewegen 2015). This means that the physical possibilities, the ability to be awoken by an alarm signal, and the effects of fire in foam rubber influence the effectiveness of smoke detectors as regards improving people's chances of surviving a fire. The data of the Netherlands Fire Service shows that three quarters of all fires in homes with working smoke detectors did not claim any casualties. This seems to indicate that smoke detectors can prevent fatal casualties and injuries if there is a fire in the home. However, this can only be said with sufficient certainty if there is representative data on fires in the

home where smoke detectors were found to have been effective and the people present survived the fire. Unfortunately, no such data is available yet.

If the situation involves a reduced ability to leave a building without assistance, rapid reporting and follow-up of the fire alarm, e.g. to and by the neighbours, is important. In order to more effectively wake people who are asleep, the sound of smoke detectors should be changed. The sound produced by the most common type of smoke detector (3100 Hz) has been found to sometimes be too high to wake people who are asleep (Bruck & Thomas 2008). A lower frequency (520 Hz) wakes up many more people. It has also been found that parents' voices are more effective at waking children than smoke detectors (Smith et al. 2006).

An exploratory analysis of some fires in the home without casualties was carried out in two safety regions. This showed that the alarm did not sound in one third of the fires in homes with smoke detectors. This was because the smoke did not reach the smoke detector in the hallway or on the landing. Effectiveness can be improved by changing the locations where smoke detectors are installed.

●●● The probability of escaping

Field experiments with smoke detectors in fires in the home have confirmed the importance of the location

of the smoke detector (Kobes & Groenewegen 2015). These experiments showed that smoke detectors in hallways or on landings sometimes sound too late to enable people to escape from the room on fire in time. Only about 1.5 minutes are left after the alarm sounds in which to escape from the other rooms in the dwelling. The probability of escaping increases by installing smoke detectors in rooms where people may sleep (such as the bedroom and the living room) and to interconnect the smoke detectors in other rooms where a fire may occur. Even if there are smoke detectors in all the rooms, escaping quickly is of vital importance: if a mattress or sofa has caught fire, escaping from the room with the fire becomes impossible within 4.5 minutes and the probability of surviving decreases quickly after this. If an electrical appliance (fryer or TV) is on fire, the room has to be left within 5.5 to 6.5 minutes.

Almost two thirds of the fatal casualties of fires in the home were in the room where the fire started when the fire started, and slightly over half of these casualties were also found there. This means that some of these casualties managed to escape from the room with the fire, but still did not survive the fire. Regarding two thirds of the casualties found in the room where the fire started, it was found that the fire was contained to that room. In well over one third of these fires, the casualties were awake and did not have any physical impediments. In one in four fires where a fatal casualty was found in the room where the fire started, the fire had not spread to beyond the

object in which it started. Well over one third of these casualties were awake and did not have any physical impediments. This means that a relatively minor fire (limited to the object or room where it started) may still be fatal even if the person in the room with the fire is able to leave without assistance (i.e. is awake and mobile).

●●● The probability of being rescued

In 2013, the response time to more than half of all reports of fires in the home (with or without casualties) was longer than 8 minutes (Statistics Netherlands 2014). For fatal fires in the home where the response times are known, the average response time was 6.8 minutes: the fire service arrived within 8 minutes in three quarters of these fires, within 6 minutes in half of these cases, and within 5 minutes in more than half of these fires.

In slightly more than half of the fatal fires in the home whose fire growth is known, the fire was still contained within the room where it had started when the fire service arrived. In one fifth of all fatal fires in the home, the fire was actually still contained to the object in which the fire started. Most fatal fires in the home hardly grew any more after the fire service arrived. This also applies to fires in the home in general.

Nearly three quarters of the fatal casualties had presumably already died before the fire service

arrived, and nearly one third presumably even before the fire was reported. A number of casualties were brought from the dwellings alive, but died of their injuries afterwards. There is no relationship between the moment of death and the response time.

This means that, as regards some of the fatal fires in the home, those present in the room with the fire did not have any chance of being rescued by the fire service, in spite of the generally short response time and the limited size of the fire. In these situations, automatic fire suppression might offer sufficient protection. This calls for a further examination. Furthermore, reducing smoke spread to the other rooms in the dwelling is important. Field experiments (Kobes & Groenewegen 2015) have shown that the probability of people outside the room with the fire being rescued increases greatly if doors are closed and there are interconnected, working smoke detectors in all the rooms where a fire may occur. However, this is subject to a number of conditions. Firstly, if escaping without assistance is no longer an option, people have to stay in the room (where there is no smoke) with the doors closed and they must refrain from opening the door in the meantime. And secondly, the fire service will need to know where the people to be rescued are located. And finally, any rescue will have to take place through a safe room, without any heat or smoke that contains hazardous substances.

●●● Summary of areas of attention for community fire safety

The above analysis provides some hints for reducing the number of fatalities and people injured due to fire. The following points are therefore determined as being important for community fire safety:

- prevent fire as much as possible, specifically:
 - when older people and people with a reduced ability to leave a building without assistance are concerned
 - while smoking and cooking
 - in bed, on upholstered furniture and in connection with clothes
 - if there are people sleeping in the dwelling
- enable rapid detection by interconnected smoke detectors, especially in rooms where people are generally expected to be present and in other rooms where a fire may occur. These smoke detectors should preferably have a low sound frequency (e.g. 520 Hz);
- close internal doors, in combination with interconnected smoke detectors in all rooms where a fire may occur;
- ensure a rapid and adequate escape response or other response by occupants;
- provide support for people with a reduced ability to leave a building without assistance when:
 - escaping, e.g. by having smoke detectors also alert neighbours
 - finding shelter, e.g. in combination with automatic fire suppression.

Bibliography

British Crime Survey (2004). Fires in the home: findings from the 2001/02 British Crime Survey, Retrieved October 27, 2004, from <http://www.odpm.gov.uk>, 2001. In: Barnett, M., Bruck, D. & Jago, A. (2007). Mean annual probability of having a residential fire experience throughout a lifetime: Development and application of a methodology. *Proceedings of 7th Asia-Oceania Symposium on Fire Science and Technology*. Hong Kong.

Bruck, D. & Thomas, I. (2008). Towards a Better Smoke Alarm Signal – an Evidence Based Approach. *Fire Safety Science – Proceedings of the Ninth International Symposium*, pp. 403-414.

Statistics Netherlands (2014). *Fire Services Statistics 2013*. Voorburg: Statistics Netherlands.

Groenewegen, K., Kobes, M., Mertens, C. & Rossum, W. van (2013). *Fatale woningbranden 2008 t/m 2012: een vergelijking (Fatal fires in the home 2008 to 2012: a comparison)*. Arnhem: IFV.

Kobes, M. (2014). *Analyse database brandonderzoek TBO 2010-2012 (2010-2012 TBO fire research database analysis)*. Arnhem: IFV.

Kobes, M. & Groenewegen, K. (2015). *Gebrand op inzicht. Een onderzoek naar de effectiviteit van*

rookmelders. (*Hot on learning. A study into the effectiveness of smoke detectors*) Arnhem: IFV.

Marriott, M.D. (1993). Causes and consequences of domestic fires, Retrieved October 27, 2004, from <http://www.odpm.gov.uk>. In: Barnett, M., Bruck, D. & Jago, A. (2007). Mean annual probability of having a residential fire experience throughout a lifetime: Development and application of a methodology. *Proceedings of 7th Asia-Oceania Symposium on Fire Science and Technology*. Hong Kong.

Smith, G. Splaingard, M., Hayes J. & Xiang, H. (2006). Comparison of a personalized parent voice smoke alarm with conventional residential tone smoke alarm for awakening children. *Pediatrics*, 118: 1623-1632.

Dutch Association of Insurers (2014). Risicomonitor Woningbranden (Residential Property Fire Risk Monitor). Dutch Association of Insurers, The Hague.

Websites

[http://www.brandweernederland.nl/wat_doen_wel_thema-\(brand\)veilige/brandveilig-leven-0/brandveilig-leven/brandveilig-leven/](http://www.brandweernederland.nl/wat_doen_wel_thema-(brand)veilige/brandveilig-leven-0/brandveilig-leven/brandveilig-leven/) geraadpleegd op 8 mei 2015.

<http://www.statline.cbs.nl> consulted on 8 May 2015. Measurements during the period 2000 to 2013.

Community fire safety: the citizen's perspective

Marnix Eysink Smeets, Professor of Security Perceptions at Inholland University of Applied Sciences

David Ambachtsheer, researcher at Inholland University of Applied Sciences

The Netherlands Fire Service has introduced the concept of 'community fire safety' to specifically focus on the role of citizens (see chapter 1). Under this concept, citizens are expected to be able to make a situation safe and be better able to leave a building without assistance, as well as making more efforts to increase fire safety. But what do they think of this themselves? How do they look at risks in general and the risks of fire in particular? And is this the same for everyone? And if the importance of fire safety is only felt to a slight extent, why is that? Do people suppress their worries about fire safety or do other matters occupy their full attention so that there is no room left for other worries? To what extent is the fire service's view - i.e. that citizens also have their own role to play as regards fire safety – agreed with by the general public? This chapter explores the answers to these questions.

●●● How do people view risks in their own environment?

As a firefighter, policy maker, director or government official, you are used to looking at risks from a rational point of view. You look for the presence of factors which you know involve certain risks, you study incident statistics, carry out some more specific analyses and *voilà*, you have a reasonably substantiated picture of the risks in a certain situation. That is, the risks belonging to your own particular focus area. Every area has its own risks and threats that are mapped by the people responsible for that specific area. So professionals naturally take a very rational and sensible look at the risks and threats to citizens in their own specific fields of expertise, although their field of vision is very narrow (CCV 2014; Skjong & Wentworth 2001).

Citizens look at these matters in a completely different way. Not in a narrow and rational way, but broad and instinctive. That is a very functional approach as there are significant threats and less significant threats. And those threats occur in all kinds of fields: ranging from fire or diseases, to becoming unemployed, etc. And life is about more than facing threats: it is just as much or even more about making use of opportunities. The result is that anyone who adequately recognises and faces the greatest threats, and is the least flustered by lesser threats, has the better probability of survival and the better chance of success. Psychologists have

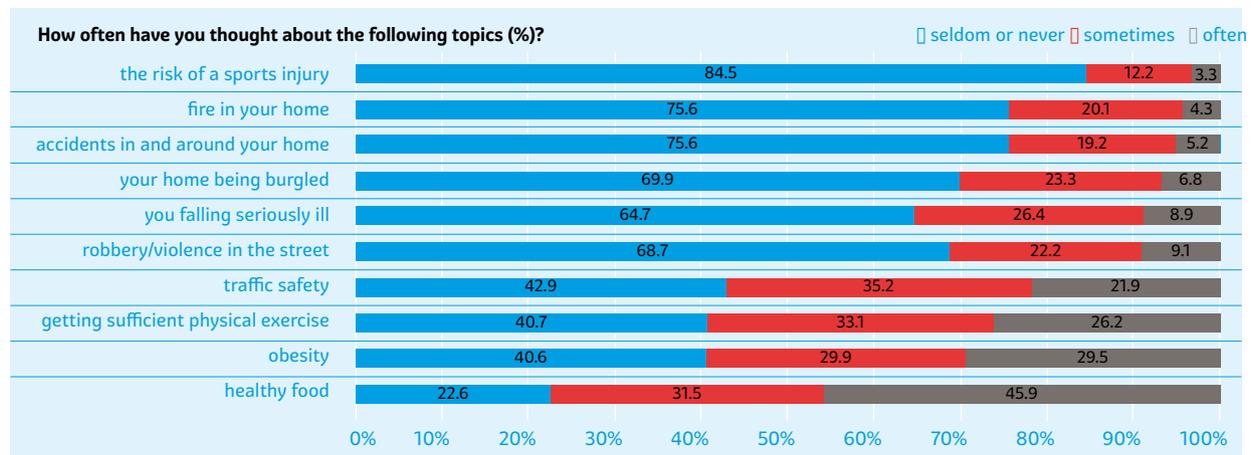
found that, for this reason, people neutralise risks in their own environment that bring little or medium levels of stress, and prevent them from getting through to their consciousness. This enables them to keep a focus on the things that they find important in life. A notion that is sometimes referred to in this concept is the 'optimism bias' (Sharot 2011), as a result of which mentally sound people seem to have an overly positive view of their direct environment. They filter away the minor threats and their own minor shortcomings or limitations or view them more positively than justified. This may seem to be short-sighted and unwise, but it has been proven to be a smart strategy: that is why these people achieve better results than people who do take notice of the lesser shortcomings and threats. Funnily enough, people who are depressed, or for whom fear is an integral aspect of their personality or who otherwise have a high degree of alertness or *arousal*, happen to have a much more realistic view of the risks, threats and limitations that surround them (Kinatader et al. 2015; Sharot 2011). People with a relatively low socio-economic status (SES) often also have a less optimistic view and therefore a more realistic perspective of risks (Savage 1993; Stellar et al. 2011).

To be able to quickly and efficiently determine which risks are important risks (and which are not) people subconsciously use 'rules of thumb' (or 'heuristics'). (Skjong & Wentworth 2001). For example, one such rule of thumb is the '*availability heuristic*': if people can

form a picture of an emergency and its consequences very easily, they automatically assume that the risk of this emergency happening is also relatively high - higher than if they cannot easily picture such an emergency (Skjong & Wentworth 2001; Tversky & Kahneman 1973). This means that if there has just been a fire in a street, the people living there will subconsciously think that the probability of such a fire happening again is greater than they would have if no fire had occurred. Well-known researchers in the risk perception field, like Slovic, also found that the degree of newness of a risk plays a role: a new risk gets more attention than a risk that people are already familiar with. The 'dread' factor, or how horrible a situation is, is also instrumental in how we experience a risk: the more a threat connects with more deeply felt human fears, the more attention it will get (Slovic 1987; Slovic et al. 1981).

●●● How do people perceive safety and fire safety in their homes?

'My home is my castle' is a popular English saying. This is for a good reason: lots of people think of their home as the place where they feel safe, no matter what, just like in a castle. Research has shown that the majority of the population of the Netherlands perceive their home as also offering this safety, although the facts sometimes prove differently. According to the Risico- en Crisisbarometer 2014 (2014 Risk and Crisis Barometer), no fewer than 98% of all citizens feel safe in their homes (Ipsos 2014). The Veiligheidsmonitor 2014 (2014 Safety Monitor), which focuses more on crime figures, shows that 91% of citizens state that they feel safe at home (Statistics Netherlands 2015). This does not mean that people do not see any risks or threats in or around their homes. They definitely see



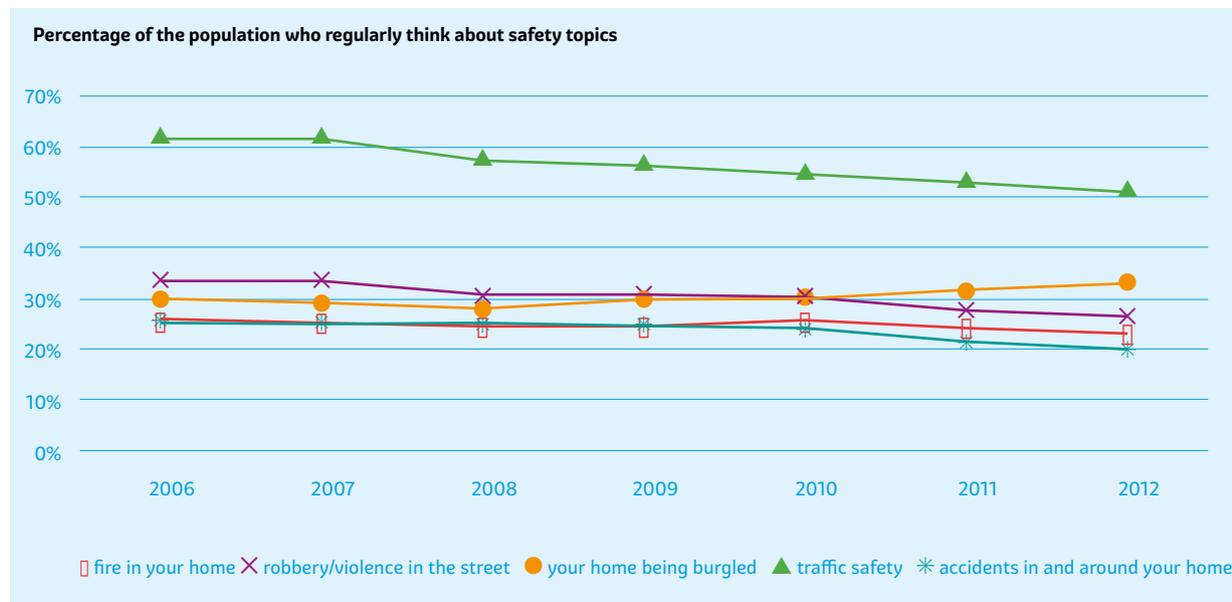
How often have you thought about (...)? Based on: Ongevallen en Bewegen in Nederland (Accidents and Physical Exercise in the Netherlands) (OBIN) 2006-2012 in Hulsker & Witmand 2014.

diverse risks and threats, but they assign them very different weightings. The risk of fire usually ranks low in people's perception of problems.

What is interesting to see is that, in the past few years, the public has slowly, but steadily, started to assess the risks in different areas as being less high. Homes being burgled is an exception in this regard: against all trends, this risk is perceived as getting ever higher. What is remarkable however, is that this does not lead to people taking more preventive measures (Statistics Netherlands 2015; Eysink Smeets 2015). The availability heuristic might well be at work as regards

the growth of the perceived risk of burglary: the information campaigns organised by the police and the judicial authorities remind people of the risk of their homes being burgled so often that people perceive burglaries as becoming ever more prevalent, although actually the number of burglaries has decreased demonstrably.

What type of risks people worry about, and the degree to which they do so, greatly depends on the specific situation that people are in. For instance, a senior citizen has other worries than someone young, and the worries felt by people without children are different than the worries felt by parents. And in the latter



Percentage of the population who regularly think about safety topics. Based on: *Ongevallen en Bewegen in Nederland (Accidents and Physical Exercise in the Netherlands) (OBIN) 2006-2012* in Hulsker & Witmond 2014.

event, parents' worries differ depending on how old their children are. Parents of young children naturally assess the probability of their child getting its fingers trapped between the door and the door frame or falling off a play structure or falling down the stairs as being the greatest. However, what they fear the most is their child drowning or suffocating in its sleep.

Parents of somewhat older children (5-12) have a different perception. They still think that the probability of falling is the greatest, but what they fear the most is that their child will drown or will be burnt by fire or flames. But strangely, fire in the home does not feature high on the list of risks that parents of children younger than twelve think about: healthy food, safety in traffic, and general safety in and around the home score much higher (Van Aken et al. 2008).

●●● The perceived need to do something about fire safety oneself

Since people generally feel safe in their homes, it will come as no surprise that few respondents who participate in questionnaires indicate that they do not perceive their homes as being fire-safe. For example, in the regional Veiligheidsmonitor 2011 (2011 Safety Monitor) by the Hollands Midden fire service region, 89% of respondents assessed their homes as 'reasonably safe' to 'very safe'; only 5% perceived their homes as 'rather unsafe' and 1% as 'very unsafe' (Schuthof-Vermeulen & Doeschot 2012).

In the same study, the large majority of citizens indicated that they had taken or were going to take measures themselves to prevent fire. Just over three

Extent to which people think about different topics (n=1,703, %)

	Often	Every now and then	Rarely	Never
Healthy food	71	22	5	2
Traffic safety	41	41	13	5
Safety in and around the home	27	45	21	7
A child having an accident	18	48	26	9
Fire in the home	13	45	31	11
The chance of a child falling seriously ill	13	40	36	12
The home being burgled	11	33	37	20

The extent to which people think about risks (source: Van Aken et al. 2008)

quarters of respondents were careful with fire, and said that they checked for fire, gas, etc., and/or had smoke detectors. Roughly one third of respondents said that they also had fire extinguishers or fire blankets and/or periodically checked their chimneys. Two thirds of people thought that there was still room for improvement as regards fire safety in the home, e.g. by installing smoke detectors, fire extinguishers or fire blankets, or by being more careful. When asked why they had not done so yet, more than half the respondents indicated that they had not given it any thought or they had not had the time for it. Other reasons were: 'the measures are too expensive' (10%), 'it's not my job' (10%) or 'I'm still planning to do it' (11%).

Of course, in this kind of study, one can always question whether people are not just giving the answers that they think are the right answers from a social point of view. However, it is not likely that lots of people would hide behind others where the responsibility for fire safety is concerned. People appear to employ a basic degree of caution in their homes to reduce fire risks and take one or just a few obvious supplementary measures. The need to take more measures is simply not perceived to be very great.

●●● The importance of looking carefully

Average findings, as described above, provide a first overall view, but are unsuitable to base prevention

activities on. This requires a more thorough understanding of what drives people in specific situations, what their needs and possibilities are, and what the context is. This was also the most recent conclusion of American researchers who studied how citizens in areas prone to forest fires can be stimulated to display more preventative behaviour: *'Agencies and organizations seeking to promote self-protective behavior change [...] are encouraged to focus their efforts more strongly on understanding the socio-cultural characteristics of the context in which their interventions are implemented'* (Macgregor & González-cabán n.d.).

As we have shown before, in respect of risk perception and the urgency perceived, it makes a big difference what phase of life someone is in and, for example, whether they have young or older children. But to establish a good understanding of the target group, this is just a beginning. Many other characteristics of the target group are often equally as informative. In recent years, there has also been an increasing focus on the 'value patterns' or lifestyles of target groups in the Netherlands. Different classifications from large research agencies (such as SmartAgent, Motivaction and TNS-NIPO) are available for this. For example, Motivaction use a classification into four different 'citizenship styles': People who Feel Responsible, Pragmatists, Traditionalists and Outsiders. Each of these groups has a different attitude in respect of the government and the risks and responsibilities

concerning social issues. By taking these differences into account, it becomes clearer what people feel they need, what issues they can be approached about, and how to optimally communicate with them about such issues. At present, we do not know of any study based on such a classification into perception and attitude as regards fire and fire safety; presumably, this kind of study would be another positive step in the right direction.

●●● The effect of scarcity

National and international fire safety literature on reducing fire and fire risks pays a relatively large amount of attention to socially disadvantaged neighbourhoods and their residents. Allegedly, the fire risks in these areas are often higher than average and the residents' willingness to do something about this themselves, and their belief that this would actually help, is lower than the average (Girasek & Gielen 2003). Such an image tends to lead to various misconceptions by safety professionals: 'The risks are so obvious and they are so easy to remedy, so why don't people do this?' We have already shown that citizens have a completely different perspective of such risks and efforts than professionals. In their renowned publication *Scarcity, why having so little means so much*, the scientists Mullainathan and Shafir (2013; 2014) showed why people who live in poverty

or otherwise experience scarcity have been found to be much less able to be concerned about or do things that appear to be sensible when looked at objectively, such as eating healthy food, getting enough physical exercise, working, and paying attention to the risks of burglary or fire. Mullainathan and Shafir show why it is plausible that the stress connected with scarcity claims such a significant mental 'bandwidth' that there is simply no room left for a rational approach to other matters. In order to still stimulate people in such situations to display another behaviour, the stress due to scarcity will first have to be reduced, or people will have to be influenced on a subconscious level. It has not been studied to a sufficient extent yet whether this mechanism also plays a role in Dutch socially disadvantaged neighbourhoods. This is an area for future research.

In summary

Citizens have a different perception of the risks, including fire risks, in their environment than professionals: where professionals mainly take a rational approach to a relatively limited set of risks, citizens usually monitor the entire palette of risks more broadly and more instinctively. In general, people then seem to have a rather optimistic view of, or even ignore, the minor or lesser risks in their direct environment and only pay attention to the major perceived threats as and when necessary. To make this distinction, people subconsciously apply a number of

general 'rules of thumb'. They are often useful, but they may sometimes confuse people's view of risks.

Most people consider fire in the home to be a relatively minor risk. People tend to feel safe at home. They do see some risks in and around their homes, but fire does not feature high on their list of worries. Since they already reduce the risks of fire in a pragmatic way, the majority of people say that their environment is quite fire-safe; only a few find their own homes not sufficiently fire-safe. This does not mean that people do not see any room for improvement. However, for most people, improvements in the field of fire safety do not have any priority.

If it is desirable to increase the level of community fire safety, e.g. where a subgroup with an increased risk is concerned, the characteristics of the target group and the context must be considered carefully before thinking about any possible measures. Here, it is important that we learn to view the way in which the target group assesses the risks, the urgency of measures and their own possibilities without any preconceptions. Only then can we consider how the behaviour of the particular target group can be influenced. Furthermore, because there are still a lot of developments going on concerning knowledge in this field, the latest scientific state of the art as regards risk analyses, preventative behaviour and influencing behaviour should be monitored closely. We will go into this more deeply in later chapters.

Bibliography

Aken, C. van, Klein Wolt, K. & Hertog, P. C. den (2008). *Veiligheidsbarometer autochtone ouders van 0-12 jarigen (Safety barometer for native parents of 0- to 12- year olds)*. Amsterdam: Stichting Consument en Veiligheid foundation.

The Dutch Centre for Crime Prevention and Safety (CCV) (2014). *'Over last en beleving' (Nuisance and how this is perceived). Results from the innovation project*. Utrecht: CCV.

Statistics Netherlands (2015). *Veiligheidsmonitor 2014 (2014 Safety Monitor)*. The Hague:

Eysink Smeets, M. (2015). *De Preventieparadox (The Prevention Paradox)*, paper for the annual congress of the Nederlandse Vereniging voor Criminologie (Netherlands Association for the Study of Crime), Leiden.

Girasek, D. C. & Gielen, A. C. (2003). The effectiveness of injury prevention strategies: what does the public believe? *Health Education & Behavior*, 30, 287-304.

Hulsker, W. & Witmond, B. (2014). *Maatschappelijk rendement van de brandweer (Social gains from the fire service)*, draft report, Ecorys, Rotterdam.

Ipsos (2014). *Risico- en Crisisbarometer (Risk and Crisis Barometer). Basic measurement June 2014*. The Hague: National Coordinator for Security and Counterterrorism - Dutch Ministry of Security and Justice.

Kinateder, M. T., Kuligowski, E. D., Reneke, P. A. & Peacock, R. D. (2015). Risk perception in fire evacuation behavior revisited: definitions, related concepts, and empirical evidence. *Fire Science Reviews*, 4, 1-26.

Macgregor, D. G. & González-cabán, A. (n.d.). Risk Perception, Adaptation and Behavior Change: Self-protection in the Wildland-Urban Interface. In Kent, B. & Raish, C. (eds). *Wildfire and fuels management: Risk and human reaction*. Washington, DC: Resources for the Future. In press.

Mullainathan, S. & Shafir, E. (2013). *Scarcity -- Why having too little means so much*. New York: Henry Holt and Company.

Mullainathan, S. & Shafir, E. (2014). *Scarcity - The new science of having less and how it defines our lives*. New York: Picador.

Savage, I. (1993). Demographic influences on risk perceptions. *Risk Analysis*, 13, 413-420.

Schuthof-Vermeulen, D. & Doeschot, F. ten (2012). *Brandweer en brandpreventie in Hollands Midden. Integrale Veiligheidsmonitor Hollands Midden 2011 - themarapport brandweer. (The fire service and fire prevention in Hollands Midden. 2011 Integral Safety Monitor for Hollands Midden - themed fire service report)* Enschede: I&O Research.

Sharot, T. (2011). The optimism bias. *Current Biology*, 21, 941-945.

Slovic, P. (1987). Perception of risk. *Science*, 236, 280-285.

Slovic, P., Fischhoff, B., & Lichtenstein, S. (1981). Facts and Fears: Societal Perception Risk. *Advances in Consumer Research*, 8, 597-502.

Skjong, R. & Wentworth, B.H. (2001). Expert judgement and risk perception. *The proceedings of the eleventh (2001) International Offshore and Polar Engineering conference*, pp. 537-544.

Stellar, J. E., Manzo, V. M., Kraus, M. W. & Keltner, D. (2011). Class and compassion: socioeconomic factors predict responses to suffering. *Emotion*, 12, 449-460.

Tversky, A. & Kahneman, D. (1973). Availability: a heuristic for judging frequency and probability. *Cognitive Psychology*, 1, 207-233.

4

How the fire service is focussing on community fire safety

Renske Postma, Tekstbureau Met Andere Woorden
Krista Schram, safety perception researcher

Almost all the Dutch fire service regions have been carrying out activities in order to stimulate citizens to create community fire safety. The list of interventions implemented in the past few years is long and varied, and shows a strong emphasis on knowledge transfer. Knowledge about fire safety in the home and fire-safe behaviour is offered to adults and children, e.g. by means of information sessions or lesson materials. However, it is not clear if this leads to people's behaviour becoming more fire-safe. For now, little is known about the effects of the interventions. Studies and evaluations are conducted only sparingly and they mainly focus on the increase in knowledge.



●●● Working on a new task: community fire safety

The Netherlands Fire Service consists of 25 regions that act autonomously: every region decides for itself how to design and implement its fire service tasks. However, the regions exchange knowledge and experience through 'networks' and underlying research groups. This is also where joint research is initiated. In 2012, a 'fire-safe environment' research group was established as a consequence of the philosophy of a 'Fire service for tomorrow' (see chapter 1). The research group covers three sectors:

- safe use: providing advice on such topics as new legislation and regulations and how to interpret guidelines;
- supervision and enforcement: discussing national issues in this area, such as municipalities' supervisory role;
- safety awareness: exchanging knowledge about influencing behaviour for community fire safety and connecting initiatives together.

The safety awareness sector is the platform where the regions coordinate their initiatives for community fire safety and develop joint projects and tools. It is also where they discuss new results of fire research and the implications for interventions, and where the strategy for collaborating with partners is tabled. Furthermore, the sector prepares national campaigns and facilitates

information provision about community fire safety at national events, such as the Huishoudbeurs Home Exhibition and the 50+ fair.

These new activities call for different knowledge and skills from professional firefighters and volunteers. Community fire safety also calls for more collaboration with other partners. This explains why it took some time for the activities for community fire safety to start in all the regions.

●●● Interventions for community fire safety

In 2013 and 2015, the Netherlands Fire Service asked the regions what interventions for community fire safety they had planned. 19 of the 25 regions responded to this. All but one of these regions had initiated interventions. This query resulted in a list of dozens of different interventions.

Three of these interventions catch the eye because they are applied in almost every region: conducting checks in people's homes, organising information meetings, and teaching fire safety lessons to children. All these interventions centre around transferring knowledge. When checking people's homes, an inspector from the fire service (or another expert) examines the fire safety of a dwelling together with its occupants. At the same time, they are also given

information. Often they are given a free smoke detector, which is installed on the spot. A special type of check in people's homes is the 'Geen Nood bij Brand' (Do not let fire turn into an emergency) intervention in healthcare institutions. Here, the fire service, together with the staff and residents of the institutions, examines the fire safety of the institution. The fire service indicates any unsafe situations and explains how they can be improved. Information meetings often focus on specific groups, such as socially disadvantaged neighbourhoods. There are now various lesson materials for children about community fire safety, such as Smokey, Professor Blusseman and Billy Brandkraan.

The list also contains several interventions that are only carried out in one, or just a few, regions. Some of these special activities are:

- In 2014, the fire service commissioned the Technasium Top Award. Students of these schools were invited to send in smart ideas to enable time to be won in the event of a fire in the home. Various regions responded to this by giving information in schools and wider publicity about community fire safety.
- In the Drenthe region, the fire service gives 'smokey' cuddly toys to families where a baby is born in order to emphasise the importance of community fire safety if there are young children around.
- The Haaglanden fire service region organised a workshop on fire-safe cooking in the Schilderswijk, a town district of The Hague.
- The Noord- and Oost-Gelderland region has set up a 'real-life experience home' where people will soon be able to experience what happens when fire breaks out.
- This latter region is also planning to introduce the intervention of *fire flipping*: sending an information clip or app through tweets immediately after a fire.

● ● ● Effects of interventions

Some regions have had studies done into the effect of a certain intervention for community fire safety, sometimes by renowned agencies and sometimes by students. The Scientific Research Council of the Netherlands Fire Service commissioned these studies to be mapped and analysed for their scientific reliability. Ten studies seem to have been set up sufficiently reliably to enable some general lessons to be drawn from them (Postma 2015). However, these Dutch studies have a different status than the studies into foreign interventions covered in chapter 5 of this collection. For instance, none of the Dutch reports was published in a scientific trade journal, which is usually subject to a thorough review procedure.

The interventions in the ten studies have been classified into the following four categories:

- 1 transferring knowledge
- 2 teaching safe behaviour
- 3 providing the means to promote fire-safe behaviour
- 4 combinations of different interventions

1. Transferring knowledge

Checks in people's homes

After a check in their home, the occupants know significantly more about fire safety and they find it important to make their home more fire-safe (De Boer et al. 2013; Timmer 2012). Whether their behaviour actually changes may depend on the follow-up. In one of the studies, the occupants were paid a second visit by the fire service and their homes were checked again (De Boer et al. 2013). Their fire safety behaviour was found to have visibly improved. For example, the fire safety inspector saw that fewer flammable leads and candle holders were present and that the space around the central heating had been cleared more often. This planned second visit may have contributed to people behaving as desired. In the study conducted by Timmer (2012), the occupants were not visited a second time. They filled in a questionnaire themselves and sent it in. This group did not show any change in behaviour. How information is given may also explain the different outcomes. These studies measured the effects three to four weeks after the intervention.

The study by Timmer (2012) also demonstrates that a check of people's homes by the fire service (in uniform) is just as effective as having people's homes checked according to the same script by representatives of a housing association (not in uniform).

Geen Nood bij Brand (Do not let fire turn into an emergency)

Another study pictures the effects of Geen Nood bij Brand in healthcare institutions (Dijkstra & Sman 2012). The healthcare staff were more positive about this intervention than about the customary inspections by the fire service. Healthcare institutions where the Geen Nood bij Brand scheme was implemented conducted more evacuation drills than healthcare institutions that did not join this scheme. However, the intervention did not have any significant effect on the attitudes, awareness, behaviour and risk perception of the staff. This may also partly be due to the low response to the questionnaires (the researchers were only sent back 55 questionnaires from a total of 26 healthcare locations). No baseline measurement was conducted prior to the intervention; the results were only compared to those of a control group.

Information meetings

When tested two months later, people who had gone to an information meeting about fire safety knew more about the causes of fires in the home and preventative action than their neighbours who had not gone to such

a meeting. This is shown by a study about information meetings in seven Amsterdam town districts (Dijkstra et al. 2011). However, in this context it should be noted that it may be that information meetings are mainly attended by people who find the subject important and already know relatively much about it.

43% of participants indicated that they had taken measures to improve fire safety in their own homes as a result of the information meeting. Participants mainly mentioned the following measures: installing smoke detectors (33%), buying fire blankets or powder extinguishers (15%), and being careful with candles (8%). 54% of participants said that they intended to take more measures.

The information meetings for this study were divided between neighbourhoods where there had recently been a fire and those neighbourhoods where this had not been the case. It appears that information meetings are slightly more effective if there has recently been a fire in the local environment (Dijkstra et al. 2011). In these situations, information provision by the fire service also seems to be slightly more effective than information provision by the Dutch Burn Association. However, the turnout at the meetings organised by the Dutch Burn Association was too low to draw any reliable conclusions (15 people attended both types of meeting). The meetings with the fire service that were considered in this study attracted more participants

and led to somewhat more knowledge about causes and preventative action being obtained. For example, more participants were familiar with smoke detectors and they assessed the risk of fire as being higher.

Lesson materials for children

Children who are given information about fire safety in school still know significantly more about the causes of fire and about fire-safe behaviour after a few months than other children (Brakel 2012; Hijlkema et al. 2013; Pol et al. 2012-2). Depending on the lesson materials, these children know better what to do in the event of, for example, a frying pan fire, smoke development and receiving a burn. The use of specially developed lesson materials is slightly more effective than the fire service visiting the school, but a combination of both seems to be the most effective (Pol et al. 2012-2). What is remarkable in the study by Pol et al. (2012-2) is that the knowledge of children and parents in the schools that formed the control group also increased on a number of points. Chapter 7 of this collection deals with this study in more detail.

The studies show that, after having been given information, children do not, or hardly, ever intend to change their behaviour. The effect on their environment (parents) is rather small as well. One of the studies did show that a large number of parents discussed fire safety with their children as a result of the questionnaires (Brakel 2012).

2. Teaching safe behaviour

RISK Factory

The RISK Factory enables children to experience realistic scenarios of different kinds of risks, including fire. There they learn what safe behaviour is. Pupils who have visited the RISK Factory are more aware of the hazards of fire and know considerably more about fire safety than other children (Kievik 2014). They are also willing to take more measures. This study shows that the extent to which people are able to save themselves and to leave without assistance greatly depends on the willingness to comply with the social standard (what would my best friend do?). The researchers did not conduct a baseline measurement prior to the intervention; the results were only compared to those of a control group.

Influencing subconscious behaviour

Some of our behaviour consists of automatic actions that we do without being aware of them, i.e. subconsciously. Knowledge transfer has little effect on this behaviour (see chapters 6 - 8). One Dutch study looked into an intervention using stickers intended to influence subconscious behaviour (Pol et al. 2012-1). This showed that students start to display more fire-safe behaviour if stickers remind them of what others in their environment do or what society expects of them. Chapter 7 of this collection deals with this study at greater length.

3. Providing the means to promote fire-safe behaviour

In the Netherlands, providing the means to promote fire-safe behaviour is basically limited to providing smoke detectors. In Dutch studies, the effect of this intervention is only addressed in combination with the effect of knowledge transfer (category 4).

4. Combinations of different interventions

Checks in people's homes and installing smoke detectors

Installing a smoke detector when checking people's homes is always effective as it increases the number of smoke detectors in flats and houses. If occupants are only advised to install smoke detectors, most of them are found to not heed this advice (De Boer et al. 2013).

In 2010, the Dutch Ministry of Security and Justice commissioned a study into the social costs and benefits of various interventions, including checks in people's homes (Akker & Tieben 2010). This showed that a national scheme of checks in people's homes in all high-risk neighbourhoods in the Netherlands, combined with installing smoke detectors, would bring a positive balance of EUR 40 million, assuming that 150,000 households would participate in the intervention on an annual basis. The authors of the report assumed that the effect on safety awareness would decrease to zero in ten years' time. Smoke detectors greatly contribute to the benefits of interventions. The study did not vector in that people

who do not participate in the intervention may constitute the most important risk groups. As a result, the social cost and benefits analysis may be too optimistic.

● ● ● Conclusions

In recent years, the fire service regions have implemented dozens of interventions with an eye to community fire safety among various target groups. The fire service refer to this phase as 'letting a thousand flowers bloom'. This has initiated the necessary change in culture within the fire service and it has yielded some experience of the new approach. In the end, choices should be made and priorities set: what target groups and what interventions enable the greatest gains to be achieved in the field of safety? Making these choices calls for a sound knowledge of the risk groups, the causes of fires in the home, and the effectiveness of interventions.

The most frequently used interventions (checks in people's homes, information meetings and lesson materials for children) serve to increase the overall knowledge about fire safety. The limited number of studies has shown this to work, at least in the short term: the studies show that when checked one to two months after the intervention, knowledge had indeed increased. However, it is unclear whether this is a lasting effect and whether this actually makes people's behaviour more fire-safe.

Bibliography

Akker, I. & Tieben, L.A.W. (2010). *Investeren in brandveiligheid. Maatschappelijke kosten-batenanalyse woningbrand. (Investing in fire safety. A social cost-benefit analysis of fire in the home.)* COT Instituut voor Veiligheids- en Crisismanagement. Commissioned by the Dutch Ministry of Security and Justice. SEO report no. 2010-78. ISBN 978-90-6733-590-4

Boer, A. de, Vrij, L. de, Smit, I. & Pol, B. (2013). *Onderzoek effectiviteit Handboek Brandveilig Wonen: resultaten van een veldonderzoek in aandachtswijken in de regio's Haaglanden en Brabant-Zuidoost. (Study into the effectiveness of the handbook on a fire-safe domestic environment: results of field study in high-risk districts in the regions of Haaglanden and Brabant-Zuidoost.)* Tabula Rasa report commissioned by the Netherlands Fire Service.

The Netherlands Fire Service (2014). *Startdocument "Blussen voordat het brandt" Incidentbestrijders en Brandveilig Leven. (Initial document "Suppression before there is a fire". Incident fighters and community fire safety.)*

Brakel, J.F. van den (2012). *Evaluatierapport Brandveiligheidvoorlichting voor leerlingen in groep 4. (Evaluation report on providing fire safety information to 7 to 8-year old primary school pupils.)* Flevoland Fire Service & Gooi and Vechtstreek Fire Service.

Dijkstra, M., Klein Wolt, K. & Hertog, P. den (2011). *Effectiviteitstudie voorlichting brandveilig wonen. Effectiviteit voorlichting in Amsterdamse wijken in kaart gebracht. (Study into the effectiveness of information provision to achieve a fire-safe domestic environment. A mapping of the effectiveness of information provision in Amsterdam town districts.)* Stichting Consument en Veiligheid foundation.

Dijkstra, M. & Sman, C. van der (2012). 'Geen nood bij brand!' in de zorg. *Proces- en effectevaluatie van een nieuwe brandweeraanpak. ('Do not let fire turn into an emergency!' in healthcare. Process and effects evaluation of a new fire service approach.)* Stichting Consument en Veiligheid foundation. Commissioned by the Nederlandse Vereniging voor Brandweezorg en Rampenbestrijding (NVBR - Netherlands Society for Fire Service and Disaster Control).

Hijlkema, S., Meulen, S. van der & Timmer J. (2013). *Actief, ondersteunend en inspirerend in veiligheid. Een onderzoek naar zelfredzaamheid en de rol van burgers, professionals en bestuurders. (Active, supportive and inspiring in the field of safety. A study into the ability to leave a building without assistance and the roles of citizens, professionals and government officials.)* Christelijke Hogeschool Windesheim.

Kievik, M. (2014). *De Risk Factory. Onderzoek naar de effectiviteit van de RISK Factory. (The Risk Factory. Study into the effectiveness of the RISK Factory.)* Kenniscentrum Leefomgeving (Knowledge Centre for the Living Environment)/University of Twente. Commissioned by the Twente fire service.

Pol, B., Boer, A. de & Smit, I. (2012-1). *Brandveiligheid stimuleren in studentenhuizen middels sociaal psychologische interventies. Resultaten van een veldexperiment in Utrecht, Rotterdam en Nijmegen. (Stimulating fire safety in student housing through socio-psychological interventions. Results of a field experiment in Utrecht, Rotterdam and Nijmegen.)* Tabula Rasa report commissioned by the Netherlands Fire Service.

Pol, B., Boer, A. de & Smit, I. (2012-2). *Vaststellen van het effect van voorlichting over brand bij basisschoolleerlingen en hun ouders. Resultaten van een veldonderzoek naar twee voorlichtingsmethoden. (Establishing the effect of information provision about fire on primary school pupils and their parents. Results of a field study into two information provision methods.)* Tabula Rasa report commissioned by the Netherlands Fire Service.

Postma, R. (2015) *Overzicht van onderzoeken naar effecten van Nederlandse interventies voor brandveilig leven en een beoordeling van de betrouwbaarheid. (Summary of studies into the effects of Dutch interventions for community fire safety and an assessment of the reliability.)* Commissioned by the Scientific Research Council of the Netherlands Fire Service. In prep.

Timmer, A. (2012). *Uit de brand! Een onderzoek naar de bruikbaarheid van het EPPM bij het geven van brandpreventie adviezen tijdens een woningcheck. (Putting it out. A study into the usefulness of the EPPM when giving fire prevention advice during checks of people's homes.)* University of Twente.

5

Fire-safe environments abroad: measures that have found to be effective

Nancy Oberijé, senior researcher at the Netherlands Institute for Safety

What is known internationally about the effect of interventions for community fire safety on private citizens' behaviour? The Scientific Research Council of the Netherlands Fire Service commissioned a literature review to study this (IFV 2015). This found that, while there was a wide range of interventions, there were hardly any sound evaluations available. Eventually, three interventions were found whose effectiveness was demonstrated (in part): education in schools, a training scheme in a safety village, and home visits where information provision about fire safety was combined with the installing of smoke detectors. All these interventions concerned integrated packages of measures offered to specific target groups, specifically children and households with an increased fire risk. The interventions consisted of a combination of knowledge transfer, teaching safe behaviour and/or providing means.



●●● Types of interventions

A wide range of interventions applied abroad was found in international literature. For example, TriData gathered worldwide *best practices* by interviewing firefighters of local and regional fire brigades and policy officers at a national level (TriData 2007, TriData 2008, TriData 2009). In general, the interviewees were very positive about the projects that had been conducted, but in most cases objective evaluation studies were lacking. As a result, the actual effects of these interventions on fire safety and the fire-safe behaviour of private citizens is often unclear.

Although the dividing lines are not always very distinct, the literature study enabled interventions focussing on the following aspects to be distinguished:

- 1 transferring knowledge;
- 2 teaching safe behaviour;
- 3 providing means to promote fire safety or fire-safe behaviour;
- 4 a combination of the above.

Transferring knowledge

The literature study revealed various different interventions that concern knowledge transfer, including by means of home visits, in schools, or through mass media campaigns. Reliable evaluations have only been found for home visits combined with information provision about how to leave the building.

This is due to the assumption that private citizens will escape from a fire more effectively if they have devised an escape plan and agreed on an assembly point.

For example, Hwang et al. (2006) studied the extent to which providing information to parents about escape plans and installing smoke detectors during home visits had an effect on children's knowledge and behaviour. They conducted this intervention among a minority community in the city of Philadelphia (US) that had an increased risk of casualties due to fire. The home visits included orally presenting an escape plan and attaching a drawing to the fridge. Four weeks after the home visit, children in the intervention group were more likely to report fire escape plans written on paper and the identification of a meeting place outside of the home if the smoke detector alarmed. Duchossois et al. (2009) also studied the effect of home visits in the US combined with providing information to parents about drawing up an escape plan. After the intervention, the number of households that had drawn up escape plans had increased slightly from 61% to 69%. The number of households that had agreed an assembly point had increased considerably, from 45% to 91%.

The intervention was aimed at households in a socially disadvantaged neighbourhood.

Evaluations about knowledge transfer in schools and via mass media have also been found. However, they are not sufficiently reliable to draw any conclusions about the effectiveness of these interventions.

Teaching safe behaviour

A thorough evaluation of the 'Lifeskills' programme was found. This is part of the 'Lifeskills Learning for Living' programme (Oxford Evaluation Team 2003; Lamb et al. 2006). This programme is organised at a training facility in Bristol offering education programmes for special target groups: children aged 10 or 11, children and adults with learning problems, parents of young children, and senior citizens. During the two-hour programme, participants visit ten different locations with different risks, in groups of three or four people. A guide encourages them to discover various hazards (in the areas of traffic, home and fire safety) and to discuss the best course of action if such hazard situations occur. Three months after completing the 'Lifeskills' programme, children were better at indicating what not to do in the event of a gas leak and at demonstrating what to actually do, and better at demonstrating what to do in order to leave a room safely if fire breaks out. There was found to be a positive relationship between knowledge and performance: children who knew better what to do in dangerous situations also scored better on the practical test. It is not known whether these effects are also maintained in the long term.

The 'Risk Watch' programme has also been found to be an effective way to change children's behaviour (Kendrick et al. 2007). The programme was developed in the USA and is also applied in Canada and the UK. This concerns a school-based injury prevention

programme addressing all kinds of incidents in and around the home (the topic areas include traffic safety, fall prevention, poisoning, fire safety and burns). The programme is based on different educational methods and includes practising the taking of safe decisions, resisting peer pressure, and influencing family members and others to take action in order to reduce risks. The approach includes 'Risk Watch' folders targeted at specific age groups and 'Risky boxes' with background information, lesson plans and activities for pupils.

The evaluation of the scheme in the UK shows that the participants still had more knowledge of preventing fire and burns four months after the intervention (Kendrick et al. 2007). In this context, the researchers measured knowledge about fire hazards in kitchens, what to do when clothes are on fire, the risks of fireworks and bonfires, what to do if there is a fire in the home, having smoke alarms, using matches, and the danger of cooking when there are no parents around. The children's skills had also improved. For instance, children who had taken part in the programme knew better than the children in the control group what to do in case of a fire or when their clothes are on fire. Again, the long-term effects of the programme are not known.

Providing means

The intervention that was mentioned the most in international literature is providing smoke detectors.

Door to door distribution of smoke detectors is found to be a more efficient way of providing smoke detectors than having people collect them for free (Douglas et al. 1998). Actively installing smoke detectors is also found to result in a higher percentage of working smoke detectors in homes than just distributing smoke detectors for free. For instance, DiGuseppe et al. (2002) found that the effect of distributing smoke detectors in a socially disadvantaged neighbourhood in London for free had been very small: two years after they had been distributed, 32% of the households in the intervention group had installed a smoke detector, compared to 30% in the control group. The number of working detectors was 17% in the intervention group and 16% in the control group. Mallonee (2000) found that, two years after free smoke detectors had been distributed, only 23% of the households in a minority area in Oklahoma City still had working smoke detectors. These percentages are distinctly lower than the results of Rowland et al. (2002). They studied the effect of an intervention where smoke detectors were installed in 2,145 council houses in London. Here it was found that 54.4% of these households still had working smoke detectors 15 months after they had been installed. Shults et al. (1998) found even more favourable results with households with an increased fire risk in the states of Minnesota, North-Carolina and Oklahoma. All households where smoke detectors had been installed, were paid unannounced repeat visits three or four

years later in order to check the smoke detectors. 72% of all these households were found to still have working smoke detectors.

Keeping smoke detectors operational in the long term continues to be an area for attention (Ta et al. 2006; Rowland et al. 2002, DiGuseppe et al. 2002). The main reason why smoke detectors fail to work is the fact that batteries are missing or that the batteries have run out (Shults et al. 1998). People have been found to deactivate smoke detectors because they cause them stress: they go off too quickly and occupants have trouble checking their smoke detectors (Roberts et al. 2004).

Combination of providing means and transferring knowledge

Making home visits combined with installing smoke detectors is an intervention that was found a lot in the literature studied. A number of evaluations, that were conducted with all due care, showed this to be a very positive intervention (Clare et al. 2012; Duchossois et al. 2009; Hwang et al. 2006; Thompson et al. 2004). For example, fire service volunteers of Surrey Fire Services (Canada) made 18,473 home visits to give information about preventing fire and installed and/or checked smoke detectors on those occasions (Clare et al. 2012). The study focussed on areas where, according to fire data, there was an increased probability of fire and a large share of the population

fulfilled one of the following characteristics:

- children aged under 6;
- adults aged over 64;
- single-parent families;
- unemployed residents;
- high residential mobility of residents.

The information that was provided concerned smoke detectors, escape plans, children and fire, fire safety for elderly people, and fire safety in the kitchen.

After the intervention, the number of fires decreased by 63.9% per 1,000 residents a year, whereas the decrease in the control group was only 14.6%.

Furthermore, 38.6% of the fires that did occur in the intervention group were contained to the object where the fire started and did not spread to the entire room or dwelling. In the control group, this was true for 21.6% of all fires.

●●● Effective interventions

In summary, the literature study brought to light interventions focussing on knowledge transfer, teaching safe behaviour, providing means, and combinations of these points. All the interventions focussed on specific target groups. The most frequently targeted groups were children (of primary school age) and residents with a heightened risk of fires in the home (such as the residents of socially disadvantaged neighbourhoods). Basically, three interventions were found that contained some effective elements:

- 1 the 'Risk Watch' programme in primary schools in the UK aims to reduce the number of injuries resulting from all kinds of incidents in and around the homes;
- 2 the safety village in Bristol (UK) where various target groups visit different locations with different risks and are encouraged to discover various hazards (within the areas of traffic, home and fire safety) and to discuss the best course of action if such hazard situations occur;
- 3 giving information about escape plans when making home visits, combined with installing smoke detectors.

These interventions always concern a combination of knowledge transfer and teaching/learning skills, or knowledge transfer and the provision of means/resources.

●●● Discussion

It has been stated before that lots of interventions have been conducted in other countries, but that, in general, their effects are not clear. Often, there are no evaluations of measures and, where such evaluations have been done, their quality often leaves a lot to be desired. The techniques used to influence behaviour are seldom based on scientific theories. Studies with a baseline and a follow-up measurement are rare, and a very low number of studies used a control group. Furthermore, there is little awareness of the possible long-term effects. If the effects have been measured, these measurements are often restricted to a period of three months to one year after the intervention. The effect after a couple of years is not clear. All in all, there is a lot that can be improved as regards measuring the effects of interventions.

The interventions that are found to be effective in international literature show similarities with the interventions used in the Netherlands. Education in schools, a safety village (RISK Factory in Twente), and home visits combined with the fitting of smoke detectors, are all done in the Netherlands. However, it does not go without saying that these interventions are equally effective in the Netherlands. Some measures that are demonstrably effective in other countries will not necessarily be effective in the Netherlands as well, e.g. due to cultural differences. In addition, some caution should be applied when

adjusting interventions to the Dutch situation as this may undermine their effectiveness. This means any interventions copied from other countries will have to be evaluated first in order to be able to assess their effect.

Studies into the functioning of smoke detectors, carried out outside the Netherlands, show that the number of working smoke detectors decreases after some time, specifically because people actively remove the batteries or forget to replace them. This means that more attention should also be paid to the long-term effect of this intervention. It is important that methods are found to ensure that smoke detectors continue to work. Technical solutions (mains-powered smoke detectors, extra-long-life batteries) might be an answer, but especially where existing buildings are concerned, the solutions would be better focused on getting the residents to change their behaviour. The question is how occupants can be motivated to properly maintain their smoke detectors. In other professional areas, such as traffic safety, social safety, and environmental education, the designers of interventions increasingly make use of insights and theories derived from social sciences. These insights may possibly also be useful for the professional area of fire safety.

Bibliography

- Clare, J., Garis, L., Plecas, D. & Jennings, C. (2012). Reduced frequency and severity of residential fires following delivery of fire prevention education by on-duty fire fighters: Cluster randomized controlled study. *Journal of Safety Research*, 43, 123-128.
- DiGuseppi, C., Roberts, I., Wade, A., Sculpher, M., Edwards, P. & Godward, C. (2002). Incidence of fires and related injuries after giving out free smoke alarms: cluster randomised controlled trial. *British Medical Journal*, 325, 995.
- Douglas, M.R., Malloonee, S., & Istre, G.R. (1998). Comparison of community based smoke detector distribution methods in an urban community. *Injury prevention*, 4, 28-32.
- Duchossois, G.P., Nance, M.L., Garcia-Espana, J.F. & Flores, J. (2009). Sustainability of an In-Home Fire Prevention Intervention. *Journal of trauma nursing: the official journal of the society of trauma nurses*, 16(4), 194-198.
- Hwang, V., Duchossois, G.P., Garcia-Espana, J.F. & Durbin, D.R. (2006). Impact of a community based fire prevention intervention on fire safety knowledge and behavior in elementary school children. *Injury prevention: journal of the International Society for Child and Adolescent Injury Prevention*, 12(5), 344-346.
- IFV (2015). *Internationaal literatuuronderzoek brandveilig leven* (International literature review into community fire safety). Arnhem: IFV.
- Kendrick, D., Groom, L., Stewart, J., Watson, M., Mulvaney, C., & Casterton, R. (2007). "Risk Watch": Cluster randomized controlled trial evaluating an injury prevention program. *Injury prevention*, 13, 93-98.
- Lamb, R., Joshi, M.S., Cater, W., Cowburn, G. & Matthews, A. (2006). Children's acquisition and retention of safety skills: the Lifeskills program. *Injury Prevention*, 12, 161-165.
- Mallonee, S. (2000). Evaluating injury prevention programs: the Oklahoma City smoke alarm project. The future of children. *Unintentional injuries in childhood*, 10(1), 164-174.
- Oxford Evaluation Team (2003). *An evaluation of the Lifeskills-Learning for Living programme*. Oxford: HSE Books.
- Roberts, H., Curtis, K., Liabo, K., Rowland, D., DiGuseppi, C. & Roberts, I. (2004). Putting public health evidence into practice: increasing the prevalence of working smoke alarms in disadvantaged inner city housing. *Journal of Epidemiol Community Health*, 58, 280-285.
- Rowland, D., DiGuseppi, C., Roberts, I., Curtis, K.,
-

Roberts, H., Ginnelly, L., Sculpher, M. & Wade, A. (2002). Prevalence of working smoke alarms in local authority inner city housing randomised controlled trial. *British Medical Journal*, 325, 998-1001.

Shults, R.A., Sacks, J.J., Briske, L.A., Dickey, P.H., Kinde, M.R., Mallonee, S. & Douglas, M.R. (1998). Evaluation of three smoke detector promotion programs. *American Journal of Preventive Medicine*, 15, 165-171.

Ta, V.M., Frattaroli, S., Bergen, G. & Gielen, A.C. (2006). Evaluated community fire safety interventions in the United States: a review of current literature. *Journal of community health*, 31(3), 176-197.

Thompson, C.J., Jones, A.R., Kidd Davis, M. & Caplan, L.S. (2004). Do smoke alarms still function a year after installation? A follow-up of the get-alarmed campaign. *Journal of Community Health*, 29(2), 171-181.

TriData (2007). *Global Concepts in Residential Fire Safety: Part 1 – Best Practices from England, Scotland, Sweden and Norway*. Atlanta: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, Division of Unintentional Injury Prevention.

TriData (2008). *Global Concepts in Residential Fire Safety: Part 1 – Best Practices from Australia, New Zealand and Japan*. Atlanta: Centers for Disease

Control and Prevention, National Center for Injury Prevention and Control, Division of Unintentional Injury Prevention.

TriData (2009). *Global Concepts in Residential Fire Safety: Part 3 – Best Practices from Canada, Puerto Rico, Mexico and Dominican Republic*. Atlanta: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, Division of Unintentional Injury Prevention.

6

Influencing behaviour in the social safety domain

Karin Bongers, PhD, Dutch Centre for Crime Prevention and Safety

This chapter looks at how influencing behaviour is carried out in the social safety domain. The chapter starts with a description of social safety. What is social safety and how can it be increased? Recent years have seen an increase in the number of practical experiments with behaviour interventions based on the fact that people often do not make deliberate choices, but are guided by circumstances. This chapter details some experiences of different behaviour interventions in the social safety domain.

●●● Social safety

Social safety refers to the degree to which people both are protected and feel protected against personal harm and distress due to crimes, offences and nuisance from others in their direct home and living environments (Stol et al. 2011). Crimes and offences are taken to be different forms of punishable acts. Examples of crimes and offences are domestic burglary, violence, public intoxication, selling and using narcotics, theft and vandalism. Nuisance affects the quality of life and is related to objectionable behaviour. They are the 'minor offences' that do not always have something to do with feeling unsafe, but that are perceived as anti-social, annoying, or at least unpleasant. Examples of this are urinating in public, noise nuisance, parking problems, litter in the street, graffiti or youths loitering about. Although some people might experience these things as unpleasant, it might be frightening to others, and increase their feelings of unsafety.

As the definition shows, social safety comprises both an objective and a subjective component. Objective social safety concerns the degree to which people are protected against personal harm. This concerns visible social phenomena. Subjective social safety is about the degree to which people feel protected. This is the personal perception of safety and risks and this will differ from person to person and from situation to situation. For example, some people do not feel safe in the street at night, whereas others do not stop to think about the possible risks at all.

●●● Model for influencing behaviour in the social safety domain

In order to be able to effectively influence behaviour, it is important to know that there are two systems that control behaviour: the automatic, intuitive system, and the rational, conscious system (Chaiken & Trope 1999; Kahneman 2011; Petty & Cacioppo 1986; Strack & Deutsch 2004). Behaviour that stems from the rational system is intentional. People consciously think about it and make deliberate choices. The rational system can make plans for the future, but is slow and requires time, energy and concentration.

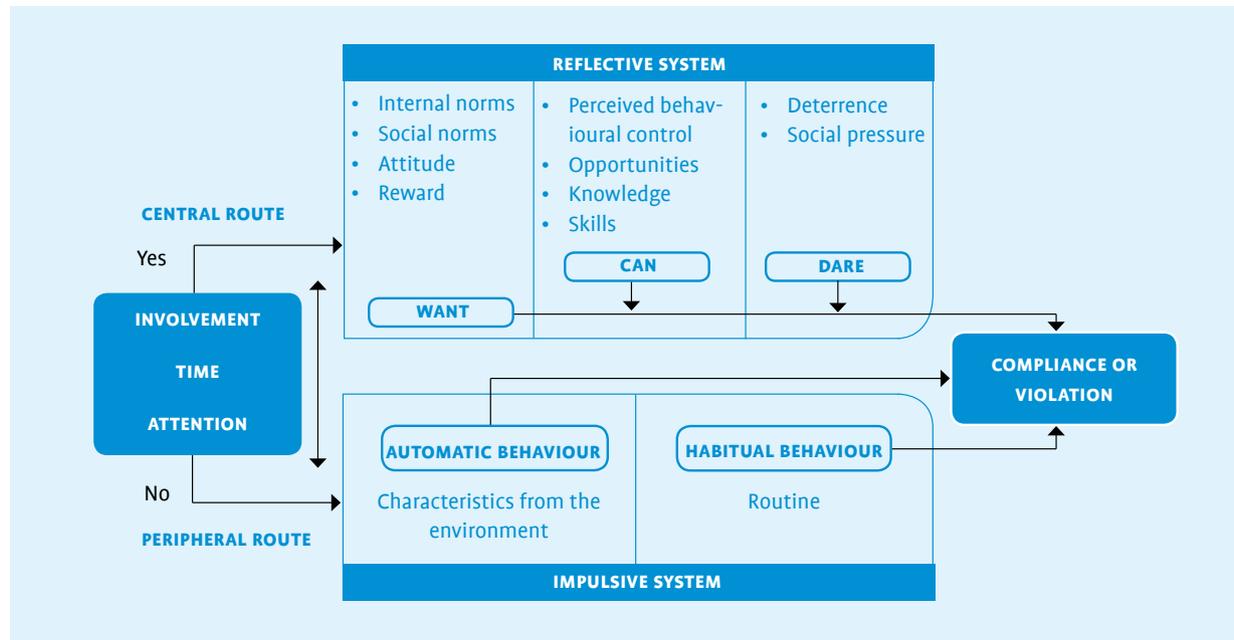
Behaviour that stems from the automatic, intuitive system is much more determined by the situation. It operates very quickly and takes little or no effort. Often, it happens without thinking. You are guided by your surroundings, by the context of other people around you. You do not make any deliberate choices, but you do what you always do or what seems logical on the spur of the moment. This system works on the basis of associations and 'rules of thumb'.

The Dutch Centre for Crime Prevention and Safety (CCV) developed the 'dual model for compliance and violation' based on behavioural insights in late 2014 (Bongers 2014). This model offers a framework for mapping the motivations for compliance or violation, but it can also be applied more broadly to desired or undesired behaviour.

In essence, it is important that reasons for displaying or not displaying a certain behaviour are carefully mapped in advance. Are they rational, conscious considerations (central route) or more automatic, intuitive impulses (peripheral route)?

If people consciously choose to do - or not do - something, it is important to find out why. Are these people motivated - or not motivated - to do it? Are they able - or unable - to do it? Or do they wish to, and are they able to do it, but are they afraid? A good example is selling alcohol to under-age youths. Selling alcohol to people younger than 18 has been forbidden

in the Netherlands since January 2014, and everyone under 25 years old has to show some form of ID when buying alcohol. However, some minors still manage to buy alcohol in supermarkets. Why do cashiers still sell alcohol to minors, knowing that this is against the law? Is that because they do not agree with the rule and are therefore not motivated to comply with it ('wish')? Or are they motivated to comply with the rule, but are they not able to correctly estimate the customer's age ('ability')? Or are they afraid to refuse to sell alcohol to their friends who they will meet in school again tomorrow ('dare')?



Dual model for compliance and violation (source: Bongers 2014)

Of course, it is also possible that people do not base their behaviour on rational considerations at all. Then it is also important to find out whether the behaviour is stimulated or impeded automatically by the environment. Or is it in fact routine behaviour? Which behavioural interventions are effective in a specific situation depends on the conscious and subconscious motivations underlying the behaviour.

●●● Influencing rational behaviour

Many measures in the social safety domain are still based on the idea that people make deliberate, conscious choices. They often focus on providing information about crime or the nature of crime, or on making private citizens aware of different forms of crime. Lots of measures also focus on enforcing the law, and on finding and punishing the alleged perpetrators. In addition, measures to reduce opportunities are employed, such as increasing the probability of being caught or decreasing the benefits of criminal or nuisance-causing behaviour. These are suitable interventions in respect of deliberately chosen behaviours.

Reducing domestic burglaries

The first thing that is important in order to reduce the number of domestic burglaries is to get a good picture of the situation: where do most domestic burglaries take place (the 'hotspots', based on a mapping of the

situation of several years), to whom (specific target groups, *hot victims*) and when (specific periods, *hot times*) and by whom (*hot shots* or *hot groups*)? Why do domestic burglaries occur there? Is it because those houses are less well protected, is it due to the geographic location of a town, city or district and its accessibility, or does occupants' behaviour play a role? For instance, do they leave doors and windows open if they leave their home for a few minutes, or do they lock everything properly? Do they pay attention to suspicious situations in their neighbourhood and do they call 112 to report such situations? Who are the perpetrators? And what are their characteristics? Do any partners know when a 'known burglar' returns to a neighbourhood after having served their time in prison? What action is taken to prevent them from relapsing into crime?

Once these aspects have been mapped, a sound (integrated) plan can be drawn up. The interventions chosen so far mainly focus on conscious, deliberate behaviour. If the security level of a house is found to be below par, an intervention that might be applied is drawing attention to the Dutch police quality mark for safe and secure homes (PKVW). Occupants can also be offered financial or other incentives to stimulate them to have their homes made safe according to this PKVW quality mark, or to elements thereof. For instance, if several neighbours want to buy new locks together, they can be assisted by an expert who will help them assess the quotations.

If the security level of houses or flats is found to be okay, but the occupants are careless as regards locking their homes, interventions can be used that encourage the occupants to change this behaviour. This can make people aware of the risk of burglary. An example of this are the 'white feet' that are frequently used as part of the integrated approach to burglary. Here the municipality or the police leave behind paper flyers in the form of a shoe print in homes and sheds where doors or windows have been found to be left open or not locked. The flyer carries the warning: "This shoe print could have been left behind by a burglar." Besides a warning, the flyer also contains prevention tips, contact details for further information, and a reference to a PKVW accredited company.

Citizen participation is also increasingly opted for as part of the approach to push back domestic burglaries. Setting up a WhatsApp group is a nice example of this. WhatsApp is a smart phone messaging system. WhatsApp makes it easy for occupants to exchange information quickly. The WhatsApp groups are groups by and for occupants, but lots of municipalities encourage their use. In some municipalities, the police monitor these groups, enabling suspects to be apprehended more quickly. In this way, citizen participation can contribute to improving supervision and detection.

The above measures are mainly based on the idea that people make deliberate, rational choices. Interventions

that key in to automatic, intuitive behaviour have also become more popular recently (Vollaard 2014). It is being assumed more and more that subconscious motivations can play a significant role in whether or not people take measures to prevent burglaries.

●●● Influencing subconscious behaviour

Interventions that key in to automatic, intuitive behaviour often make use of the fact that this behaviour is largely based on associations and 'rules of thumb'. A minor change to the environment or situation may already bring about a change in behaviour. For example, the environment can be configured such that the desired behaviour becomes the *default* behaviour. The *default* behaviour is the behaviour that is the most obvious in a certain situation, i.e. the default option. This manner of influencing behaviour is also called *nudging* (Thaler & Sunstein 2008), giving people some extra encouragement to make sure they do the right thing. Since deviating from the *default* option takes extra effort, people will automatically opt for the default option, and, as a result, for the desired behaviour. The social safety domain has been seeing ever more experiments with interventions that key in to automatic, intuitive behaviour. Some examples are listed below.

'Watchful eyes' to reduce bike theft

A sign with 'watchful eyes' was developed to deter bike theft. The sign keys in to the fact that people often take decisions based on quick, subconscious 'rules of thumb'.



Watchful eyes in Dordrecht (source: Politie NL)

The idea underlying the 'watchful eyes' is that a picture of eyes gives you the feeling that you are being watched and that this leads to socially desired behaviour, even if you know that it is only a picture and they are not 'real' eyes. The effect of 'watchful eyes' was demonstrated both in laboratory settings (Haley & Fessler 2005) and in field experiments (Powell et al. 2012).

The effect on bike theft was studied in several locations, including at Newcastle University in the UK

(Nettle et al. 2012). The researchers had made signs with watchful eyes and the text 'Cycle thieves, we are watching you' on them. These signs were placed in three locations on the Newcastle university campus for one year. In the year after these signs were installed, the number of bike thefts from these bike sheds dropped by more than 60%. However, the number of thefts from neighbouring bike sheds increased, also by more than 60%, so there seems to have been some 'waterbed effect'.

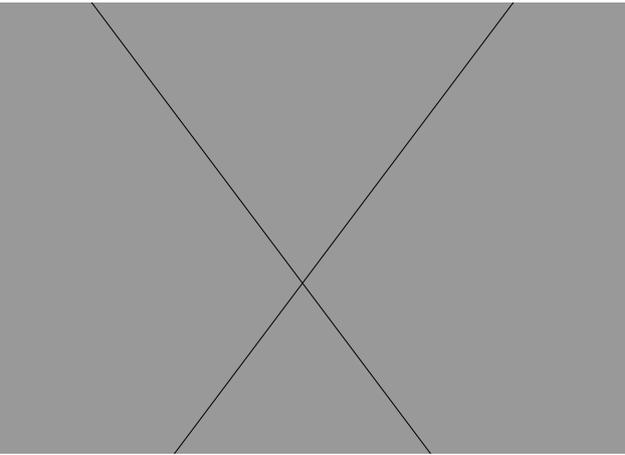
The municipality of Dordrecht has followed the example of these watchful eyes. Early this year, a sign was put up at the Dordrecht railway station, bearing a photo of the 'watchful eyes' of a local police officer and the text 'Hee fietsendief! Je bent gezien!', which is Dutch for 'Cycle thieves, we are watching you'. The number of bike thefts from the Dordrecht railway station also dropped by two thirds after the signs had been put up. The number of bikes that was stolen from other locations in the town did not increase.

Library against noise nuisance

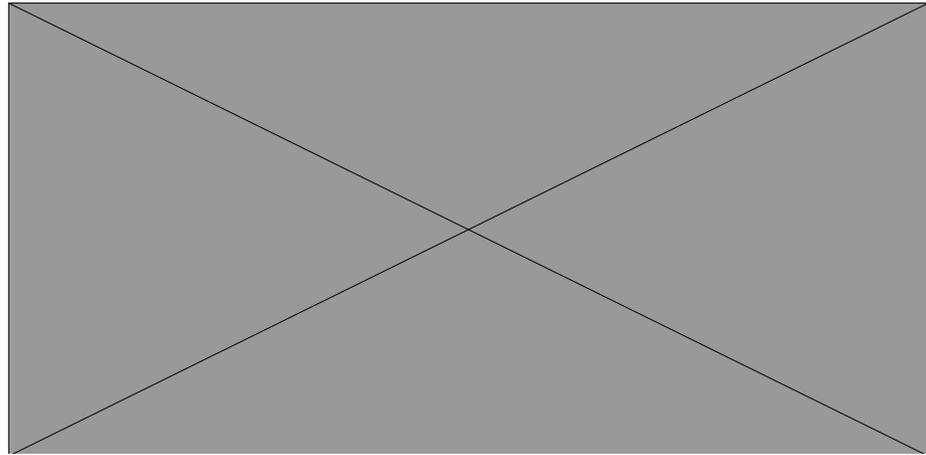
The automatic, intuitive system works on the basis of associations. For example, scientific research has shown that people will walk more slowly after thinking about senior citizens (Bargh et al. 1996). This is sometimes referred to as 'priming'. Priming is an influencing strategy where existing knowledge concepts in the brain are activated by means of

stimuli that people associate with the desired behaviour. *Priming* can be used to activate certain moral standards. This was also applied to quiet train carriages of NS (the Netherlands Railways).

carriages without the picture. And if people did talk, their conversations were generally shorter than in a quiet train carriage where no pictures of a library had been applied.



De rode loper (The red carpet) © Municipality of Groningen



A library in a quiet train carriage (source: Novi Mores)

When these quiet train carriages were first introduced, lots of passengers failed to be quiet in them. In order to change this behaviour, NS decided to display pictures of a library in these quiet carriages (Debets & Ruitenbergh 2010). This is because a library is associated with the social standard of having to be silent (Aarts & Dijksterhuis (2003). The study shows that passengers talked a lot less in quiet train carriages with these pictures than in quiet train

Red carpet to improve accessibility

In 2007, the municipality of Groningen also experimented with activating moral standards. A red carpet was placed in a shopping street. Before the red carpet was there, cyclists would park their bikes all over the pavement. This hardly left any room for pedestrians to pass. The red carpet aimed to encourage cyclists to park their bikes on the sides of the street or in the bike racks. The red carpet was

chosen because this is associated with a high standard of importance, and with an exclusive use of walking on it. The red carpets in front of shop doors caused people to not park their bikes on the carpet, but along the sides, where they caused less nuisance.

The municipality of Amersfoort followed this example by placing a red carpet on the street in the hours when people go clubbing. Before the carpet was there, cyclists would park their bikes all over the street, making it difficult for the emergency services to reach their destinations. Now, if the carpet is in place, the majority of cyclists park their bikes in the bike racks in this street, as they should.

●●● Conclusions and recommendations

Influencing behaviour works, but it is not a simple trick

Techniques to influence behaviour make it possible to make the Netherlands a bit safer and give the Dutch a greater sense of safety. But beware: influencing behaviour is not a simple trick! It often comes down to getting everything exactly right.

Start with a good analysis

To influence people's behaviour, a detailed study of why people display, or fail to display, certain behaviour must be conducted first. What drives people? Do people do what they do deliberately? Or do they do it

without thinking? And what is the target behaviour that should be stimulated? Who is your target group? And can you expect any resistance? It is only when you have a good overview of your target group that you can start to think about possible behavioural interventions, because then you will have a better view of the techniques for influencing that offer the better chances of success with this particular target group and in this particular situation.

Measure the results

To make sure that the techniques have worked, it is important that proper effects measurement is done. Ideally, the evaluation should already be thought about prior to implementing the intervention. Baseline and final measurements should be done and a control group should be created. Baseline measurements are carried out prior to the intervention in order to map the current behaviour. Carrying out a final subsequent measurement enables the behaviour both before and after the intervention to be compared. A control group is a group that can be compared to the target group, but where no interventions are applied. This enables researchers to rule out that an effect that has been observed is due to any spontaneous changes. In practice, it is often hard to find a good control group and sometimes, baseline measurements are not possible. In that case, the final measurement can be more quality-oriented, by interviewing the target group. You can then attempt to interpret or explain the outcomes.

Bibliography

Aarts, H. & Dijksterhuis, A. (2003). The silence of the library: Environment, situational Norm and social Behavior. *Journal of Personality and Social Psychology*, 84, 18–28.

Bargh, J.A., Chen, M. & Burrows, L. (1996). The automaticity of social behavior: Direct effects of trait concept and stereotype activation on action. *Journal of Personality and Social Psychology*, 71, 230–244.

Bongers, K. (2014). *Waarom zou ik de wet naleven? Een theoretisch perspectief op nalevings- en Overtredingsmotieven* (Why should I comply with the law? A theoretical perspective of compliance and violation motivations). Utrecht: The Dutch Centre for Crime Prevention and Safety.

Chaiken, S. & Trope, Y. (red.) (1999). *Dual-process theories in social psychology*. New York: Guilford Press.

Debets, L. & Ruitenberg, K. (2010). *Het spoor bijster. Het verminderen van normoverschrijdend gedrag in de trein* (Lost. Reducing behaviour that violates moral standards on trains). Master thesis, Radboud University Nijmegen.

Haley, K.J. & Fessler, D.M.T. (2005). Nobody's watching? Subtle cues affect generosity in an anonymous economic game. *Evolution and Human Behavior*, 26, 245-256.

Kahneman, D. (2011). *Thinking, fast and slow*. New York: Farrar, Straus & Giroux.

Nettle D., Nott K. & M. Bateson (2012). Cycle Thieves, We Are Watching You: Impact of a Simple Signage Intervention against Bicycle Theft. *PLoS ONE* 7(12): e51738.

Petty, R.E. & Cacioppo, J.T. (1986). The elaboration likelihood model of persuasion. In L. Berkowitz (red.), *Advanced in Experimental Social Psychology* (Vol. 10, pp. 123-205). San Diego: Academic Press.

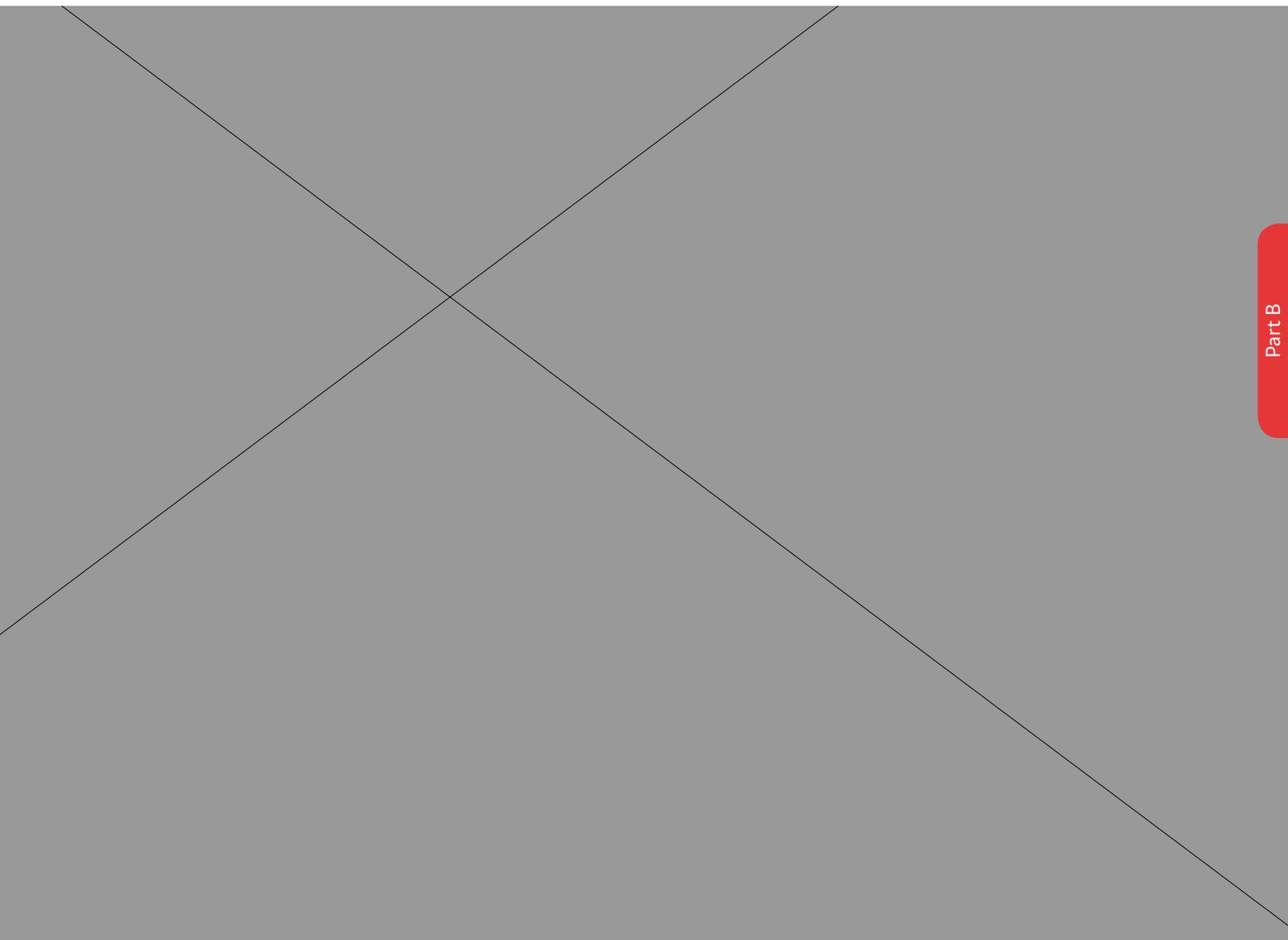
Powell, K.L., Roberts, G. & Nettle, D. (2012). Eye images increase charitable donations: Evidence from an opportunistic field experiment in a supermarket. *Ethology*, 118, 1-6.

Stol, W.Ph., Tielenburg, C., Rodenhuis, W., Pleysier, S. & Timmer, J. (2011). *Basisboek integrale veiligheid* (Basic textbook on integrated safety). The Hague: Boom Lemma Publishers.

Strack, F. & Deutsch, R. (2004). Reflective and impulsive determinants of social behavior. *Personality And Social Psychology Review*, 8, 220-247.

Thaler, R.H. & Sunstein, C.R. (2008). *Nudge: Improving Decisions about Health, Wealth, and Happiness*. Yale University Press.

Vollaard, B. (2014). *Beïnvloeding van inbraakpreventie-gedrag; Een handreiking voor beleidsmakers* (Influencing burglary prevention behaviour; A guideline for policy makers.) Utrecht: The Dutch Centre for Crime Prevention and Safety.



7

Pilot schemes for influencing behaviour with a view to ensuring community fire safety

Bert Pol, PhD, Tabula Rasa

The general message when talking about fire-safe behaviour is that people 'should be made aware that fires can start in anyone's home'. It is true that subconscious behaviour, i.e. behaviour that we do not think about, is often the cause of fire. But improving awareness is not the only way to change this and to promote fire-safe behaviour. And in a number of situations it is not the smartest way either, as this chapter will show you.



This chapter addresses various different ways of influencing behaviour. It discusses concrete interventions that have been carried out and tested in daily practice by the fire service. The first type of interventions discussed are those that the target group need not be aware of. The second type is information provision where the target group is addressed in person in order to stimulate and encourage them to change their behaviour, based on well-founded arguments. The third type is education in the form of lesson materials. Finally, we look at the question of whether mass media campaigns, such as radio and TV commercials, are useful in order to promote fire-safe behaviour. And we also call for a focus on the 1.5 million low-literacy people in the Netherlands.

●●● Influencing people without their being aware

Usually, *unsafe* behaviour concerning fire is not deliberate. People do not intentionally obstruct the escape routes in their homes, they do not deliberately cause a frying pan fire, and placing a candle too close to curtains tends not to be a premeditated action. These types of unfortunate actions are not part of any deliberate or conscious behaviour, but they are done *subconsciously*. If you wish to change subconscious behaviour, just providing information usually makes little sense. I.e.

using arguments to persuade people why it would be better for them to change their behaviour is often little use because fire is not a subject that is on many people's minds, simply because they have normally never experienced any problems in this respect. Where such subconscious behaviour is concerned, arguments usually do not get through to people, because this is simply not a subject on their minds.

But how can you change such behaviour?

An effective method is where you actually make use of the fact that the behaviour is subconscious (Pol & Swankhuisen 2013, 91-107). When something is not on people's minds, they are actually easy to influence, albeit in another way than by information provision. This also goes for fire-safe behaviour, as interventions aimed to achieve fire-safe behaviour in student housing showed. These interventions were *evidence-based*, i.e. they had proven to be effective in as many comparable circumstances as possible in a scientifically verifiable manner. They were performed and tested according to the method for field experiments ('t Hart et. al. 2001, 203).

The interventions were performed in small student houses, where six to ten students rent a room from the owner of the premises. The owner might be a private person, a student association, or a housing association. Fire brigades in towns with many students

were already paying attention to promoting fire-safe behaviour among students, e.g. by manning stands during freshmen introduction days. But this had relatively little effect: too few students came to the fire service stands, in spite of attempts to draw their attention by having them experience how quickly smoke develops and how they would not be able to see anything anymore. Students were mainly interested in other stands, such as those for sports and student associations.

This can easily be explained from a scientific perspective. There are very few students who have ever experienced a fire from close by. If you do not have any direct experience of it, and your peers are not constantly talking about it, you are not aware of any dangers in that field. And there are so many other subjects that catch your attention: studying, going out with friends, sports, dating, making some extra money next to your studies, etc.

This made it necessary to employ other ways to achieve fire-safe behaviour than only providing information and attempting to draw students' attention. These other ways were interventions that keyed in to the fact that a behaviour was concerned that was not a consequence of conscious deliberations, but happened without thinking about it in advance.

The interventions were based on behaviour patterns that have become deeply ingrained and that we are not aware of, but that determine our actions to an

important degree (Pol & Swankhuisen 2013, 98-104). Those behaviour patterns concern our relationships with the people around us. Barring some exceptions, we are all part of groups and we behave according to the standards of those groups. For example, we are part of a group of direct colleagues (the team), a wider group of colleagues (the fire service station or the region), a family, a household, a group of friends, possibly a religious community or a political party, and so on. In those groups, we need each other from time to time: the group offers protection, prevents us from feeling lonely, confirms our way of life and our view of society. The behaviour patterns ensure that the group is maintained. We do not realise that our behaviour follows these group patterns. But if you think about them and have read or heard about them, you will often recognise these patterns in your own behaviour and in that of others. For instance, if someone does you a favour, you will be inclined to do them a favour as well. If someone is fair to you, you will often be inclined to be fair to them as well. This is called the reciprocity principle (Cialdini 2001, 23-57).

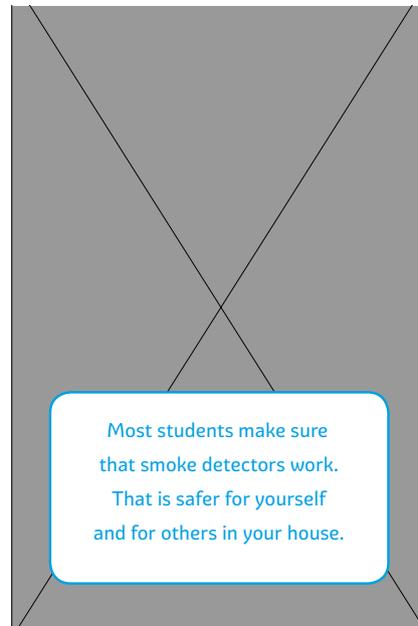
As a result, without thinking, we are often inclined to do what lots of other people do, specifically if these people share similarities with us. For example, because they live in the same neighbourhood, work at the same organisation, or are also students. This behaviour can be traced back to the principle of 'social validation' or 'social proof': doing what most others do (Cialdini 2001, 111-155).

Such behaviour patterns can also be used to promote fire-safe behaviour. This was done in the experiments as follows. The unsafe behaviour that was often found in such student housing consisted of placing old newspapers, bikes, crates of beer and similar objects on the escape routes, using unsafe electrical appliances, leaving bits of food in the oven that can catch fire, and not cleaning the filters of tumble dryers.

As part of the experiment, fire professionals in Rotterdam visited some student houses where they asked if they could check out the safety facilities in the premises. They verified whether a fire extinguisher and a smoke detector were present. In this way, their inspection looked like a check for facilities that the owner of the home should have provided. The students did not realise that the fire professionals were also looking at the equipment in the kitchen and any obstructions to the escape routes. The fire professionals scored their observations on a checklist. During their visits, they applied little stickers to the walls of the communal rooms of the student houses. The socio-psychological mechanism behind this intervention is that of social validation: most people (who share similarities with you) display the correct behaviour.

What were the effects? Firstly, contrary to what the fire service had expected, the smoke detectors in most student houses were found to work well. They had not

been covered and the batteries had not run out either. There was nothing to be won in this field. However, what was interesting was that the sticker did have an effect on related behaviour. More main entrance doors and extra escape routes were free from obstacles (from 73% at the time of the first visit to 90% with the second visit.) And more equipment was found to be safe (from 48% to 92%). And finally, hygiene had improved from a fire safety point of view (in 33% of the houses this shifted from poor/moderate to good).



●●● Limitations

Can you always confront people with an intervention in the place where the behaviour is displayed? That would be very attractive since it is an effective way to stimulate the desired behaviour or to stop an undesired behaviour. And such interventions do not cost much: stickers cost no more than a few cents each. Of course, a condition for effective application is that the right intervention has been chosen and that it has been carefully thought out. Here, using *evidence-based* interventions is recommended, i.e. interventions that have proven to be effective in as many comparable circumstances as possible in a scientifically verifiable manner.

Unfortunately, this type of intervention cannot be applied everywhere. Stickers can only be applied in public areas, and not in people's living rooms. Blocks of flats offer more possibilities: not in the actual flats of course, but in the communal rooms.

●●● Information provision combined with breaking the pattern of behaviour

So what other options are there if interventions at the 'scene of the crime' are not possible? One of the options is *combining* information provision with breaking the pattern of behaviour (for information provision see also, for example: Brug et al. 2008; for

breaking patterns of behaviour see: Pol & Swankhuisen 2013, 82). Here, the undesired behaviour pattern is: not stopping to think of the possible consequences of your actions for fire safety and not taking this into account in your behaviour.

This method was tested in a pilot study in socially disadvantaged neighbourhoods in The Hague and Helmond. This test was the result of an action that had been developed by the Amersfoort fire service (this approach is described at length in the 'Handboek Veilig Wonen' (Handbook on a safe domestic environment)). It was not underpinned by any scientific insights. The essence of the approach was: call on people's homes, show the occupants any fire hazards in their homes, and finally install free smoke detectors. The objective was to increase knowledge about fire safety and make occupants' behaviour more fire safe. The question was also whether the effectiveness of the approach could be established in a scientifically sound manner. In order to measure the effect of this, the fire service visited a number of homes in selected town districts in The Hague and Helmond in order to provide information. A control group was also always used to make sure that any changes were not due to other factors than the information campaign. The approach was found to work. A repeat visit three weeks later showed that the occupants' knowledge had increased. More of them knew what an escape plan was, how to put out a frying pan fire, and where to find the main

stop valves for gas and electricity. Not only had their knowledge increased, they also displayed more fire-safe behaviour. For example, fewer flammable candle holders were used, people left their kitchens less often when there was a pan on the fire, they kept the area around the central heating boiler clear, and more people unplugged appliances during thunderstorms. What can the effectiveness of this approach be attributed to? The essence is that a firefighter who actually comes to your door breaks the custom of not paying any serious attention to fire safety. The subject of 'fire' is now made a salient topic, because 'there must be a good reason why the fire service comes to our door'. In such a situation, there is a good chance that the arguments of information provision do get through to people.

The *Geen nood bij brand* (Do not let fire turn into an emergency) project also combined information provision with the breaking of automatic behaviour. Here, firefighters made a tour of the building together with the occupants and employees of an organisation for care for the elderly for the purpose of a safety expedition (instead of a safety inspection). After the tour, they discussed their findings and recorded them in a report. Based on the findings, the fire service gave advice about the measures to be taken. This approach resulted in more frequent evacuation drills being organised. This did not happen in the control group: so it seems to be obvious that the positive effect was the result of the intervention.

● ● ● Education

It goes without saying that learning leads to an increase in knowledge (a concise summary of the different ways to learn can be found, for example, in *Zimbardo et al. 2005*, p. 200-240). Lesson materials have also been developed and used in actual fire service practice. The Netherlands Fire Service (formerly NVBR) wondered whether those lesson materials had not become outdated in an era where most young people play computer games. It was therefore decided to test the effects of some lesson materials that were being used such that credible conclusions could be drawn. This was done by measuring the level of knowledge before and after working with the lesson materials and comparing the results to a control group where these lesson materials had not been used.

Pupils who had worked with the lesson materials were found to have a higher level of knowledge than before they had worked with it (and higher than that of the pupils in the control group). An interesting finding was that the level of knowledge of the parents had also increased after the children had started to work with the lesson materials. Apparently, the children had talked about the lessons at home as well. This leads to the recommendation to set children assignments to do at home as part of the lesson material: ask if there are any smoke detectors at home, has an escape route been drawn up, do mum and dad know how to put out a frying pan fire, etc.

●●● Are campaigns effective?

Campaigns in the form of radio and TV commercials and billboards are often resorted to in order to change or improve people's behaviour. It is assumed that such campaigns are much more effective than, for example, information provision as discussed above, let alone interventions by means of stickers as described above. People simply cannot believe that such methods are effective: 'Surely, such a simple sticker does not change people's behaviour?' However, the effects on behaviour achieved by these stickers is much greater than those of mass media campaigns such as radio and TV commercials. Interventions such as those applied to the student housing enabled behavioural effects of up to 25 to 30% to be achieved. Mass media campaigns usually do not deliver more than a few percent. One important factor that plays a role in this regard is that target groups often process mass media campaigns in another place and at another time than where and when the action in question takes place. When watching TV, you will often be sat on your sofa, and you will not be cooking. You do not see a billboard at home. Such campaigns concern behaviour that will occur in the future. In the interim, you will have been confronted by so many other stimuli that the message about fire safety has been completely forgotten. However, messages at the location where an action is performed relate to behaviour that is being performed at the actual moment of being exposed to

those messages. The effect of information provision is that the habit not to stop to think about fire hazardous behaviour is broken and people become receptive to information.

However, this by no means implies that mass media campaigns are useless. But the best effects are achieved by combining them with other ways of influencing people, e.g. by making them part of an intervention package (Pol & Swankhuisen 2013, 167-174). One thing that is definitely not advisable is having very creative campaigns made, such as for commercials for commercial products, since this has been found to actually be counter-productive for more complex subjects: people remember the commercial, but they do not remember the message and the desired behaviour is also not achieved (Pol & Swankhuisen 2013, 175-189).

●●● Recommendations

To promote fire-safe behaviour, it is advisable to not immediately resort to large-scale public campaigns. An analysis of the nature of the behaviour to be influenced is essential: is it conscious behaviour or subconscious behaviour? This has important consequences for how to influence it. The interventions described above generated knowledge about effective ways of influencing

behaviour and knowledge for the purposes of fire safety. But there is still a lot that we do not know, simply because it has not been studied. It would be very useful to not limit the type of interventions that key in to subconscious behaviour to only use in smaller student housing, but to look into other options of applying them – probably in an altered form – in other public areas, e.g. in the lobbies of blocks of apartments and residential facilities for care for the elderly. And besides this, it is highly recommended to pay more attention to the group of approximately 1.5 million Dutch people who have low literacy levels. At best, these people can read only very simple sentences if there are no external factors that distract them. Because traditional communication will not have an effect on this large group, nor then will the majority of the interventions. There is quite some knowledge available about how to communicate with these people, but this knowledge is rarely applied in the public sector. It remains likely that there is quite a lot to be won with this group as regards their own safety and that of their environment.

Bibliography

- Brug, J., Van Assema, P. & Lechner, L., (2008). *Gezondheidsvoorlichting en gedragsverandering. Een planmatige aanpak. (Health information and changing behaviour. A planned approach.)* 6th ed. Assen: Van Gorcum.
- Cialdini, R.B. (2001). *Invloed. Theorie en praktijk (Influence. Theory and practice)*. Amsterdam: Nieuwezijds Publishers.
- Cialdini, R.B., Demaine, L.J., Sagarin, B.J., Barrett, D.W., Rhoads, K. & Winter, P.L. (2006). Managing social norms for persuasive impact. *Social Influence*, 1(1), p. 3-15.
- Pol, B. & Swankhuisen, C. (2013), *Nieuwe Aanpak in Overheidscommunicatie. Mythen, misverstanden en mogelijkheden. (A New Approach to Government Communications. Myths, Misunderstandings and Opportunities)* Bussum: Coutinho.
- Hart, H. 't, Van Dijk, J., de Goede, M., Jansen, W. & Teunissen, J. (2001). *Onderzoeksmethoden (Research methods)*. 5th ed. Amsterdam: Boom.
- Zimbardo, P.G., Weber, A.L. & Johnson, R.L. (2005). *Psychologie. Een inleiding (Psychology. An introduction)*. 4th ed. Amsterdam: Pearson Education.

8

The new way to persuade: causing people to act

Professor Dr. Rick van Baaren & Lynn Voogt MSc
Radboud University/d&b Applied Behavioral Science

It continues to be surprising how often people fail to do something, even though it would be wise to actually do it. Examples are checking tyre pressures before going on holiday, regularly cleaning the extractor hood and the chimney, spraying leather or suede clothes/furniture with a protective product, eating healthy food, installing smoke detectors, making one's home more energy efficient, airing mattresses and putting them out in the sun twice a year, and switching off the TV and talking to you partner for a change.



In recent years, psychologists have developed ever-better techniques to effectively change this type of behaviour (I should do it, but I don't do it). This chapter describes some of these developments. It gives some practical examples and discusses how these developments are also relevant for the fire service.

● ● ● From rational persuasion to the use of psychological reflexes

Professionals have long thought that people make decisions in an orderly and rational way. Virtually all theories assumed the steps of 'attention-interest-decision-action'. These steps formed a transparent view of human beings: you grab their attention, then you come up with arguments and private citizens/consumers will make rational considerations, they will then take a rational decision and then carry out this decision.

There is one setback to this old-fashioned approach to persuasion, i.e. the enormous gap between attitude and behaviour. There are numerous examples of people *wanting* to do something, saying that they are going to do it, but then *not* doing it. Notorious examples are health, sustainability and safety behaviour. There was a flood of studies in the late 1980s and 1990s that disproved the obviousness of the link between attitude and behaviour. Understanding or wanting something does not automatically lead to actually doing it. There

is even a significant discrepancy between the intention to perform a certain behaviour and actually doing it.

At the same time, science has shown us over and over again that people are not always as rational as they were taken to be. Dozens of heuristics (*biases*) have been found that we can use when making our decisions and in our behaviour.

The above insights have resulted in the use of all kinds of techniques of influencing. These are based on one or several heuristics that have to ensure that people will do or think what the influencer would like them to do or think. A major contribution to this was made by Robert Cialdini, whose six principles of persuasion have become renowned all over the world (Cialdini 2001). Over thirty years, he studied people's 'psychological reflexes' and what stimuli we respond to more or less automatically:

- **Reciprocity**

'If you give me something, I feel the urge to give something back to you.'

- **Commitment & Consistency**

'If I say A, I also want to say B.'

- **Social Proof**

'If others do it, it will be OK.'

- **Authority**

‘We follow and obey authority.’

- **Scarcity**

‘If something is scarce, I want to have it.’

- **Liking**

‘If I like you, I will listen to you.’

Influencing through these reflexes has often been tested in real-life practice and it sometimes brings very good results. An example that has become a classic is the ‘towel experiment’ by Goldstein et al. (2008). The purpose of the experiment was to ensure that hotel guests would reuse the towels in their bathrooms at least once and no longer drop them onto the floor for them to be replaced every day. An 80-day study, comprising 190 rooms and unwittingly – participated in by 1,058 guests, revealed that *Social Proof* can be used to make people really behave in a more environmentally friendly way.

The study was conducted as follows. Half the rooms served as the control condition where the ‘standard’ card was used to get people to reuse their towels. The essence of the text on this card was ‘Help conserve nature’.

The *Social Proof* condition was created in the other half of the hotel rooms by changing the essence of the

text into ‘Join our other hotel guests and help conserve nature. Almost 75% of our guests have already done so.’

The results showed that, in the control condition, 35.1% of the guests reused towels against 44.1% in the *Social Proof* condition. That is an increase by some 25%. Since there are millions of hotel rooms worldwide, applying this technique would have a material effect on saving water, phosphate in nature, etc.

●●● The use of Priming & Prompting

Besides studies into the psychological reflexes, *Priming & Prompting* to change behaviour have also been extensively studied. *Priming & Prompting* are based on the idea that the right behaviour can be triggered by offering the right associations or memories in the right location. For example, as part of a study into keeping trains clean (De Lange et al. 2012), the researchers released a lime scent (of an all-purpose cleaner with lime in it) in some train carriages. Afterwards it was found that more waste had been deposited in the waste bins and there was less waste outside the bins in carriages with the scent compared to the carriages where the control condition had been created. This *priming* works because people subconsciously associate the lime scent with cleaning. The scent activates the association, making people

inclined to keep their environment clean without them noticing this themselves.

Prompting works in a comparable way. A previously offered stimulus (for example ‘the nice’ Telfort man from the Dutch Telfort commercials) is offered again at the relevant moment (a poster with the same man at a phone shop, so that people will be inclined to opt for Telfort).

● ● ● From reflexes and priming back to persuasion?

Not dropping a towel on the floor or depositing the empty bottle you are holding into the waste bin are changes to behaviours that are already taking place. Somebody has a bottle and does something with it. By influencing, you make sure they do the proper thing with it.

Things often get more difficult when trying to initiate new behaviour. Think of checking your tyre pressures or buying and installing a fire extinguisher or smoke detector. A deliberate choice is necessary then.

The most recent trend in the behaviour change domain goes back towards the direction of persuading people again. However, the emphasis is now on how to get those persuaded people (because we do know how to persuade) to actually carry out their better plans.

Basically, two techniques are the most effective in this case: *Implementation Intentions* and *Self-Persuasion*.

Implementation Intentions

An *Implementation Intention* means that the desired behaviour is associated with a concrete situation in the future (for example Orbell & Sheeran 2000). So not ‘You should try this’, but ‘If X occurs, I do Y’. For example: ‘When I light the barbecue, I ask someone else to fill a bucket of water.’

Although the difference seems slight, there is actually a significant difference between having a goal and making *Implementation Intentions*. If you have a goal (for example ‘I want to take up sports’), you can intend to take up sports all your life without actually doing it. If you make *Implementation Intentions* (‘I drive to the gym for a Bootcamp session every Tuesday after work at 5.’) you make an advance appointment with yourself and you no longer have to make the choice and do the planning in the hectic bustle of your daily life. You only have to carry it out.

And furthermore, this creates an association: if the situation occurs, our brain will remind us of the behaviour we have associated with it (cues are formed). Examples of such associations are:

- Situation: buying a Christmas tree
Behaviour: check the fire extinguisher

- Situation: the first school day
Behaviour: discuss with your children what to do in the event of fire
- Situation: the last day of the month
Behaviour: clean your extractor hood

The ‘*Spitsmijden in Brabant*’ (Avoiding the rush hour traffic in Brabant) project applied *Implementation Intentions* in practice. *Spitsmijden in Brabant* consisted of a reward stimulus for motorists who were often on the roads in the morning or evening rush hours. Based on license plate detection, they were approached and asked to participate in the test. They would receive approx. EUR 2 for every time that they did not join the rush hour traffic. Almost 2,300 participants volunteered. But still, the initiators noticed that, despite the financial stimulus (which could be up to as much as EUR 100 a month), and in spite of their participating voluntarily, motorists did not avoid the rush hour traffic that much. This is a typical situation where there is a goal (‘I want to avoid the rush hour’) that keeps not being translated into concrete action.

The researchers therefore decided to place hundreds of new participants into an experimental condition. They asked these participants to make *Implementation Intentions*. Hundreds of other new participants served as the control condition. The participants in the experimental condition had to visit a website and once every two weeks they created a plan there where they

indicated how they were going to avoid the rush hour traffic during those two weeks. For both the morning and the evening rush hours, they could indicate per day whether they would ‘just’ join the rush hour traffic or avoid it. If participants indicated that they wished to avoid the rush hour traffic, they entered how they would do this (for example by travelling by train or on their bikes) and at what time.

It was found that people who made a concrete plan as to how to achieve their goals were in the rush hour traffic more than 27% less than the other participants. And compared to people who did not participate in the experiment, they joined the rush hour traffic 50% less of the time. This shows that *Implementation Intentions* can have a great effect on real behaviour.

Self-Persuasion

Another promising technique is *Self-Persuasion*. As the name suggests, the essence is that people come up with arguments themselves for why they would, or would not, carry out a certain behaviour, and why they are not persuaded by others. So do not just say ‘You should not smoke, because it is bad for you, unhealthy and it stinks.’, but ask: ‘Why is it good not to smoke?’ This effect is based on a number of theoretical reasons, the most important ones of which are:

- **preventing resistance**
People often process a message given by someone else in a critical way and look for the ‘Yeah, but ...’. If

we come up with something ourselves, we do not have this critical mindset. We do not tend to debate with ourselves a lot.

- **wanting to be consistent**

If you come up with reasons yourself why you would, or would not, do something, you feel particularly bad if you fail to display the corresponding behaviour. You feel uncomfortably inconsistent.

In an anti-smoking study (Müller et al. 2009), half the people in a group of smokers were given a list of arguments. These arguments showed why different matters, including smoking (and animal testing, nuclear energy etc.), were supposed to be bad. The other half of the participants were asked to come up with arguments themselves why smoking (and those other matters) were bad.

By means of camera observations, it was then measured how long it took for the participants to light a cigarette. In the *Self-Persuasion* condition this took almost twice as long as in the control condition. A follow-up study showed that questions on a packet of cigarettes like ‘Why is smoking bad?’ call up a lot less resistance with smokers than the warning texts that are printed on them now.

It is important to note that *Self-Persuasion* can be combined perfectly with *Implementation Intentions*. If you get people to persuade themselves, and then help them carry out their plans, you resolve both the

problems of resistance and of planning. An additional advantage of both these techniques is that people are intrinsically motivated to perform the target behaviour. As a result, they will probably also do this again if the same situation occurs later and in similar situations for which you have not contacted them.

● ● ● How the fire service can use this approach to persuade people

When looking at the subject of fire prevention, quite a long list of behaviours can be found that are the right thing to do, but that few people actually do. Think of:

- regularly cleaning the extractor hood and the chimney;
- being careful with fire, for example when cooking, barbecuing, or when lighting candles in the home;
- buying fire-safe mattresses and sofas;
- installing smoke detectors;
- buying fire blankets and fire extinguishers;
- having fire ladders available;
- determining an escape route and keeping it clear.

A combination of *Self-Persuasion* and *Implementation Intentions* is excellently suited to stimulating the above behaviours. The fire service can encourage people to come up with reasons why these actions are good, and then have them plan how and when they will carry out the behaviours that go with them.

What to do as part of existing initiatives

The initiatives undertaken by the fire service as regards fire prevention were sketched in chapter 4. Many studies showed that the knowledge and the intention to carry out the right behaviour increased. But the actual behaviour that was desired did not always improve to a sufficient degree. However, the effectiveness of these initiatives can be increased by adding *Self-Persuasion* and *Implementation Intentions*.

For example, the checks in people's homes where installing smoke detectors is obviously a desired behaviour: when fire personnel or housing association staff visit people to check their homes, they can help them plan the desired behaviour.

Are smoke detectors installed while checking the home? Then tell the occupants when the batteries should be replaced and ask them to write in their calendars - on the spot - when they are going to do so. Thus they come up with a concrete situation (Tuesday 1 December 2015 at 10 a.m.) to carry out a concrete action (replacing batteries).

If no smoke detectors are installed while checking the home, and the occupants do need one or more smoke detectors, the desired behaviour becomes 'buying and installing smoke detectors'. The action is still the same: have the occupants write down in their calendars when they will perform the desired behaviour. To prevent them from planning too far ahead, you can ask them: 'Is there any time available within the next two

weeks for you to buy and install a smoke detector?' Of course, this also applies to clearing the area around the central heating boiler or any other matters encountered by fire service or housing association personnel.

The same thing applies to such initiatives as *lesson materials for children*, *courses on fire-safe cooking*, *the real-life experience home*, and other fire safety meetings: always end the meeting with a number of questions. What would you like to, and be able to, change in your home to improve fire safety? Why do you think this is important? When are you going to do this? You should preferably have the people present write down their concrete plans. The association between a concrete situation and concrete behaviour is the key to helping motivated people to actually carry out the desired behaviour.

What not to do as part of existing initiatives

When addressing health and safety behaviour, people often point out the dangers: it will kill you, you will get sick/injured, etc. This technique is called *Fear Appeals*. Emphasizing the dangers is quite understandable, because it is terrible to fall victim to a fire, but this technique is not effective. This is because people who have been given information about the dangers wish to get this bad feeling out of their system as soon as possible. They usually do this by thinking 'This will not happen to me anyway' or 'It's not as bad as they make it sound.'

If the technique of *Fear Appeals* is still used, it is crucial that people are shown the right behaviour to help them to *immediately and easily* get the bad feeling out of their system. It is even better to have people come up with reasons why this behaviour is important themselves, as described above (*Self-Persuasion*).

If the fire service integrates the combination of *Self-Persuasion* and *Implementation Intentions* into its information provision about fire prevention, this will have a positive impact on the effectiveness of this information provision. A logical consequence of this will be a decrease in the number of casualties of fire.

Bibliography

Cialdini, R. B. (2001). *Influence: Science and practice* (4th ed.). Boston: Allyn & Bacon.

D&B-abs (2012). *Spitsmijden in Brabant*. (Avoiding the rush hour traffic in Brabant.) Own management.

Goldstein, N. J., Cialdini, R. B., & Griskevicius, V. (2008). A room with a viewpoint: Using social norms to motivate environmental conservation in hotels. *Journal of Consumer Research*, 35, 472-482.

Lange, M.A. de, Debets, L.W., Ruitenburg, K. & Holland, R. (2012). Making less of a mess: Scent exposure as a tool for behavioral change. *Social Influence*, 7, 90-97.

Müller, B.C.N., Baaren, R.B. van & Ritter S.M. (2009). Tell me why ... The influence of self-involvement on short term smoking behaviour. *Addictive Behaviors* 34: 427-431.

Orbell, S. & Sheeran, P. (2000). Motivational and volitional processes in action initiation: A field study of the role of implementation intentions. *Journal of Applied Social Psychology*, 30, 780-797.

9

A good discussion: lessons for community fire safety

Renske Postma, Tekstbureau Met Andere Woorden

How can the fire service, given all that has been learnt from the previous articles, further improve its efforts to achieve community fire safety? That was the key question on 29 May 2015 when there was 'A good discussion' between the authors of the articles, members of the Scientific Research Council of the Netherlands Fire Service, employees active on community fire safety and the editorial board. This chapter sketches the outlines of this discussion.

●●● In summary

The participants agreed that the fire service regions had undertaken lots of initiatives to promote community fire safety in recent years: this had truly been a phase of 'letting a thousand flowers bloom'. The participants also agreed that the collection offers new insights into changes in behaviour and community fire safety. It is hard to tell just how effective the current efforts for community fire safety are because hardly any reliable measurement results are available. The articles underline the importance of carrying out proper studies and adequate measurements, while at the same time offering theoretical principles in order to effectively influence behaviour. This does not mean that all the current activities should stop, but the collection may be a prelude to further deepening current knowledge and activities, and initiating a new phase in creating community fire safety.

Most participants think that a fundamental change in course is required in this new phase: working with one joint strategic plan, structurally collecting data about fires, including fires in the home, measuring and studying the effects of interventions, and taking the characteristics of the target groups into account better when selecting interventions.

●●● One strategic plan

One of the participants stated that the fire service could work towards community fire safety much more strategically by working to one joint plan across the Netherlands. The substance of this message was met with unanimous approval.

A good strategic plan answers both the following and other questions:

- What would we like to achieve through 'community fire safety' (fewer fires, fewer casualties and/or less damage and loss)?
- What do we know about causes and risk groups and how are we going to fill any knowledge gaps?
- What theoretical line of thought should we follow in order to go from causes and risk groups to good interventions?
- Which steps should we take to measure effects and to evaluate and adjust interventions?
- How can we achieve good fire statistics?

Such a strategic plan need not take a lot of time: it can be drawn up by a small group of knowledgeable people within just a few weeks.

It also became clear in the discussion that different regions are developing their own strategies. The participants came to the conclusion that one central direction would be much more effective with a view to the goal of 'community fire safety', including achieving

fewer casualties. This will allow the fire service to coordinate the necessary measurements, evaluations and studies more effectively, deliver better quality, and learn from experience faster. Elaborating the strategy into interventions will call for efforts customised to the individual regions, since the target groups and the causes of fires, as well as the pace and phasing per region, can differ.

The participants understood that such a central approach is a far cry from the method currently employed. They came to the conclusion that it is essential that a strategic plan, with buy-in from all the regions, is achieved. Carry out a SWOT analysis is their advice. This will automatically provide a transparent view of these and other conditions for success.

● ● ● **Structurally gather data, measure more, study more**

According to the participants in the discussion, a central thread in the collection is that there is very little reliable data. This is relevant to all levels. For instance, there is no complete and reliable set of data about fires in the home, causes and casualties, and furthermore the effects of interventions are hardly measured scientifically. This makes the basis on which the interventions for community fire safety are substantiated quite narrow.

Parties in some other areas of society are also looking for ways to influence behaviour (e.g. the police, healthcare). No blueprint is available there either and a method that includes experimenting is also necessary in that case. However, more measurements and evaluations have been done in most other domains, making it possible to learn from such experiments. The participants agree that a fundamental change of course within the fire service is necessary in this area: data on fires in the home must be gathered structurally, in-depth studies must be done or commissioned in order to be able to choose a clear focus, and the effects of interventions must be measured systematically. This is all part of the strategic plan.

● ● ● **Get to know your target group better**

Most interventions for community fire safety now focus on increasing the knowledge of fire safety, such as information meetings and lesson materials. Expectations seem to be that people will behave differently if they know how important community fire safety is and what they can do to achieve this. However, the articles in this collection only refer to scientific theories, showing that knowledge on its own does not automatically lead to another behaviour. The experts on changing behaviour present therefore recommended that the current line of thought on changing behaviour (knowledge/behaviour) be adjusted. This raises the question of whether the

current interventions are sufficiently effective. This question can definitely not be answered by an unconditional 'yes', but since hardly any measurements are being done, an unconditional 'no' cannot be substantiated by figures either.

Different articles in the collection point at other types of interventions that demonstrably bring about a change in behaviour. These interventions make use of, for example, *nudging* (chapters 6 and 7) or implementation intentions and *self-persuasion* (chapter 8). One of the participants pointed to the large group of low-literacy people and the group who live in great poverty. These groups - possibly important risk groups! - are hard to reach by means of regular means of communication and call for special attention.

However, during the discussion, different authors emphasised that it was too early to choose certain types of interventions. One first has to know the target groups well: *who* are the most important target groups for community fire safety (risk groups), *why* do they display unsafe behaviour and *what* are they open to? In this way, separate sets of interventions will be devised for every target group, and possibly for the age groups that form part of those target groups. This route is also part of the strategic plan. One of the participants suggested *Intervention Mapping* as a possible method to develop interventions step by step.

The conclusion is that there is no sense yet in making a

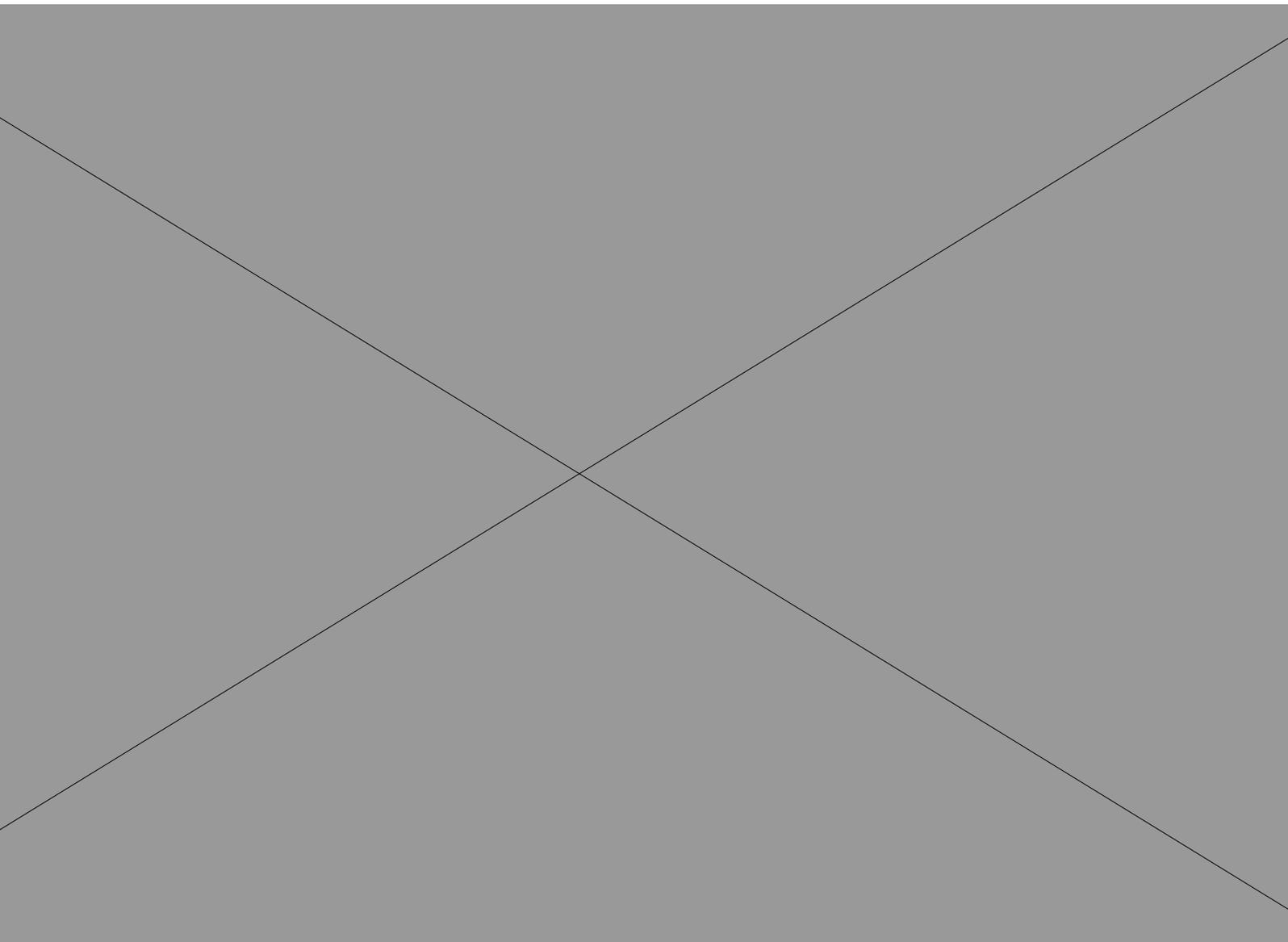
general choice for, for example, 'more *nudging*' or 'less information provision' based on the collection.

● ● ● A safe environment

During the discussion, the question was asked as to whether the fire service should not advocate community fire safety more broadly, together with other parties that play a role in society, such as the police and municipal health services: from community fire safety to a safe environment? Participants expected that collaboration would definitely be effective when implementing interventions. However, other participants advocated that it should be made very clear what the fire service itself wishes to achieve. This will make the fire service a stronger partner for an integrated approach.

● ● ● In conclusion

Finally, the reasoning behind the concept of community fire safety should be given proper attention. Nationally speaking, the number of fires in the home and casualties is not very high, but this may be different for certain risk groups. The impact of fire is often traumatic there. However, too much attention to fire can also lead to an exaggerated sense of danger. Good motivation is important: you have to know what you want to achieve and what you can achieve.



The conclusion is that community fire safety deserves a follow-up in a new phase, with a carefully devised strategy for the implementation of interventions, studies and measurements.

Participants in the discussion

'A good discussion' was headed by Jac Rooijmans, Vice Chairman of the Scientific Research Council of the Netherlands Fire Service. The following people participated in the discussion:

External authors:

Rick van Baaren, Professor at Radboud University/d&b Applied Behavioral Science

Karin Bongers, adviser at the Dutch Centre for Crime Prevention and Safety

Bert Pol, Tabula Rasa change in behaviour and communication (written input)

Fire service personnel:

Marcel van Galen, Chairman of the Safety Awareness sector

Annet Hulshof-Mourits, Safety Region of Drenthe

Mandy Leurs, member of the A Fire-Safe Environment team, Safety Region of Noord-Limburg

Scientific Research Council of the Netherlands Fire Service:

Marnix Eysink Smeets, Professor of Security

Perceptions at Inholland University of Applied Sciences

Bert Felling, Professor Emeritus of Methodology at Radboud University

Marjan Heijman, Secretary of the Scientific Research Council of the Netherlands Fire Service

Gerard van Klaveren, Regional Chief/Director of the Zuid-Limburg Fire Service

Ricardo Weewer, Professor of Fire Service Science at the Netherlands Institute for Safety (IFV)

Editorial board:

Nancy Oberijé, senior researcher at the Netherlands Institute for Safety (IFV)

Renske Postma, copywriter and general editor of this collection

Hilda Raasing, Managing Director/Fire Chief of the Zaanstreek-Waterland safety region and Portfolio Manager for Community fire safety on behalf of the Dutch Board of Fire Chiefs

In conclusion: the Council's view

Marnix Eysink Smeets, Professor of Security Perceptions at Inholland University of Applied Sciences

The Netherlands fire service wishes to further increase its contribution to a safe society and, for this, it is looking beyond its traditional repressive fire service task (extinguishing). Through community fire safety, the fire service wishes to give prevention an extra boost by encouraging citizens to be extra aware and conscious of the risk of fire in their daily lives. Of course, this will only be possible if the fire service has the latest insights into the manner in which this can be brought about. Therefore, the Scientific Research Council of the Netherlands Fire Service has compiled this collection of insights for the fire service. On the basis of this, the Council has concluded that working on fire-safe behaviour by citizens can make sense under some conditions and that using the latest insights about influencing behaviour can be helpful here. But above all, the Council has come to the conclusion that it is important that the Netherlands fire service starts working even more methodically.



●●● The collection

To create this collection, the Council asked a number of experts to reflect on how the Netherlands fire service works and can work on community fire safety, and also how it can promote a change in behaviour in this respect. This was restricted to the domain that concerns almost everyone: fire-safe behaviour in our own homes¹. The previous chapters of this collection represent the fruits of that exercise. The chapter by Margrethe Kobes taught the Council that the number of casualties and fatalities due to fires in the home is relatively minor, but also that the data about fires in the home, both as regards numbers and causes, is highly incomplete. According to Kobes, this makes finding a reliable basis for community fire safety difficult. Marnix Eysink Smeets then showed that citizens do not perceive the risk of fire as serious and urgent and, as a result, they are not highly motivated to do something extra about it. The chapters by Renske Postma and Nancy Oberijé showed that lots of interventions to achieve community fire safety are applied at home and abroad, but that little reliable data on this is available. Effects are reduced and not studied in any systematic way. In her chapter, Karin Bongers gave examples of how other safety areas

already work with new and existing ways of influencing behaviour and achieve successes with them. Rick van Baaren and Bert Pol, renowned experts on influencing behaviour, then shared the latest scientific insights in this field in their chapters. They showed that only increasing knowledge often does not lead to the desired behaviour and they offered some hints in order to achieve better effects. On the Council's invitation, a panel of fire service professionals, scientists and external experts discussed the findings that had been collected. This led to a number of suggestions for the future that the Council largely endorses.

Of course, it is not up to the Scientific Research Council to say how the Netherlands fire service should now give further substance to community fire safety, as this is the remit of the board and of the management teams of the fire service itself. However, it is the Council's task to provide scientific insights, ask questions based thereon, and give advice. This collection as a whole is how the Council fulfils the first part of its task; this final chapter focuses on the second and third parts.

1 The policy field of community fire safety is broader; e.g. the fire service also focuses on buildings other than flats and houses and on the use of fire-safe materials.

●●● Methodical working: a condition for success

Considering all the contributions, the first question that the Council would like to get an answer to is whether applying the latest techniques of influencing to citizens is actually the key to working on fire-safe behaviour. Based on the contributions in this collection, the Council has come to the conclusion that changing behaviour is the key to a successful strategy, but it is not only citizens' behaviour that should be changed. The fire service should also change its own behaviour at least as much. According to the Council, there is a lot to be gained by the fire service in the field of methodical working. In fact, the Council has come to several conclusions, including (barring exceptions) that:

- the fire service measures too little and knows too little to be able to successfully design and implement community fire safety: its information systems and management are not as they should be.
- (as a result of this) we do not know enough about what groups are the most vulnerable to fire safety risks and, in this regard, what behaviour involves the most risks.
- the assumptions on which policies are based (the 'policy theory') are not yet sufficiently supported by scientific evidence, and
- a tradition of *evidence-based practice*, i.e. structurally working such that people learn from their daily practice, has not really been developed yet.

The Council thinks these are the points where the greatest gains can be achieved. The Council is pleased that, in its recent vision paper, the RemBrand project group calls for more attention to be given to some of the same issues. Further to this, the fire service wishes to have better *business intelligence*, working on the basis of risk profiles and further knowledge development. The Council cannot but conclude that there is indeed still a great need of such forms of methodical working being further developed and deployed. And this is exactly where the biggest step forward can be taken.

●●● Drives for community fire safety

Actually, the Council is of the opinion that methodical working also calls for something else: taking an unprejudiced view of what is driving the fire service to start working on community fire safety. This also means: taking an unprejudiced look at the nature and the extent of the safety problem that is to be reduced. And at the profit that can be gained by working on community fire safety. When considered from that perspective, the Council can discern several views in and around the fire service domain as it were:

- 1 One view considers the extent of the fire risk, the damage and loss, the number of casualties and the urgency felt by citizens. Based thereon, this

view comes to the conclusion that fire in the home is a risk of a very limited extent, both objectively considered and in the perception of citizens, especially when compared to risks in other areas of safety.

- 2 Another view is that every fire is one fire too many, and that developments in society cause the risks to increase rather than decrease, which in itself explains why there is a compelling problem. This is the vision advocated by the RemBrand project group in its vision paper for example.

The Council thinks that it would be a good thing to consider these views in the light of an important trend that has been becoming more prominent throughout the safety world for quite some time: a greater emphasis on prevention. “Going to the front of the problem” has become an ever-more important guideline for safety service organisations. Stimulating citizens' own role (via participation and the ability to save oneself and to leave without assistance) has become a main theme in this respect in a short time, at least in the Netherlands. However, scientists increasingly point to the setbacks of this development. For example, Frissen (2013) found that the government says that it has abandoned the concept of the makeable society and therefore tells citizens that ‘risks are an inherent aspect of life’ due to which the government cannot prevent all risks. But at the same time, he came to the conclusion that

that same government apparently does not dare to depart from the makeable society approach and its actions continue to suggest that all risks can be removed. And citizens have to make a considerable contribution to this nowadays. According to Peeters (2013 and 2015), we have ended up in a *prevention society*, with an unbridled ‘*longing for preventing*’. In this context, Peeters pointed out that the justification for preventative action in this prevention society is found more and more in *anecdotal proof*, stressing the seriousness of a single incident (‘every fire is one too many’), instead of applying an objective, businesslike consideration of absolute and relative risks in society as a whole. The Council advocates that the warnings given by these scientists should be heeded. We should not refuel the suggestion of makeability, nor should we deduce the urgency of community fire safety from the incident, but from a broader consideration of the risks and trends in society.

The Council recognises that this may be difficult, because developing prevention policy increasingly often serves *strategic* goals. For example, in order to position an organisation more firmly in the force field of the safety world. Or to be able to promise efficiency gains. Regardless of whether this is justified, lots of people feel that prevention implies the promise that savings (for example on repression) can be achieved at a later stage.

The real danger is the *strategic* interest leading

to people being too optimistic about what the concept or policy can actually achieve and the substantive reliability or the feasibility being seen in a more positive light that justified, exactly because the strategic value is so significant. The previous chapters showed that the theory that interventions for community fire safety are currently based on is definitely not equally valid for all points, let alone for the quality of implementation. Is it possible that the strategic value of the concept of *community fire safety* is currently greater than its actual substantive meaning for reducing the risk of fires in the home?

These are the criticisms that the Council has in respect of the *urgency* of the problem that the concept of community fire safety focuses on in respect of fires in the home. The Council will now address the manner in which this concept can be better implemented in practice. As indicated above, according to the Council the first area of attention is creating a better *body of information*: having sufficient knowledge available at any time. Good *information management* is required for this: gathering knowledge, and making it available and analysing it systematically.

● ● ● Information management

The fire service's information management has been found to be a bottleneck before (Vullings & Veldhuis

2015). The fire service itself also recognises this, and this bottleneck is also clearly identified in this collection. The body of information available is still insufficient for policy to be based on it. The collection also shows that policy makers and scientists take a different view of this: where the RemBrand project group attaches firm conclusions to the available data, this collection mainly emphasizes the limited reliability and the incompleteness of the same data. In particular, the chapter by Margrethe Kobes shows the ambiguities and hiatuses in the available data. According to the Council, in order to achieve real control (by trends, by high-risk subgroups, by factors that involve excessive risks), the level of the data will have to be increased first. The RemBrand project group seems to agree with the Council in this respect as it has stated that the *business intelligence* needs to improve.

● ● ● Evidence-based practice

Nowadays, it is becoming ever-more common practice to base strategies and interventions on the principles of *evidence-based practice (EBP)*. The essence of EBP is informed working and learning from this, based on the best insights currently available (Sackett 1997 and 2005; Smeijsters 2009). Three components will have to be combined in this respect: (1) the professional's knowledge, views and experience, (2) external knowledge, specifically the latest scientific insights,

and (3) the needs and views of the target group itself. The Council feels that as regards community fire safety, more use can definitely be made of components 2 and 3, and that there is little evidence of systematic learning from what works and what does not work.

The Council re-iterates the importance of studies into the long-term effects of interventions and their impact on changes in behaviour and actual safety, as it now looks like, if impact studies are conducted at all, there is mainly only a focus on the short-term effects and then particularly on changes in knowledge or the willingness to change behaviour. However, as Bongers, Van Baaren and Pol also argue in this collection, this does not say a lot about the eventual impact on actual behaviour, let alone on safety. The Council therefore advocates a critical, businesslike attitude, also where the effectiveness of interventions is concerned. This attitude should also be accompanied by some understanding for the fact that the effectiveness of interventions depends on the target group and the context, and that, as a result, the effectiveness of an intervention can differ from situation to situation.

● ● ● **One intervention studied in more detail: the smoke detector**

Propagating smoke detectors and encouraging citizens (and others) to install smoke detectors in flats and

houses are often key to citizens-oriented interventions for community fire safety. The Council strongly supports this strategy, but it also encourages applying the critical, businesslike, learning attitude suggested above also - or specifically - to interventions whose effect seems to have been proven beyond any doubt in the everyday practice.

Looking very carefully is what is particularly necessary. Oberijé's chapter describes, for example, that the evaluations of schemes to encourage smoke detectors do not always show straightforward successes. Kobes has further deepened that view by describing, based on her recent research, the conditions under which smoke detectors of the current generation are effective or are not effective. These insights form a nice example of what can be gained from taking a critical and methodical look at how interventions work, specifically when practical conclusions are drawn from them.

● ● ● **Together or alone?**

Lots of organisations are focussing on citizens in order to get them to cooperate in preventing diverse risks. The police want to reduce the number of burglaries, the municipal cleaning services wish to prevent pollution, municipal health services are worried about obesity or VDs, and the fire service is looking to sell its fire safety message. The first question to be asked

is whether citizens are always the most practical starting point. Sometimes, it takes less effort to achieve more, e.g. by influencing a housing association or another organisation. For example, if a housing association applies preventative measures in all its houses at once. Secondly, one might question whether continuously pointing citizens to all kinds of safety risks does not actually make matters worse. Eysink Smeets (2015) recently described in his *Preventie-of participatieparadox* (Prevention or Participation Paradox) how efforts by organisations to prevent problems due to unsafe situations sometimes caused the public to actually perceive those problems as becoming ever-greater. If citizens are asked to help keep their street clean, and this is not asked in a very carefully considered manner, they will suddenly see a lot more pollution, even though, from an objective point of view, the street has become cleaner. Thirdly the question arises of whether – given the number of organisations that address the same citizen for various safety aspects - a joint approach would not be better. For instance, just as a number of fire brigades have been doing, jointly working on what has previously sometimes been called ‘a safe environment’ instead of on ‘community fire safety’ (the Netherlands Fire Service 2010).

It may be a good idea here to remind you of the ‘roots’ of the concept of community fire safety: English *community safety*. In most places in the Anglo-Saxon

world, this is a strategy that is rooted in fighting crime, but that has grown into a wider cooperation between safety organisations and public authorities, citizens and companies in order to improve social and physical safety or health. Some very interesting results have been achieved through this (e.g. see Berry et al. 2011). The Dutch equivalent of this is the integral safety policy. Here various parties work together in almost all municipalities in order to improve safety, mostly under the control of the municipality. As also advised by the RemBrand project group (2015), it seems to be obvious to link up with this and also to specifically learn from the experience gained through that policy in the past decades. This also makes it easier to address exactly that form of unsafe behaviour that is the main problem for a particular target group or for citizens in a particular location. For some groups this is traffic, for others it is nuisance caused by youths, and for yet other target groups it is fire safety.

●●● In conclusion

All in all, the Council is of the opinion that the issue focussed on by community fire safety in respect of people's homes is less significant than is sometimes assumed. Furthermore, a lot can be gained by working more methodically and it would be wise to try and work together with other parties in the integrated safety policy. Some of these notes were also addressed

in the 'good discussion' summarised in chapter 9. 'Oh boy, does this mean we have to start doing everything differently?', is what someone ask halfway through this meeting. Well, the answer is both yes and no. It is the Council's opinion that the concept of community fire safety has been the start of an approach that definitely offers potential. It should be noted in this regard that there are insufficient indications that this will enable the overall fire risks for the public at large to be reduced significantly. We will have to disappoint anyone hoping that community fire safety will enable the number of fire stations to be reduced: we do not see anything that points in this direction. However, it is conceivable that the fire safety of small, distinctly defined, high-risk groups may improve due to a systematically implemented, target group- and problem-focussed approach. And it is also conceivable that an approach tailored to different stages in life (pupils and students, parents with young children, senior citizens) can contribute to what one might designate as general safety hygiene².

The Council therefore recommends continuing community fire safety, restricting ambitions in this respect to a moderate level, and greatly enhancing methodical working.

² An example of this is the promise implied by an initiative such as the RISK Factory.

The Council also suggests following a two-track policy in the foreseeable future, as also proposed in the 'good discussion'. The first track is continuing initiatives for community fire safety aimed at fires in the home, but then tailored more distinctly to high-risk groups and situations, and employing better substantiated interventions and good evaluations. The second track is plotting a strategy with the fire service as a collective in order to achieve that fire brigades will actually and permanently work methodically, from a learning attitude. A strategy that leads to a recalibration of community fire safety, enabling Community Fire Safety 2.0 to be initiated in a targeted manner. The Council hopes that this collection will make a constructive contribution to this.

Bibliography

Berry, G., Briggs, P., Erol, R. & van Staden, L. (2011). The Effectiveness of Partnership Working in a Crime and Disorder Context. Home Office Research Report 52, (November 2009). Retrieved from [http://www.safercommunitiesscotland.org/Documents/A Rapid Evidence Assessment \(2009\).](http://www.safercommunitiesscotland.org/Documents/A%20Rapid%20Evidence%20Assessment%20(2009).pdf)

Netherlands Fire Service (2010). De Brandweer over morgen. Strategische reis als basis voor vernieuwing. (The Fire service for tomorrow. A strategic journey as the basis for innovation.)

Eysink Smeets, M. (2015). De preventie- of participatieparadox (The Prevention or Participation Paradox). Paper for the 2015 annual congress of the Nederlandse Vereniging voor Criminologie (Netherlands Association for the Study of Crime). Leiden.

Frissen, P.H.A. (2013). De Fatale Staat. Over de politiek noodzakelijke verzoening met tragiek. (The Fatal State. About the reconciliation with tragedy that is necessary from a political view.) Van Gennepe Publishers.

Peeters, R. (2013). The Preventive Gaze: How Prevention Transforms Our Understanding of the State. The Hague: Eleven International Publishing.

Peeters, R. (2015). Het verlangen naar voorkomen. Hoe het preventieparadigma de overheid verandert. (The longing for prevention. How the prevention paradigm has changed the government.) Amsterdam: Uitgeverij Van Gennepe.

RemBrand project group. (2015). Brandveiligheid is coproductie. (Fire safety is a co-production.)

Sackett, D.L. (1997). Evidence-based medicine. *Seminars in Perinatology*, 21(1), 3–5. doi:[http://dx.doi.org/10.1016/S0146-0005\(97\)80013-4](http://dx.doi.org/10.1016/S0146-0005(97)80013-4).

Sackett, D.L. (2005). Evidence-based Medicine. In *Encyclopedia of Biostatistics*. John Wiley & Sons, Ltd. doi:10.1002/0470011815.b2a08019.

Smeijsters, H. (2009). Onderzoek in en door de praktijk en practice based evidence in de lerende organisatie Voorbeelden van onderzoek door kenniskringen van hogescholen. (Study in and by the field and practice-based evidence in learning organisations. Examples of studies by knowledge circles of universities of applied science.) *Thema*, 09(1), 4–13.

Vullings, E. & Veldhuis, G. (2015). Naar effectiever gebruik Brandweer data (Towards a more effective use of fire service data). TNO report.

Publication details

[Deze uitgave is een vertaling van de Nederlandse uitgave “Gedragsverandering voor brandveilig leven. Inzichten en aanbevelingen“.]

This collection was produced by the Scientific Research Council of the Netherlands Fire Service (Wetenschappelijke Raad Brandweer - WRB). The WRB contributes to the development of scientific knowledge about the configuration, the function, and the functioning of the fire service in a changing democratic society.

Editorial Board M. Eysink Smeets (Chair), M. van Duin, M. Heijman, N. Oberijé, H. Raasing, R. Postma
General Editor Renske Postma, Tekstbureau Met Andere Woorden
Design Carlo Polman, OudZuid Ontwerp media designers
Printed by GLD Grafimedia
Translation Esperanto WBT (arnhem@esperanto.nl)

This publication is to be cited as follows

Eysink Smeets, M., Heijman, M. & Postma, R. (editors) (2016) *Gedragsverandering voor brandveilig leven. Inzichten en aanbevelingen* (Behaviour change for community fire safety. Insights and recommendations). Scientific Research Council of the Netherlands Fire Service, the Netherlands Fire Service, Arnhem.

The Netherlands Fire Service
Kemperbergerweg 783
P.O. Box 7010
6801 HA Arnhem, the Netherlands
+31 (0) 26 355 2455
wetenschappelijkeraad@brandweernederland.nl
www.brandweernederland.nl







Scientific Research Council
of the Netherlands Fire Service



BRANDWEER
Nederland