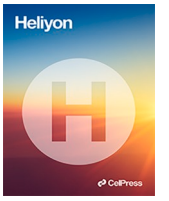
Heliyon 9 (2023) e18103

Contents lists available at ScienceDirect

Heliyon

journal homepage: www.cell.com/heliyon



Distraction in road traffic: How Czech media covers the issue

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ARTICLE INFO

Keywords:
Distraction
Inattention
Media
Crash
Traffic safety

ABSTRACT

Road users' inattention is one of the leading factors that contribute to crashes. It has been thoroughly researched from many perspectives, but there is limited information about the factors that influence risk perception and road users' attitudes. These factors are formed by personal and mediated experience, but education and public awareness play important roles. In this context, media seems to significantly influence risk perception and it may result in behavioural changes. This study aimed to review the coverage of driver inattention in the Czech media to analyse how it covers different types of inattention. Both quantitative and qualitative content analyses were conducted, and the sources of inattention mentioned in media reports were coded. We found the following: distraction is the most often reported inattention subtype; the media often communicates illegal behaviour, such as mobile phone handling; the preventive and educational potential of media coverage seems to not be fully utilized; and media reports are often focused on specific crashes, consequences, and immediate causes. Other risky aspects or inattention contributory factors tend to be neglected.

1. Introduction

Driver inattention is one of the leading factors that contribute to crashes [1–6]. Inattention is the failure to pay attention to relevant activities. Distraction is a subtype of inattention that has been defined as "diversion of the mind, attention, etc., from a particular object or course" [7]. Based on a comprehensive review of the literature, Regan et al. [7] provide a taxonomy for a framework for coding forms of driver inattention that contribute to crashes.

The issue of inattention and distraction has been thoroughly treated from many perspectives and by multiple methods, including in-depth crash analyses e.g. Refs. [6,8,9], observational studies e.g. Ref. [10], driving simulator studies e.g. Refs. [11–13], and naturalistic driving studies (e.g. Ref. [14]). Selected issues of inattention and distraction have also been the subjects of surveys that focused on the attitudes and opinions of road users, particularly the SARTRE and ESRA projects e.g. Refs. [15–19], but also many others e.g. Refs. [20,21].

Information about the attitudes and behaviour of road users is available. Their ratings for the riskiness of individual factors have been established. Nevertheless, there is limited information about how road users develop their attitudes and the influences upon their perception of the related risks. According to the ESRA 2 results [18], behaviour, attitudes, and risk perception differ regionally. Pires et al. [18] report that countries that apply restrictions for the use of hands-free devices have a lower prevalence of drivers who use a phone while driving, and countries whose populations spend more time on social media have higher percentages of drivers who declare that they text while driving. The survey also indicated that an increase in risk perception decreases the likelihood of using a

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https://doi.org/10.1016/j.heliyon.2023.e18103
Received 27 February 2023; Received in revised form 26 June 2023; Accepted 6 July 2023
Available online 7 July 2023

phone while driving [18]. Thus, risk perception plays a very important role in shaping road users' behaviour. It can be assumed that risk perception is formed not only by one's own experience and one's own mediated experience but also by education and public awareness [22]. In this context, media reports are important.

In this study, Czech media reports covering the issue of inattention in road traffic are analyzed. The aim was to find how and to what extent the media inform the public about distraction and inattention in traffic, and whether they make use of their potential to shape the risk perception of road users.

1.1. Background – coverage and influence of media reports

Mass media are a major source of information in advanced societies and as such, they have a significant impact on how people perceive social issues [23,24]. The media can thus have a relatively significant influence on citizens' attitudes and behaviour on health and safety issues. However, several studies e.g. Refs. [23,25–27] show that the media do not always fully use this potential or do not beneficially exert their influence. For instance, Frost et al. [28] point out that the media significantly misrepresents the prevalence of the leading causes of death and the related risk factors, which may contribute to distorted perceptions of health threats to the public. Another issue is the fact that the media only reach a certain part of the population. Not all population segments in terms of sex, education, and income have similar access to all information channels and sources, so also types of communication sources should be considered [29].

The relationship between the media representation of reality, as opposed to public attitudes and behaviour, is not straightforward enough for the media to immediately determine what people will think. However, according to the theory of agenda-setting, they can influence which topics will be important to the public [30]. In other words, if the media devotes a large amount of space to a certain risk, it may increase public concerns about that risk to a level that is disproportionate to its actual threat in the given environment. For example, Czech periodicals provided a massive amount of information about the Ebola epidemic and migration from Islamic countries, yet both of those issues only marginally affected the country [31]. According to McCombs [32], there is no discernible difference in the agenda-setting influence of various media. Kalvas and Kreidl [33] conclude that the media salience of an issue increases its perceived importance among the population. Their research included media homogeneity and the relative salience of an issue, among other aspects, but none of these induced an effect on the perceived importance of the issue, which supports the assumption that only the intensity of the media presentation influences the public perception of the topic.

Based on relevant theories (agenda-setting theory, cultivation theory, approach of cognitive psychology) and empirical findings, Rowe et al. [30] point out, in the study of hazard reporting and public risk perception, that public negativism is, to a large extent, the result of the amount of media coverage, regardless of whether the coverage itself is positive or negative. On the other hand, the method of information distribution used in the media often supports negativism. Several studies conclude that media reports misinterpret reality and thus encourage its negative public perception [23]. This phenomenon was well demonstrated in studies that dealt with the media coverage of traffic safety issues.

The most frequent topic of the relevant studies is the media representation of road crashes. The studies mostly conclude that the media, television, radio, newspapers, and the internet, present a distorted image. A study of the newspaper coverage of fatal crashes [25], which compared reports about crashes in four cities in 1999 against a comprehensive database, ascertained that only selected crashes received coverage. Newspapers were more inclined to cover the unrepresentative cases that allowed for a dramatic narrative and blame to be positively assigned to one of the participants. The newspaper articles did not reflect the real risk and resigned to preventive efforts (e.g., presentation of seat belts value). Crashes were reported as individual cases without a public health context. As concluded by Faus et al. [34], the effectiveness of reports is increased if preventive measures such as legislation or road safety education are included. The topic of thematic or episodic reporting was further elaborated upon in a study that included newspaper reports of motor-vehicle crashes with injuries from 1999 to 2002 [26]. Episodic framing was used in a majority of the reports. Newspapers were found to be insufficient sources to influence public perceptions and attitudes.

These conclusions correspond to the results of a later study of television reports of traffic crashes [23]. The study linked the prime-time news coverage of two Belgian television channels about traffic crashes in 2006–12 to the official injury crash database. It found that certain crash characteristics correlated with lower/higher probabilities of being reported in the news. These were, specifically, crash severity, time, location, types of involved road users, and the personal characteristics of the victims. The authors assume that "these biases in media reporting can create skewed perceptions in the general public about the prevalence of traffic crashes and eventually may influence people's behaviour" [23]. A study of a South African newspaper [35], which used discourse analysis, observed that reports took the form of stories with heroes, villains, and victims, and included calls for more evidence-based reporting of traffic crashes.

Daniels et al. [27] compared crash data from three sources (official crash data, data retrieved from an insurance company, and newspaper articles), with the purpose to define factors that influence the likelihood that the incident would be reported in the newspaper and official statistics. The media coverage rate was substantially higher for the most severe crashes. There was weaker reporting for crashes that occurred at night or on the weekend. This indicates that the written media has a structural bias in the processing of information for traffic crashes.

The role of the media in drivers' assessments of distraction was addressed in a study of driver attitudes toward safety issues [22]. The results indicated that the risks associated with distraction, specifically the use of smartphones, are significantly recognized by drivers than the limited visibility of pedestrians at night, and drivers do not compensate behaviourally for this limitation. The authors observed that the topic of visibility is also presented less often by the media as compared to distracted driving. It is therefore plausible

that road safety at night could be improved by increased public awareness through media coverage.

A specific issue was investigated by Macmillan et al. [24]: how has the media coverage of cyclist fatalities in London changed during a period when the prevalence of cycling has doubled. As a control group, the media coverage of motorcyclists' fatalities was used. During the study period, the annual number of cyclist fatalities remained stable, while the daily number of cycle trips almost doubled. This implies a reduced injury rate; nevertheless, the proportion of covered fatalities increased from 6% (1992–94) to 78% (2010–12). The coverage of motorcyclists' fatalities remained low. The authors considered that the change in coverage for cyclist fatalities was related to the fact that cycling had become more popular. They further pointed out that the vast coverage of fatalities had the potential to give the public the impression that cycling had become more dangerous, thus inhibiting the growth of cycling.

Newspaper representation of cycling safety was also explored in Queensland [36] in the context of new legislation to improve cycling conditions (1-m passing law). The study was aimed at the risks and crashes and the media portrayal of cyclists and cycling. The content analysis included articles about the new laws, cycling safety, road wars, road factors, crashes, and blame in 12 Queensland daily newspapers from April 2014 to January 2015. Results showed a very negative portrayal of the new laws and cyclists, namely in user-generated content (professional journalists were more even with their portrayals of the topic). The authors agree with Macmillan et al. [24] that this style of media coverage may dissuade potential cyclists.

Elderly drivers were the subject of an Australian study by Harkin et al. [37]. A content and discourse analysis of 11 metropolitan newspapers was carried out in three periods: 2010–14, 2016, and 2017. Similar to other studies, the results proved a relatively narrow range of covered information, thus the media made the unjustified impression that there was a shortcut between age and risk.

The studies mostly agreed that the media presentations of safety and public health issues are distorted, mostly due to bias in the choice of cases. The media does not reflect real risks and predominantly renounces educational and preventive efforts.

1.2. Summary

Inattention is widely described as a psychological problem. In recent years it has been widely studied with various methods, but there is still only a limited amount of information about the factors that influence road users' attitudes and risk perception. These factors could be, at least partly, formed by education and public awareness, where the media play an important role. Even though media influence has been proven, its potential is often not fully realized, and all of the factors related to the reported issues are often not represented.

To address the issue of the coverage of inattention in the Czech media, this study was designed to fulfil the following criteria:

- to analyse how the Czech media handle the issue of inattention and evaluate the extent to which they use their potential to shape public opinion and risk perception; and
- to conduct a comprehensive analysis of the coverage of inattention in media reports, also the factors that contribute to the inattention reported by the media were analysed in a frame of existing taxonomy.

2. Methods

This study consists of a content analysis of media reports in national Czech periodicals from 2016 to 20. The selected reports focused on inattention were subsequently subjected to qualitative content analysis and coded using the taxonomy of inattention designed by Regan et al. [7] and further modified.

The quantitative approach was chosen to help answer the question of to what extent and how the Czech media present the issue of distraction in road traffic. The analysis enabled the description of the basic framework in terms of the frequency of articles, their length, their focus, and their relation to accident data and ongoing traffic safety activities. The surveyed period was specifically chosen to reflect two ongoing national campaigns on distraction: "Death will answer you one day" (2016) and "Distraction kills" (2018).[1] Both campaigns were based on internet pages with crucial safety information, and motivational video clips available on YouTube.

Qualitative analysis using a modified taxonomy then provided more precise data on the reported subtypes of distraction and contributing factors. In this way, it was possible to identify gaps in public information and formulate recommendations for communication campaigns.

2.1. Media analysis

A quantitative media analysis was carried out on a sample of media reports that were collected in a retrospective search by a professional agency. The keywords were: distraction, inattention, attention, fatigue, mobile phone, smartphone, smartphone zombie, smombie, concentration, and earbuds/earphones.[2] The keywords could have been connected to the terms: crash, accident, pedestrian, cyclist, and driver.

The search included reports from 2016 to 20 on the internet, on the radio, on television, and in the written press (national dailies, including regional versions, and magazines). Professional journals were not included because they do not reach the average reader and

[1] In original Czech language – „Smrt ti jednou odpoví" a „Nepozornost zabíjí"

[2] In original (Czech) language – distrakce/rozptýlení pozornosti, nepozornost, pozornost, únava, mobilní telefon, smartphone – chytrý telefon, smartphone zombie, smombie, koncentrace, sluchátka.

their ability to influence the attitudes of the general public is very small.

Two phases of filtering provided a set of 543 relevant contributions from 10 sources. The oldest article was from 1 January 2016 and the most recent was from 24 September 2020. The file included reports about crashes where inattention played a role, reports on statistics, educational articles with preventive content, and articles that were otherwise related to the topic. The increasing importance of online sources at the expense of printed media was obvious: the percentage of internet reports grew from 54% in 2016 to 78% in 2020, while printed reports dropped from 38% to 13%. Radio reports represented 0–3% of the articles and television represented 8–16%, without any observable trend.

The set of articles was then analysed using SPSS statistics software for relevant characteristics of the reports. In addition to the basic parameters (i.e., publication date, word count), a distinction was made as to whether the article referred to a specific crash or otherwise; whether the distraction/inattention was further specified, and how; whether the content of the report was more factual or emotional; which group of road users was involved; what was the extent of the preventive content; whether there was a relation to the safety campaigns; and, in the cases of crash reports, the consequences. The results were also considered in the context of crash data.

2.2. Inattention taxonomy

Furthermore, a qualitative content analysis of the media reports was conducted. For analysis purposes, the taxonomy of driver inattention, which was developed by Regan et al. [7], was adopted to define whether all types of inattention were considered by the media reports. Subtypes of inattention were examined based on a comprehensive literature review. The taxonomy of driver inattention developed by Regan et al. [7] defines five subtypes of inattention: Restricted (DRA); Misprioritized (DMA); Neglected (DNA); Cursory (DCA); and Diverted Attention (distraction, DDA). Beanland et al. [8] and Wundersitz [9] modified the methodology based on their application of this taxonomy on crash data. They proposed a new category, Unspecified/Undifferentiated (U) for the cases where the classification was not apparent.

3. Results

3.1. Basic characteristics of media reports related to inattention

The number of relevant articles was relatively steady during the studied period (Table 2). The months with the highest frequency of reports were May, July, and August. This publication trend reflects the crash trend. The proportion of crashes where inattention to driving was identified as one of the main causes has remained invariable over the long term in the statistics (around 18% of all crashes, and 13% of fatal crashes). The frequency of inattention crashes in these years was also relatively steady. Monthly, we could see the growth from May to August, when the frequency of inattention crashes was higher compared to other crash causes (see Fig. 1).

The vast majority of reports (87.8%) concerned one specific crash (or multiple specific crashes in a short time interval). Other reports were statistics, overviews, information about surveys, information about new technologies, or articles dedicated to prevention.

Though all of the reports mentioned distraction or inattention as either the main cause for the crashes or as a road safety problem in general, 45.5% specified what is meant by inattention or what the supposed source for the distraction, is and what role it played in the reported crash. Other articles (54.5%) used distraction and inattention in vague statements without further explanation (e.g., “all it took was a moment of inattention”, “a moment of distraction was costly”). This approach seems to be a reflection of the above-mentioned official database: the term “distraction” may cover a wide range of activities or the fact that the immediate cause is currently unknown.

The specification of distraction was present in articles that did not refer to a specific crash and focused on education and prevention (see Table 3). Articles about prevention usually concentrated on one or more specific types of behaviour, while the crash reports referred to inattention and distraction in general.

The articles most often reported drivers’ distraction or inattention (91%). Distracted pedestrians appeared in 5.7% of the articles and cyclists in 1.7%. The remaining reports did not specify the actor. Pedestrians were more often the focus of prevention articles (12.1%) than crash reports (4.8%).

Only a minority of reports were explicitly connected to an educational campaign. One report mentioned the campaign “Death Will

Table 1
Definitions for the Taxonomy of Subtypes of Driver Inattention (adapted from Ref. [7] and modified based on [8,9]).

Subtype	Definition
DRA	The driver’s attention is limited or restricted by physical or biological factors (e.g., fatigue, microsleep, intoxication, medical blackout)
DMA	Insufficient or no attention is paid to activities that are critical for safe driving, which is the result of the driver focusing on a non-safety-related aspect of driving.
DNA	Insufficient or no attention is paid to activities that are critical for safe driving, which is the result of the driver’s neglect of these activities.
DCA	Insufficient or no attention is paid to activities that are critical for safe driving, which is the result of the driver giving cursory or hurried attention to critical safe-driving activities. For example, a hurried driver does not complete a full head check when merging and collides with another merging car.
DDA	The driver’s attention is diverted from activities critical for safe driving toward a competing activity (which is not relevant to safety). This is equivalent to driver distraction. This can be segmented as non-driving-related and driving-related, and internal and external (inside the vehicle, outside the vehicle)
U	The driver fails to attend to critical safe-driving activities, but it is unknown if the reason is DMA, DNA, or DCA.

Table 2
Media coverage of inattention, by year.

Year	Number of Articles	Percentage
2016	120	22.1
2017	95	17.5
2018	116	21.4
2019	114	21.0
2020	98	18.0

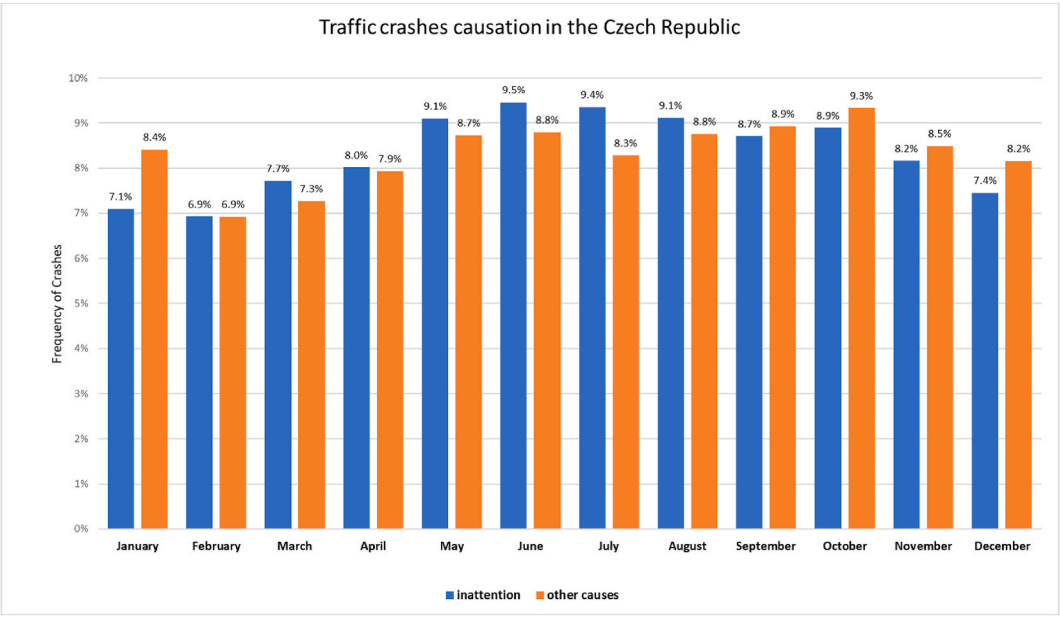

Fig. 1. Causes of Traffic Crashes in the Czech Republic, by Month, 2016–20 (source [51]). The length of the articles ranged from 11 to 1824 words. The median length of the articles was 148 words, while the first quartile had 98 words and the third quartile 225 words.

Table 3
Specification of distraction, by report type.

	Unspecified Distraction	Specified Distraction
Specific Crash	278 (58.3%)	199 (41.7%)
Statistics, Prevention, Education	18 (27.3%)	48 (72.7%)

Answer You One Day", and seven were related to the campaign "Distraction Kills". Ten reports referred to other campaigns, usually foreign.

The distribution of reports according to the consequences is strongly biased in favour of crashes with injury or death. While the proportion of these crashes was about 20% in the period under review (https://nehody.cdv.cz/), such crashes formed 71% of reports in media (see Table 4).

Most reports used a fact-based style (61.5%); 33% included emotive elements; and 5.5% can be characterised as highly emotional. Emotive elements were more present in crash reports (see Table 5).

Educational or preventive content was identified in only 26% of articles (see Table 6). Even though the realized media campaigns

Table 4
Reports by the crash consequences.

	Number of Cases	Percentage of 477 Reports Related to a Specific Crash
No Damage	4	0.8
Material Damage	123	25.8
Injury	266	55.8
Death	72	15.1
Not Stated	12	2.5

were related to only a small increase in the number of media reports focused on the topic of inattention, the content of articles differ concerning the realization of these campaigns. The highest proportion of articles that focused on prevention and education occurred in 2018 (19%), along with the campaign "Distraction Kills", and in 2016 (11.7%) with the campaign "Death Will Answer You One Day", though this campaign itself was only explicitly mentioned once in the reports.

Educational content was rare in crash reports (15.9%) and mostly as short remarks about the drivers' legal duties or responsibilities, with an occasional mention of the injured person's failure to wear a seatbelt. An exception in terms of educational content was the coverage of a fatal crash in 2017 where a young driver live-streamed her speeding; the camera then captured the subsequent crash and the painful death of the girl. This tragedy was widely publicised and detailed. These posts had substantial preventive content.

3.2. Qualitative content analysis of media reports: inattention taxonomy

The contributing factors described in the reports were coded using inattention taxonomy (see Table 1). In the reports where the contributing factors are described, there was often not enough detail to distinguish among the DMA/DCA/DNA categories. These contributing factors were coded as Unspecified (U). As shown in Table 7, the most frequent media reported about DDA, particularly about external sources of distraction.

The occurrence of various sources/manifestations of inattention is different for crash reports and educative articles. While in the articles about specific crashes, the incidence of smartphone use and phone calls was surprisingly low, these were the most frequent topic in educative and preventive articles (see Table 8).

4. Discussion

Current studies show that inattention contributes to a substantial number of crashes worldwide [1–5,8], including in Czechia [6]. The results of the ESRA project [18] indicate that Czech road users do not underestimate the issues of distraction, inattention, and fatigue behind the wheel and that risky behaviour that includes these issues is not broadly tolerated. But there are only limited data about the circumstances that influence the formation of those attitudes.

The media seems to have an important role, given that risk perception is at least partially formed by education and public awareness [22]. The intensity of media coverage for a certain issue has been proven to seed its perceived importance among the public [33]. Some of the previous research papers observed that media coverage can increase public awareness [38,39] and may result in behavioural change [40]. This study aimed to review the media coverage of inattention in road traffic and to analyse how the Czech media use their potential to shape public opinion and risk perception.

Inattention or distracted driving, as defined by the relevant Czech legislation, covers a broad range of activities. System-based countermeasures require wider characteristics of factors, which contribute to inattention. To analyse how the media cover different types of inattention, the sources were identified in media reports and coded using the Regan et al. [7] taxonomy, which was adapted based on real-word crash information by Beanland et al. [8] and Wundersitz [9]. The sources/manifestations of inattention were coded with five basic inattention subtypes: Restricted (DRA), Misprioritized (DMA), Neglected (DNA), Cursory (DCA), and Diverted Attention (DDA). Many reports simply stated that the driver failed to detect an input, which was not enough to accurately code the contributory factors. A similar problem was reported by both Beanland et al. [8] and Wundersitz [9] when using real-world crash data. Therefore, an additional category was created for undifferentiated factors. These cases involved factors that were described as overlooking or disregarding the surroundings without further specification. Behaviours classified as DDA were further categorised as driving-related/non-driving-related, internal/external. Unlike previous studies, the analysis was focused on all road users.

The most often reported subtype of inattention was DDA. It was described in previous in-depth crash studies, such as [8,9], as the most frequent cause. The percentage of reported DDA in the Czech media was significantly higher, but previous in-depth studies considered only serious/fatal crashes. Consistent with previous in-depth crash studies, in-vehicle distraction was the most common. Klauer et al. [2] concluded that distraction that requires a glance shift away from the roadway is more hazardous in comparison with cognitive distraction.

One of the most frequently reported types of inattention was restricted attention due to fatigue/sleepiness and non-driving-related distractions, mainly mobile phone use (e.g., phone calls, texting, and usage of social networks). These findings are consistent with the concept of attitude surveys. The ESRA questions mostly focused on these subtypes of inattention. Road users assumed that relatively high crash potential was associated with distracted driving and fatigue. Data acquired in 2018 show that road users' estimation of fatigue as a frequent crash cause was the highest in Czechia among European countries [41]. Plus, more Czechs considered inattentiveness/daydreaming to cause crashes than speeding. In 2016–18, an increase was observed among Czech respondents in the percentage of road users that did not accept using a hand-free mobile phone while driving (Czech national ESRA datasets, 2016 and 2018).

Another frequently reported source of distraction was manipulation with in-vehicle technologies. Vehicles, in general, are

Table 5
Emotional content.

	Factual Report	Emotive Elements	Strong Emotional Depiction
Specific Crash	285 (59.7%)	162 (34.0%)	30 (6.3%)
Statistics, Prevention, Education	49 (74.2%)	17 (25.8%)	0 (0.0%)

Table 6
Educational and preventive content.

Educational or Preventive Content	Number of Cases	% of All Articles
None	402	74.0
Informative or Educational Remarks	55	10.1
Substantial Educational and Preventive Content	27	5.0
Article Focused on Prevention and Education	59	10.9

Table 7
Reports by subtype of distraction.

Subtype of Distraction		Source or Manifestation of Distraction	Number of Cases	% Within Category
DRA: Restricted Attention	48 (19.4%)	Alcohol	10	20.8%
		Fatigue	19	39.6%
		Microsleep	7	14.6%
		Overlook due to Sun glare	6	12.5%
		Limited hearing due to earbuds	2	4.2%
		Limited vision due to weather	2	4.2%
		Health problem	2	4.2%
DMA: Misprioritized Attention	13 (5.3%)	Overlooking an object due to concentration on vehicle manoeuvring	13	100%
DNA: Neglected Attention	22 (8.9%)	Overlook due to neglect	1	4.5%
		Hastiness, failing to look around (pedestrians)	21	95.5%
DCA: Cursory Attention	11 (4.5%)	Overlook due to failing to complete full head check	11	100%
DDA: Diverted Attention	*118*			
DDA: Driving-related, External	7 (2.8%)	Handling equipment in a vehicle (e.g., mirror)	7	100%
DDA: Non-driving-related, Internal	15 (6.1%)	Sexual activity	1	6.7%
		Abstractedness, forgetfulness	14	93.3%
DDA: Non-driving-related, External	96 (38.9%)	Phone call (using either hand free or handheld, receiving a call, making a call, being disturbed by ringing)	22	22.9%
		Smartphone use (texting, social networks, recording or watching a video)	12	12.5%
		Tuning music in headphones	1	1.0%
		Manipulation with in-vehicle technologies (e.g., radio, navigation)	15	15.6%
		Picking up, catching, and placing objects	13	13.5%
		Paying attention to a child (ren) in vehicle	7	7.3%
		Paying attention to a pet in a vehicle	7	7.3%
		Repelling insects	3	3.1%
		Watching things or actions outside	11	11.5%
		Communication with passengers	2	2.1%
		Eating, drinking	2	2.1%
		Smoking	1	1.0%
U: Unspecified	35 (14.2%)	Overlook without an explicit source	18	51.4%
		More sources of distraction	14	40.0%
		Ignoring the surroundings	3	8.6%
Total	247			

Table 8
Sources of distraction, by report type.

Unspecified Distraction	Specific Crash			Statistics, Prevention, Education		
	278 (58.3%)			18 (27.3%)		
		% of all	% of specified		% of all	% of specified
Phone Call	8	1.7%	4.0%	14	21.2%	29.2%
Smartphone Activities	4	0.8%	2.0%	8	12.1%	16.7%
In-car Technologies	13	2.7%	6.5%	2	3.0%	4.2%
Earbuds, Headphones	3	0.6%	1.5%	0	0.0%	0.0%
Fatigue	20	4.2%	10.1%	6	9.1%	12.5%
Disregard	48	10.1%	24.1%	1	1.5%	2.1%
Other	103	21.6%	51.8%	17	25.8%	35.4%

increasingly equipped with various electronic systems. There has also been growing concern about the safety implications of using these technologies while driving. Young et al. [42] concluded from a literature review that numerous studies provide evidence that interacting with in-vehicle devices impairs driving performance, including the driver's ability to maintain speed, throttle control, and lateral position on the road. It can also impair the driver's visual search patterns, reaction times, and decision-making processes, and

increase the risk of being involved in a collision.

The media coverage analysis shows that crash causation reports mentioned phone calls most frequently. Phone calls are also frequently studied by simulated and naturalistic driving studies [43–46], although these studies face validity limitations [11] because the simulation of a real phone call environment is controversial due to the related emotional state and the unique individual conditions that create different levels of engagement within the conversation.

A high number of reports described non-technology-based inattention (including non-technology-based distractions). Reports also focused on driver-restricted attention that included a variety of factors that were not only technology-based distractions (e.g., attention focused on a child/pet, picking up an object). The influence of factors such as stress, emotion, fatigue, and internal mental or physical states may have manifested for a long time and then fluctuate during driving. These types of inattention are difficult to accurately detail [7]; therefore, they are not often readily identifiable from the usual data sources, which could indicate that they form an even higher proportion within the crash databases. As stated by Wundersitz [9], system-wide solutions aimed to mitigate or prevent inattention crashes include, among others, interventions for communicating the risks associated with the most common inattention causes. These types of inattention are also not enforceable or illegal. The repression is, thus, ineffective as a countermeasure in this case and attention should be focused mainly on education and interventions that communicate the risks. This is where the media can play an important role. However, if we compare the topics mentioned in the media concerning crash causes and within the framework of education and prevention, it is evident that when it comes to education and prevention, the topic of inattention is either unspecific or focused on demonstrably illegal distraction, such as the handling of a mobile phone.

Even though overlook is one of the most frequently reported inattention subtypes, the reports often do not provide any other details about the inattention contributory factors or the course of the crash. Some of the overlook crashes were not possible to further categorize and they were classified as U (unspecified). This gap could be seen in the underestimation of the problems related to the types of inattention such as Misprioritized Attention, Neglected Attention, or Cursory Attention. The factors contributing to inattention are not in the focus of the media or the causes are only briefly reported.

4.1. Study limitations

This study faces several limitations:

The media reports (especially the reports focused on specific crashes) do not often provide enough information about all the contributing factors. Some of the crash causation had to be classified as unspecified. A similar problem was described in previous studies that used in-depth crash data. The identification of inattention as the main crash cause belongs to the general problems – evidence is often based on subjective participants or witness statements; objective evidence is rarely available. In some specific cases, there are useable operational criteria, such as the manoeuvring of the vehicle before a crash or the driver's condition (especially in the case of fatigue). Despite this, it is possible that illegal distracting behaviours, such as phone use, are still underreported. Alternatively, it is liable that some of the crashes attributed to unspecified inattention were more likely due to certain external factors that were unknown when the report was written.

Another limitation can be seen in the selection of media reports. Based on the literature review, selected keywords were defined, and they were used for the retrospective media analysis. The analysis was limited to articles created by professional journalists and did not include user-generated content (i.e., reader comments and discussions, social media), which seems to have an increasingly significant impact on public opinion. Thus, this media analysis does not necessarily cover the whole range of relevant sources connected to this topic.

4.2. Recommendations for communication campaigns

For communication campaigns, not only design and strategy are crucial but also conveyed the message. Considering that diverted attention is also mentioned in in-depth studies as the most frequent cause of inattention leading to fatal crashes, it is advisable to continue emphasizing this type of inattention in communication campaigns. The highest emphasis should be given to the riskiest activities leading to the increased probability of serious crashes – these include activities that require taking eyes off-road [2], often associated with handling a mobile phone (social media, texting, etc.). It is advisable to highlight not only the use of a mobile phone but also other non-driving related activities (interaction with in-vehicle technologies). Emphasizing leading causes of death is necessary to avoid a distorted public perception of health threats [23,28,30,33].

Even though activities which do not require gaze shifts are less dangerous, they should also be subjected to the media interest. Even a phone call could affect attention, especially if requires high cognitive demand or is emotional [47]. An often-neglected topic of prevention campaigns is internal non-driving-related activities. As described by Mikoski et al. [22], risks associated with distraction are significantly recognized by drivers. The risks which are not often reported and connected with the crash risk do not force road users to compensate behaviourally for this limitation. The communication campaigns should reflect real risk [25].

The role of the media (educational and communicative campaigns) is particularly important where repression is ineffective. Concerning inattention, repression is ineffective if inattention is risky but realized activities are not directly illegal. Nowadays, the media also often neglect other types of inattention. As it follows from the crash reports in the Czech media, crashes are often caused by overlook, which can arise as a result of misprioritized attention, neglected attention, or cursory attention. The report itself could have a positive effect (attract attention, inform about the topic), but effectiveness is increased if also preventive measures (legislation, educational content) are included [34].

The unrepresentative cases that allowed for a dramatic narrative are often at the centre of media interest. Future research activities

should be focused not only on media coverage of inattention but also on the analysis of the representativeness of defined inattention subtypes in media concerning the crash causes, especially crashes with serious consequences. Targeting is also an important element of an effective campaign. Aimed to define risk aspects that should be the subject of communication campaigns, these causes should therefore be analysed regarding age, gender, education, etc. It is also important to consider local characteristics.

5. Conclusion

This study demonstrated that inattention is a serious road safety problem and that the media plays an important role in the related risk perception and public awareness. Inattention is often mentioned in the media, especially in reports about crashes. The preventive and educational potential seems to not be fully utilized. Media reports are rather often focused on who is to blame in the legal sense and the consequences, rather than the factors that contributed to the crash [48–50]. Mainly illegal behaviour such as mobile phone handling is communicated. The other risky aspects related to inattention tend to be neglected.

Author contribution statement

Pavlína Skládaná, Kateřina Bucsuházy: conceived and designed the experiments; performed the experiments; analysed and interpreted the data; contributed reagents, materials, analysis tools or data; wrote the paper.

Data availability statement

Data included in article/supplementary material/referenced in article.

Additional information

No additional information is available for this paper.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper

Acknowledgements

This paper was produced with the financial support of the Ministry of Transport (Czechia), within the program of the long-term conceptual development of research institutes.

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