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Research article

Language Matters: An Experimental Study of Language Patterns' Effects on Traffic Safety Perceptions in Germany

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Traffic crashes claim over 1.19 million lives globally each year, yet public support for proven safety measures remains limited. Research suggests that media language patterns may influence public perceptions of traffic violence and policy preferences. This study replicates Goddard et al.'s (2019) experimental design study in the German context, examining how editorial patterns in crash reporting affect responsibility attribution, penalty preferences, and policy support. Using a randomized controlled experiment (N = 1,537), participants read one of three versions of a fictitious news article: status-quo language reflecting common German reporting patterns, agent-focused language avoiding victim-blaming formulations, or agent-focused plus contextual information. Results show that shifting from victim-focused to agent-focused language substantially reduced pedestrian responsibility attribution (from 48.9% to 44.4%) and increased responsibility attributed to the driver (from 43.5% to 48.1%). Adding contextual information enlarged these effects, with driver responsibility attribution reaching 54.8% and pedestrian responsibility attribution dropping to 33.2%. Contextual framing also increased support for structural interventions and reduced support for campaigns appealing to individual behavior. These findings confirm that language patterns in German road traffic collision reporting—including metonymy, passive voice, reflexive verbs, and the lack of context information—systematically shift perceived responsibility toward vulnerable road users. The study demonstrates that more precise language in traffic reporting can increase public support for evidence-based safety policies, suggesting an ethical imperative for improved editorial practices.

1. Introduction

Worldwide, traffic crashes claim approximately 1.19 million lives annually, and are the leading cause of death for children and young people aged 5 to 29 years (WHO, 2023). In Germany, 2,839 people were killed, and 366,557 injured in traffic crashes in 2023 (DESTATIS, 2024). While overall traffic fatalities in Germany have been declining, deaths among cyclists have been rising, highlighting a troubling trend (European Commission, 2024).

The persistently high rates of traffic-related deaths and injuries point to deeply rooted structural challenges. These include policy shortcomings, insufficient urban planning for safe mobility, and a cultural acceptance of risk in traffic. Despite the significant human cost, public outcry regarding traffic violence remains sporadic and short-lived. Proven measures to improve traffic safety, such as infrastructural changes or speed-limit reductions, often encounter intense opposition (Bauernschuster & Traxler, 2021; von Schneidemesser & Kirby, 2024).

Research suggests that the framing of policies plays a critical role in shaping public support for safer mobility infrastructure (Andert & Nagel, 2024). Furthermore, there is evidence that the way traffic violence is reported may influence trends in injuries and fatalities (Goddard et al., 2019). While numerous recent studies have documented how language is used in reporting on traffic violence (Keliikoa et al., 2022; Ralph et al., 2019; te Brömmelstroet, 2020; von Schneidemesser et al., 2025), the present study offers insight into how language patterns affect the perception of those confronted with them.

To do this, we followed Goddard et al.'s (2019) approach and carried out an experimental study, adjusting the content for the German language context. Our research questions are based on those of Goddard et al. (2019) in their study from the United States, namely:

1. Do linguistic and editorial patterns affect how readers apportion blame for a traffic crash?
2. Do editorial and linguistic patterns affect what penalty readers think is appropriate, and/or how severe that penalty should be?
3. Do editorial patterns influence readers' support for various solutions for improving road safety?

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Following the original English language study, we created three different versions of a fictitious news article covering a traffic crash. The first version (v1) reflected closely the status quo of newspaper coverage of traffic crashes, based on recent research on these (von Schneidemesser et al., 2025). The subsequent two versions incorporated more precise descriptions of the crash (v2) as well as contextual information on traffic crashes, their causes and frequency (v3). Respondents were randomly given one of the three article versions to read before answering questions on apportioning blame, gauging a penalty, and assessing preventative measures to increase traffic safety.

1.1. Media Effects and the Portrayal of Collisions

Research on media effects has demonstrated that framing issues as isolated events – i.e. without contextualizing them within broader patterns – predisposes readers to attribute responsibility at the individual level rather than the structural level. Iyengar (1994, 1996) argues that news coverage presented as individual events rather than within a larger social context leads audiences to explain social problems through personal responsibility rather than systemic factors (cited in Semetko & Valkenburg, 2000, p. 96)

The portrayal of traffic crashes as isolated incidents – rather than as part of a systemic public health issue – has been well documented in Anglophone and Dutch-speaking countries (Connor & Wesolowski, 2004; Keliikoa et al., 2022; Ralph et al., 2019; Scheffels et al., 2019; te Brömmelstroet, 2020). Increasing evidence suggests that this pattern is also present in German-language media (Nacken, 2024; Nordhoff, 2023; Paeth, 2021; von Schneidemesser et al., 2025). Omitting contextual factors such as crash statistics reduces salience (Entman, 1993, p. 52), reinforcing the misconception that traffic collisions are unpredictable accidents rather than expected and preventable events.

Chong & Druckmann (2007) have pointed out that framing effects in media shape public perceptions by making certain interpretations more salient and thus more cognitively available to readers (see also: Lee et al., 2008, p. 696). Goddard et al. (2019) have demonstrated that when traffic crashes are framed as part of a systemic pattern of traffic violence, public support for preventive measures increased. However, it remains unclear to what extent this effect applies to crash reporting in other languages.

1.2. Language patterns portraying traffic violence as inevitable and isolated events and shifting responsibility

Stemming from an interdisciplinary research group on language, mobility, and public space, we identified several language patterns in German news coverage of traffic crashes that frame traffic violence as inevitable, and subtle patterns that exonerate motor vehicle drivers and shift responsibility toward users of active transport (like walking and cycling).

1.2.1. Accident vs. Collision

The most widely used term for referring to a traffic crash in German news coverage is *Unfall* (accident). It was found to be used in 80% of articles describing crashes involving motor vehicle drivers and active travel road users (von Schneidemesser et al., 2025). The German word *Unfall* itself suggests that the event referred to is an unwanted, unexpected and inevitable incident, an unfortunate destiny against which individuals and society are powerless. Furthermore the word-stem *-fall* grammatically refers to the intransitive verb *fallen*, which does not take a direct object. As such it does not require naming actors in the description of the incident and strengthens the perception of inevitability: the *Unfall* 'just happens' (von Schneidemesser & Caviola, 2024). In contrast, using a word like *Kollision* (Collision) more strongly prompts readers to ask who collided with whom. Thus, the use of the term *Unfall* is an aspect of framing traffic violence in a way that may lead readers to oppose preventative measures, as traffic violence is portrayed as inevitable.

Though the German word *Unfall* has different semantic associations than its English counterpart, there may be parallels to the English word *accident,* which is similarly dominant in descriptions of traffic violence (Ralph et al., 2019). Institutions such as the *Associated Press* and *The British Medical Journal* have cautioned against using *accident* because of its connotations of unpredictability and inevitability (Dalton, 2018; Davis & Pless, 2001). (We note, however, that research on the English term *accident* presents a more nuanced picture, suggesting that specifically perceptions of preventability may not be as strongly influenced by the term as institutional guidance suggests (Girasek, 1999).)

1.2.2. Metonymy

Metonymy is the substitution of a word with something associated with it. For example, referring to *the press* instead of *journalists*. According to van Leeuwen (1996, 2008), this results in partial exclusion. In the sentence "A pedestrian was hit by a car" the metonymy excludes an actor through a depersonalizing semantic shift, letting the object, the vehicle, stand for the person driving it. This rhetorical elimination of the drivers obscures their role in the incident, shifting the focus elsewhere. In this way, metonymy shifts agency and responsibility for actions away from agentive actors (Reisigl, 2006, pp. 602–603; Reisigl & Wodak, 2001, pp. 57–58).

Ralph et al. (2019) and te Brömmelstroet (2020) found metonymies in the majority of traffic collision reports in US and Dutch reporting, respectively. Feyver & Aldred (2022) contributed evidence of the same phenomenon in UK crash reporting. In German-language crash reporting, von Schneidemesser et al. (2025) found that metonymies replaced drivers with vehicles in two thirds of newspaper crash reporting.

1.2.3. Passive formulations

Passive formulations can serve to both shift responsibility attribution as well as obscure the causes of collisions by implying inevitability. Using the passive voice together with a prepositional phrase pushes the agent into the background and shifts the focus of a sentence onto the object. For example, in the sentence "A cyclist was hit by a driver," the cyclist has become the focus of the sentence. This would not happen with an active formulation, e.g. "A driver hit a cyclist." Hodge & Kress (1993) lay out three effects of this type of passive formulation: "(a) The theme of the sentence (what is it about) changes from actor to affected […]. (b) The link between actor and process is weakened, that is, the causal connection is syntactically looser […]. (c) The process, because it is completed, becomes more like an adjective, a state" (p. 26). The effect of this is that readers attribute more responsibility to the person who is the focus, the theme, in the sentence, most often, the victim (Niemi & Young, 2016; cited in Ralph et al., 2019, p. 2).

In their research on reporting on traffic violence, Scheffels et al. (2019) suggest that using passive formulations obscures responsibility. Studies on US and Dutch reporting show that the majority of articles use passive formulations to describe collisions (Ralph et al., 2019; te Brömmelstroet, 2020). The analysis of German-language crash reporting found passive verb formulations in 69% of the articles (von Schneidemesser et al., 2025).

1.2.4. Abstract Verbs

In German, specific formulations, such as *es kam zu* (it came to [a collision], or *ein Unfall geschah* (a collision occurred) obscure the perception of responsibility because of the use of abstract verbs. Here, the inevitability of a collision is strengthened, because the causes are blended out. In addition, the empty pronoun "it" leaves the causes unmentioned rather than alluding to traffic participants or an unsafe traffic situation that (helped to) cause the collision.

1.2.5. Reflexive Verbs in Collision Descriptions

In German, reflexive verbs (e.g.: "the pedestrian injured himself") can have a similar obscuring function as the passive voice in that they shift responsibility away from agentive actors. First, the actors that may have caused a collision are suppressed, they vanish from the sentence. Second, the theme of the sentence shifts from actor to victim, and this in a two-fold way. As demonstrated in our example above, the pedestrian has become the theme of the sentence, and on top of this, he is referenced again through the reflexive pronoun (himself) suggesting that he inflicts harm on himself. This procedure shifts the perception of responsibility to victims, and shields other actors that may otherwise bear clear responsibility.

The use of reflexive verbs in describing collisions is uniquely prominent in German when compared to English. In both languages, self-inflicted injuries are commonly described with reflexive verbs ("She cut herself while cooking."), but in German, it is also used in describing collisions, as in "After being hit by a car, she fell and hurt herself." In this example, it becomes clear how the causal link is weakened, as "hit by a car" and "she…hurt herself" are syntactically separated, with the reflexive as the independent clause. Additionally, the temporal marker "after" indicates sequence, which encourages a further separation of the cause and effect. In German collision reporting, the reflexive verb phenomenon is not a trivial matter: in a recent study, it was found in one in five articles (von Schneidemesser et al., 2025).

1.2.6. Naturalizing Human Action

There are certain verbs used in descriptions of traffic crashes that downplay the intensity of the actions. For example, *erfassen* is a verb that can encompass a wide range of meanings including *to register, to document,* or *to grab.* The verb stem *fassen* literally means to touch or grasp with hands. In a metaphorical expansion of this sense, it is also frequently used to describe the "grasping" impact of a vehicle on a person in German media (von Schneidemesser et al., 2025). Analogous uses include the impact natural disasters such as avalanches, thunderstorms and waves have "grasping" their victims, thus drawing a parallel between traffic violence and natural disasters and thereby suggesting inevitability. While it is often described that vehicles *erfassen* pedestrians or cyclists, it is almost never used the other way around.

1.2.7. Exonerating Descriptions

"Looked-but-failed-to-see-errors" are documented danger, occurring when a road user has another road user in her field of vision, but fails to perceive them. Research suggests that drivers do not perceive cyclists as readily as they do other drivers (Herslund & Jørgensen, 2003; Kaya, 2019).

Researchers investigating causalities descriptions in German news coverage of traffic collisions found that exonerating causal attributions are more often attributed to drivers, while pedestrians and cyclists are burdened with causal attributions (Nacken, 2024, p. 93; von Schneidemesser et al., 2025). The most common exonerating causal attribution was *didn't see,* or *overlooked,* where the reason mentioned in the news article was that an actor involved in the crash simply failed to see another road user (von Schneidemesser et al., 2025). While the majority of news articles appear before any legal proceedings determine causes, in this case the driver's personal perspective is reported as a seemingly objective fact. More objectively, however, it would have to be communicated in reported speech: "The driver declared that he had not seen the cyclist." – or completely omitted.

The widespread use of the aforementioned language patterns has been documented by various scholars in recent years (Nacken, 2024; Nordhoff, 2023; Paeth, 2021; von Schneidemesser et al., 2025). Yet, their effects on public perception of traffic violence for the German language realm have thus far not been investigated, as has been done in English by Goddard et al. (2019). The present study fills that gap.

Following Goddard et al. (2019), we ask how the use of language and information selection affect reader perceptions of traffic collisions. Doing so, we especially focus on the attribution of responsibility, the perception of appropriate penalties, and positioning on solutions or policy responses.

2. Methods

2.1. Survey Participants

Following Goddard et al. (2019), we developed a survey with three experimental conditions to test the effects of minor changes in formulations on reader' perceptions. 1537 participants were recruited using the firm Bilendi, an established source for market and academic research. Participants received a small financial incentive (of one Euro) to take part in the survey. The participants were recruited to be representative of the German population according to Age, Gender, Income, and regional distribution.

2.2. Survey in experimental setting

For the survey we created three different versions of a fictitious news article. In doing this, we relied on previous linguistic analyses (Caviola & Sedlaczek, 2020, 2025; von Schneidemesser & Caviola, 2024) and integrated them with the studies that document the extent to which the language patterns mentioned above contribute to shifting responsibilities in the German coverage of traffic collisions (Nacken, 2024; Nordhoff, 2023; Paeth, 2021; von Schneidemesser et al., 2025). In formulating the three versions, we followed Goddard et al's (2019) model and adapted it to the German language and its context. For the status-quo article (v1), common formulations occurring in newspaper articles describing traffic collisions were used, relying on the insights from previous research (von Schneidemesser et al., 2025). For the agent-focused article v2, we changed formulations to active verbs, used *Kollision* (collision) instead of *Unfall* (accident), mentioned the actor instead of using metonymy, and avoided reflexive verb use as well as the verb "*erfassen*" (see above) in the title. The agent-focused + context article (v3) included the changes from v1 to v2, as well as context information about the traffic situation and infrastructure at the location of the collision, and avoided the exonerative "didn't see" claim.

The three versions are shown in table 1. The changes from v1 to v2 and v3 mirror recommendations from a recent German-language guideline on language use in covering traffic collisions. These recommendations are addressed to police communicators and journalists and were elaborated in a transdisciplinary process including researchers (linguists and political scientists), city planners, police officers and journalists (Caviola et al., 2025).

Participants were divided into three nearly equal groups (in terms of size and representativeness of the total population). Each group was given a different version of the article to read, before answering a set of questions. Participants were unaware of the parallel groups and different versions of the article. They were instructed to answer seven survey questions after reading the texts.

2.3. Survey Questions

2.3.1. Responsibility attribution

Participants were asked „To what extent are the involved parties responsible for the accident?" They could attribute responsibility to the pedestrian, the driver, or "other," by indicating a percentage. Responses were required to add up to 100%. If more than 0% was attributed to "other," a follow-up question asked them to explain what is meant by "other."

2.3.2. Penalty selection and severity

The next question told participants to imagine that the driver is sentenced in court with a penalty in connection with the accident. Then they should indicate which penalties they deemed appropriate from the list of penalties in Table 2. If the penalty could be quantified and the participant indicated it as one of those deemed appropriate, a follow-up question inquired as to the severity of the penalty. For this, respondents were prompted with: "assuming the court sentenced the driver to [penalty], ..." (see Table 2 2nd column).

2.3.3. Preferred policy responses

The next question told respondents that due to the high rate of collisions on the street, the city is considering options to increase traffic safety. Respondents were asked to imagine that they regularly use the street in question, and asked to indicate on a 5-point Likert scale the extent to which they would support the three responses in table 3.

The subsequent question asked respondents to advise the city on a project in a different city street. It said that the city is considering two options for the reconstruction of the street, both of which include a single lane for motor traffic in each direction and can accommodate the same traffic volumes. Respondents were asked which of the two options (described in Table 4) they would suggest to the city.

2.3.4. Political and mobility preferences

The final two questions asked respondents about their transport mode use and political orientation. To get closer to the perspective that a respondent might have as regards transport mode, they were asked to indicate how often they use different transport modes (car, passenger in car, walking, cycling, transit) in a typical week.

Further, respondents were asked which party they would vote for, if elections would be held in their municipality that week.

2.4. Statistical Testing

To confirm that our random assignment created comparable groups that differed primarily in which version of the article they read (rather than in baseline characteris-

Table 1. Three versions of fictitious news article. German original above, English translation below

Article v1: Status-Quo	Article v2: Agent-Focused	Article v3: Agent-Focused + Context
UNFALL **Fußgänger von Auto erfasst** – tot Am Donnerstag **kam es auf der Talstraße zu einem tödlichen Unfall.** Ein Fußgänger wurde von einem Auto tödlich verletzt. Der Mann befand sich aus noch unbekannten Gründen auf der Fahrbahn, als er von **einem Auto**, das in Richtung Stadt fuhr, **erfasst wurde. Er kam hierbei zu Fall und zog sich schwere Verletzungen zu**. Nach medizinischer Erstversorgung an der Unfallstelle wurde der Mann von Rettungskräften ins Krankenhaus gebracht, wo er seinen schweren Verletzungen erlag. Der Autofahrer ist mit einem Schock in eine Klinik gekommen. Nach ersten Erkenntnissen hatte er den Fußgänger übersehen.	**KOLLISION** **Autofahrer fährt Fußgänger an – tot** Am Donnerstag **fuhr ein Autofahrer auf der Talstraße einen Fußgänger an und verletzte ihn dabei tödlich. Der Autofahrer** fuhr in Richtung Stadt, als er den Fußgänger, der **sich aus noch unbekannten Gründen auf der Fahrbahn befand**, **mit seinem Auto erfasste. Die Wucht des Aufpralls schleuderte den Mann zu Boden und verletzte ihn schwer.** Nach medizinischer Erstversorgung an der Unfallstelle wurde der Mann von Rettungskräften ins Krankenhaus gebracht, wo er seinen schweren Verletzungen erlag. Der Autofahrer ist mit einem Schock in eine Klinik gekommen. **Nach ersten Erkenntnissen hatte er den Fußgänger übersehen.**	**KOLLISION** **Autofahrer fährt Fußgänger an – schon fünf getötete Fußgänger in diesem Jahr** Am Donnerstag fuhr ein Autofahrer auf der Talstraße einen Fußgänger an und verletzte ihn dabei tödlich. Der Autofahrer fuhr in Richtung Stadt, als er mit seinem Auto auf den Fußgänger prallte, der **die Talstraße zwischen einer Bushaltestelle und einer Apotheke überquerte**. Die Wucht des Aufpralls schleuderte den Mann zu Boden und verletzte ihn schwer. Nach medizinischer Erstversorgung an der Unfallstelle wurde der Mann von Rettungskräften ins Krankenhaus gebracht, wo er seinen schweren Verletzungen erlag. Der Autofahrer ist mit einem Schock in eine Klinik gekommen. **Immer wieder werden Fußgänger in der Talstraße angefahren. Im gesamten Stadtgebiet sind in diesem Jahr bereits fünf Fußgänger im Straßenverkehr getötet worden. Laut Verkehrsstatistik wurden 2022 in Deutschland im Straßenverkehr 2.788 Menschen getötet, davon 368 Fußgängerinnen und Fußgänger. Am Unfallort sind keine Fußgängerüberwege vorhanden. Außerdem zeigen Messungen der Polizei, dass Autofahrende das Tempolimit von 50 km/h häufig überschreiten.**

English Translation:

Article v1: Status-Quo	Article v2: Agent-Focused	Article v3: Agent-Focused + Context
ACCIDENT **Pedestrian hit by car** – dead On Thursday, **a fatal accident occurred on Talstraße**. **A pedestrian was fatally injured by a car**. **The man was on the roadway for as yet unknown reasons** when **he was hit by a car** driving toward the city. **He fell and got himself severe injuries**. After initial medical treatment at the accident site, the man was taken to the hospital by emergency services, where he succumbed to his severe injuries. The driver was taken to a clinic in shock. According to initial findings, he had overlooked the pedestrian.	**COLLISION** **Driver hits pedestrian – dead** On Thursday, **a driver hit a pedestrian on Talstraße and fatally injured him. The driver** was driving toward the city when **he hit the pedestrian, who was on the roadway for as yet unknown reasons, with his car**. **The force of the impact threw the man to the ground and injured him severely**. After initial medical treatment at the accident site, the man was taken to the hospital by emergency services, where he succumbed to his severe injuries. The driver was taken to a clinic in shock. **According to initial findings, he had overlooked the pedestrian.**	**COLLISION** **Driver hits pedestrian – already five pedestrians killed this year** On Thursday, a driver hit a pedestrian on Talstraße and fatally injured him. The driver was driving toward the city when **he collided with the pedestrian, who was crossing Talstraße between a bus stop and a pharmacy**. The force of the impact threw the man to the ground and injured him severely. After initial medical treatment at the accident site, the man was taken to the hospital by emergency services, where he succumbed to his severe injuries. The driver was taken to a clinic in shock. **Pedestrians are repeatedly hit on Talstraße. Five pedestrians have already been killed in traffic in the entire city area this year. According to traffic statistics, 2,788 people were killed in traffic in Germany in 2022, including 368 pedestrians. There are no pedestrian crossings at the accident location. Furthermore, police measurements show that drivers frequently exceed the 50 km/h speed limit.**

Note: (As in Goddard et al., 2019): Words or phrases that differ between article types are denoted in bold for demonstrations purposes. Thematic elements in article v3 are denoted with underline. In the survey, all articles had plain text.

Table 2. Penalty type and severity

Penalty Type	Severity
no penalty	*not applicable*
community service hours	...how many hours of community service would be appropriate?
a fine	...how many daily wages* would be appropriate?
jail time	...how many days in jail would be appropriate?
revocation of the driver's license	...how many years should the driver's license be revoked?
or vehicle impoundment	*not applicable*

*In Germany, courts issue fines for law-breaking as a number of daily wages, so that the penalty fits the context of the perpetrator's income.

Table 3. Policy responses

Campaign	Policing	Infrastructure
Implementing a "Safe Walking" campaign to inform pedestrians how to cross the street safely.	Increased police controls to ensure compliance with current traffic regulations, in particular speeding, distracted and careless driving.	Increasing safety through wider sidewalks, a narrower roadway, a reduction of the speed limit, and the construction of a pedestrian crossing.

Table 4. Street reconstruction options

Option A	Option B
• 2 meter wide sidewalks • Car parking spaces on both sides (approx. 60 parking spaces) • 5 collisions per year (forecast)	• 3.5 meters wide sidewalks • Car parking spaces on one side (approx. 30 parking spaces) • Traffic islands (to help pedestrians cross) • 2 collisions per year (forecast)

tics), we applied one-way ANOVA for age, and chi-squared tests for the other variables. The resulting p-values indicate that none of the characteristics showed statistically significant differences across the three article version groups (see Table 5). Only the political alignment variable approaches significance ($p = 0.089$), suggesting there might be some slight differences in political orientation between the groups, but even this is only marginally significant at the $p < 0.10$ level.

3. Results

3.1. Responsibility attribution

Language patterns significantly impacted how readers attributed responsibility for the fictitious crash (table 5, Figure 1). Changing the victim-focus of the status-quo based text to a focus on the agent, mitigating passive and reflexive verbs, using *collision* instead of *accident*, and avoiding formulations that suggest inevitability such as *kam zu* caused our respondents to attribute more blame to the driver and less blame to the pedestrian.

The addition of context information and removal of exonerating causal attributions from article v2 which resulted in article v3 led readers to even more substantial changes in responsibility attribution. Those who read the agent-focused + context article v3 attributed the highest responsibility to the driver, while the responsibility attributed to the pedestrian was the lowest at 33.2% (mean).

Further, while there were no changes in the responsibility attributed to "other" factors from the status-quo to the agent-focused article, readers of article v3 attributed substantially more responsibility to "other" factors.

The responses given by respondents who attributed a share of the responsibility to "other" factors gave also shifted. We clustered these responses into thematic categories. While some 65% of responses from readers of the status-quo text suggested environment or weather-related factors (e.g., "bad weather," or "too dark"), only 55% of answers from readers of article v2 fell into this cluster of factors. In contrast, readers of the article v3 offered replies that fell into the environment/weather category in only 26% of responses, and here, these were more often combined with infrastructural or other aspects (e.g., "no traffic lights, bad weather"). Additionally, there was a clear decrease in naming factors related to inevitability (such as weather, light, bad luck), and an increase in naming systemic factors across the article versions (infrastructure and rules-based solutions), with the largest change occurring between articled v2 and v3.

3.2. Penalty selection and severity

Readers of the status-quo article were the most likely to report that no penalty at all is appropriate in the case that a court finds the driver responsible for the collision (22.2%, see table 6). The share of readers suggesting that no penalty is appropriate decreased over article version, with

Table 5. Personal characteristics, political leaning, and travel behaviors of the experimental groups.

	v1 – Status-Quo (N = 514)	v2 – Agent-Focused (N = 508)	v3 – Agent-Focused + context (N = 515)	Total (N = 1537)	p-value	p-value
Age (years)						0.327
Mean (SD)	44.9	45.8	45.5	45.4	n.s.	
Min - max	18.0–70.0	18.0–70.0	18.0–70.0	18.0–70.0		
Gender: female	267 (51.9%)	265 (52.2%)	243 (47.2%)	775 (50.4%)	n.s.	0.214
Political Alignment					*	0.089
Social Democrat (Center Left)	75 (14.6%)	58 (11.4%)	63 (12.2%)	196 (12.8%)		
Christian Democrat (Center Right)	102 (19.8%)	95 (18.7%)	118 (22.9%)	315 (20.5%)		
Die Linke (Left)	31 (6.0%)	31 (6.1%)	22 (4.3%)	84 (5.5%)		
AFD (Extreme Right)	125 (24.3%)	138 (27.2%)	98 (19.0%)	361 (23.5%)		
FDP (Liberal)	18 (3.5%)	17 (3.3%)	25 (4.9%)	60 (3.9%)		
Grüne (Greens)	38 (7.4%)	44 (8.7%)	55 (10.7%)	137 (8.9%)		
Other	125 (24.3%)	125 (24.6%)	134 (26.0%)	384 (25.0%)		
Typical transport mode						
Drive					n.s.	0.132
Never	124 (24.1%)	125 (24.6%)	106 (20.6%)	355 (23.1%)		
1-2 times	86 (16.7%)	86 (16.9%)	90 (17.5%)	262 (17.0%)		
3-4 times	106 (20.6%)	98 (19.3%)	87 (16.9%)	291 (18.9%)		
5+ times	198 (38.5%)	199 (39.2%)	232 (45.0%)	629 (40.9%)		
Passenger					n.s.	0.258
Never/Rarely	196 (38.1%)	223 (43.9%)	200 (38.8%)	619 (40.3%)		
1-2 times	212 (41.2%)	190 (37.4%)	217 (42.1%)	619 (40.3%)		
3-4 times	68 (13.2%)	56 (11.0%)	64 (12.4%)	188 (12.2%)		
5+ times	38 (7.4%)	39 (7.7%)	34 (6.6%)	111 (7.2%)		
Walk					n.s.	0.190
Never	70 (13.6%)	69 (13.6%)	63 (12.2%)	202 (13.1%)		
1-2 times	144 (28.0%)	120 (23.6%)	148 (28.7%)	412 (26.8%)		
3-4 times	94 (18.3%)	111 (21.9%)	111 (21.6%)	316 (20.6%)		
5+ times	206 (40.1%)	208 (40.9%)	193 (37.5%)	607 (39.5%)		
Bicycle					n.s.	0.276
Never	286 (55.6%)	257 (50.6%)	268 (52.0%)	811 (52.8%)		
1-2 times	124 (24.1%)	124 (24.4%)	128 (24.9%)	376 (24.5%)		
3-4 times	61 (11.9%)	66 (13.0%)	61 (11.8%)	188 (12.2%)		
5+ times	43 (8.4%)	61 (12.0%)	58 (11.3%)	162 (10.5%)		
Public Transit					n.s.	0.742
Never	276 (53.7%)	269 (53.0%)	281 (54.6%)	826 (53.7%)		
1-2 times	117 (22.8%)	102 (20.1%)	101 (19.6%)	320 (20.8%)		
3-4 times	46 (8.9%)	56 (11.0%)	54 (10.5%)	156 (10.1%)		
5+ times	75 (14.6%)	81 (15.9%)	79 (15.3%)	235 (15.3%)		

Note: One-way ANOVA and chi-squared tests, at statistical significance levels: *** = p < 0.01, ** = p < 0.05, * = p < 0.1, n.s. = not significant.

only half as many (11.5%) of those who received the agent-focused + context article v3 indicating this. Social service and financial penalties did not show substantial differences in approval between the versions. Readers of article v3 were most likely to find jail time and driver's license revocation appropriate penalties, here again with the most substantial increase between article v2 and v3. Vehicle impound was not a popular penalty, though its approval was again highest amongst readers of v3.

There was no upper limit for entries of suggested severity of the penalty, and this resulted in some extreme outliers. This was dealt with by capping the values at 1.5 times

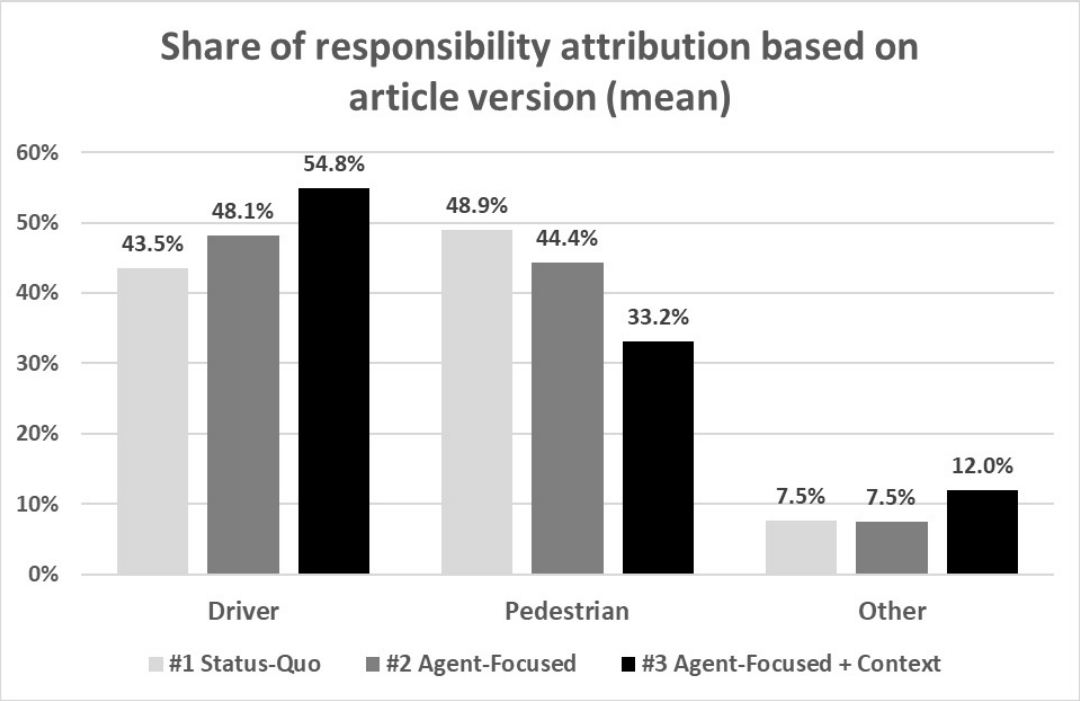

Figure 1. Shifting focus, linguistic patterns, and adding context significantly affects how respondents attributed responsibility for the fictitious crash

the interquartile range (IQR) beyond the first and third quartiles, following standard practices for handling skewed distributions in survey data, and show both the original means and the means calculated after applying the IQR approach in table 6. The results are mixed. The respondents who encountered the status-quo article v1 suggest the least severe penalties, with the exception of the duration of the driver's license revocation.

3.3. Preferred policy responses

Changing linguistic and editorial patterns affected readers' preferred policy responses (see table 3 for policy responses). While the support for the campaign is lowest amongst the readers of article v3, the support for increased police controls to increase safety as well as support for street design were highest amongst this group (table 7 and figure 2). Further, readers of article v3 are also most supportive of street reconstruction projects (see table 4 for the two options) that reduce car parking space to achieve more safety.

4. Discussion

We confirm that language and editorial patterns affect how readers perceive responsibility for traffic violence. Avoiding a victim-focus, metonymies, passive and reflexive verb formulations, formulations that trivialize or suggest inevitability led to readers shifting blame away from the pedestrian and toward the driver. This happened to yet a much larger extent when context around the collision was included and exonerating causal attributions were avoided. The responsibility attributed to "other" factors beyond the traffic participants also increased once news coverage includes context information regarding the site of the collision and about the systematic nature of traffic violence. The share of readers who deem jail time, driver's license revocation, and vehicle impoundment appropriate penalties increases from the status-quo v1 article to the agent-focused + context v3, if a court finds the driver responsible for the collision.

Further, our study provides evidence that the way traffic violence is written about affects what readers think should be done about it. The support for structural changes in the spirit of a safe and sustainable mobility transformation rises with more precise descriptions and especially once contextual information is included in coverage of crash events. That being said, the increases are not always very large. The effects on support for structural policy responses to collisions increases over articles v1, v2, and v3, but in rather smaller steps (note the scale on the vertical axis on figure 2). The difference in support for the different street reconstruction options also shows only just over 3% higher support for Option B amongst readers of article v3 than v1 and v2, between which the difference in support is negligible.

The results suggest that current practices in media coverage of traffic crashes in German shift responsibility toward the pedestrian. Although news coverage of traffic crashes usually occurs before investigations, and especially court proceedings, are finished, commonly used language patterns systematically shift the perception of responsibility away from motor vehicle drivers and downplay the role of infrastructure and other structural factors in causing traffic crashes. Our findings confirm aspects of te Brömmelstroet's (2024) critique of problematic mechanisms within road safety language for the German case: the portrayal of

Table 6. Influence of linguistic and editorial patterns on responsibility attribution and penalty.

	Article v1 – Status-Quo	Article v2 – Agent-Focused	Article v3 – Agent-Focused + context	v1 vs. v2	v1 vs. v3	v2 vs. v3
Share of responsibility attributed (mean (SD))						
The driver	43.5 (23.6)	48.1 (23.5)	54.8 (21.6)	***	***	***
The pedestrian	48.9 (24.8)	44.4 (24.3)	33.2 (19.9)	***	***	***
Other	7.5 (13.1)	7.5 (14.5)	12.0 (15.2)	n.s.	***	***
Type of penalty (% approve)						
None	22.2%	18.1%	11.5%	*	***	***
Social service	21.1%	19.1%	20.0%	n.s.	n.s.	n.s.
A fine	45.0%	44.5%	44.6%	n.s.	n.s.	n.s.
Jail time	13.1%	14.4%	21.4%	n.s.	***	***
Revoke driver's license	29.8%	35.8%	49.0%	*	***	***
Vehicle Impound	8.2%	7.1%	11.5%	n.s.	*	**
Severity of penalty (mean)						
Social service (hours)	100.5	123.5	499.7	n.s.	n.s.	n.s.
A fine (daily wage)	431.5	219.8	4613.0	n.s.	n.s.	n.s.
Jail time (days)	654.8	2420.0	9091920.0	n.s.	n.s.	n.s.
Revoke driver's license (years)	17.5	11.1	403.3	n.s.	n.s.	n.s.
Severity of penalty (mean), with corrected outliers^						
Social service (hours)	65.1	74.2	74.6	*	*	n.s.
A fine (daily wage)	39.4	39.5	48.1	n.s.	***	***
Jail time (days)	262.3	425.7	335.3	***	*	**
Revoke driver's license (years)	2.7	2.0	2.3	***	**	***

Note: p-values calculated using pairwise t-tests at *** = p < 0.01, ** = p < 0.05, * = p < 0.10.
^ Outliers were corrected by capping values at 1.5 times the interquartile range (IQR) beyond the first and third quartiles.

Table 7. Support for policy responses and street reconstruction options.

	v1 – Status-Quo	v2 – Agent-Focused	v3 – Agent-Focused + context	v1 vs. v2	v1 vs. v3	v2 vs. v3
Share who support (%)						
Campaign	52,5%	56,5%	47,6%	n.s.^	**^	***^
Police Control	65,4%	67,7%	70,9%	n.s.^	***^	**^
Street Design	66,9%	69,9%	72,6%	n.s.^	n.s.^	n.s.^
Street Reconstruction Option B (wider sidewalks, less parking, fewer collisions)	76,1%	76,4%	79.7%	n.s.^^	n.s.^^	n.s.^^

Note: Share who support are those who responded with 4 ("I support") or 5 ("I fully support") on the 5-point Likert scale.
^ p-values calculated using pairwise t-tests, significance levels at *** = p < 0.01, ** = p < 0.05, * = p &< 0.10
^^ p-value calculated using chi-squared test, n.s. = p > 0.10.

crashes as isolated events dampen the perceived urgency and support for systemic changes to our mobility paradigms, and the focus on the victim eclipsing attention to the source of danger.

This study replicated Goddard et al.'s (2019) study on English language coverage of traffic crashes, while accommodating for the nuances of the German language and context of current debates on mobility policy in Germany. Our findings largely confirm for the German case what Goddard et al. (2019) found for the North American. In both studies, the status-quo language use in traffic crash reporting shifts the perception of responsibility towards the pedestrian and away from motorists. In both studies, support for more structurally-oriented policy responses was highest amongst

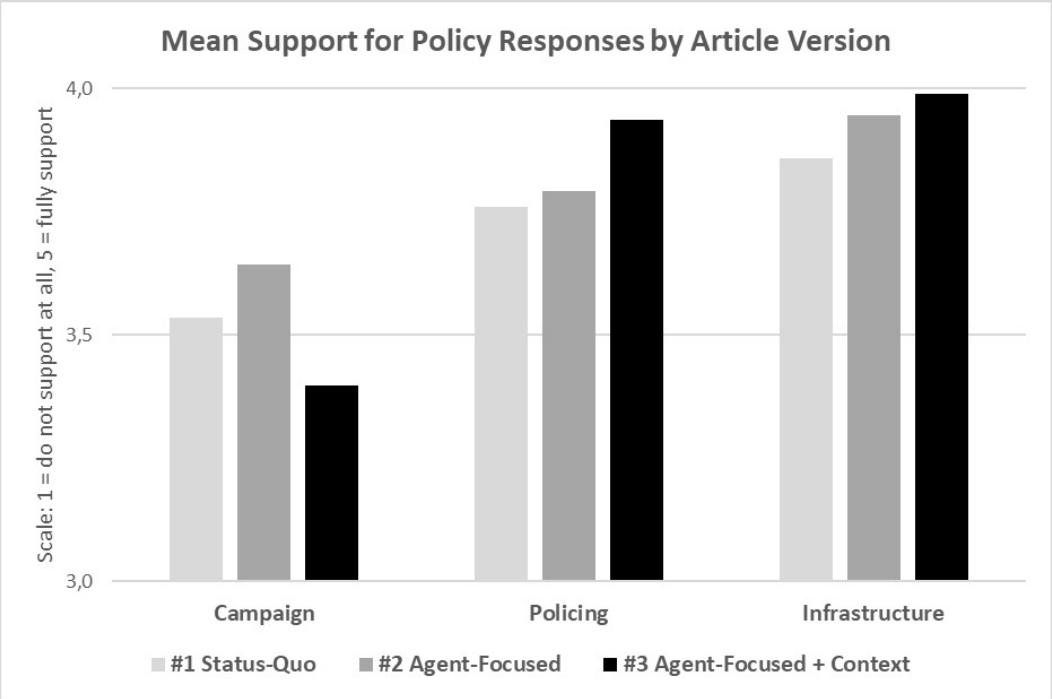

Figure 2. Shifting focus, linguistic patterns, and adding context affects preferred policy responses

respondents who read an article that included context information.

Our question about street reconstruction options outlined a tradeoff between on-street parking and collisions (tables 4 and 7), while Goddard et al.'s (2019) question used a tradeoff between vehicle speed and traffic deaths. Our adaptation of this question is grounded in the nature of the debate, where in German (and perhaps European) cities, the distribution of space is more intensely debated than in North America (e.g., Creutzig et al., 2020).

Other differences, for example the inclusion of the German formulation *es kam zu* in the status-quo article v1, reflect commonly used formulations found in traffic collision reporting in German (von Schneidemesser et al., 2025), which may have similar functions, but naturally differ in the exact meanings from counterparts in English. In this case, formulations like *es kam zu* could enable avoidance of "narratives of societal responsibility" (Kwakman et al., 2024), because of the implication that collisions manifest themselves and are thus inevitable.

Further, while Goddard et al.'s (2019) study included a counterfactual formulation in their version #1 article (a "man wearing dark clothing"), this was not included in the present German study, as these occurrences are rather rare in the German coverage (von Schneidemesser et al., 2025). Instead, we included an exonerating responsibility attribution, that the driver "overlooked" the pedestrian. Leaving this exonerative responsibility attribution out and adding contextual information were the major changes between the agent-focused article v2 and the agent-focused + context article v3.

4.1. Considerations for communication practice

Communicators in police and journalism are more and more faced with growing responsibilities and purviews, and time pressures. Against this background, it can be tricky to navigate the thin line of upholding manifold expectations and values. For example, using active formulations and avoiding metonymies (e.g., "Driver hits pedestrian") may initially seem at odds with principles such as impartiality or the presumption of innocence, which are important to police and media communicators alike (Deutscher Presserat, 2017, p. 11). However, this more precise description accurately describes a crash while not implicating the driver. We can think of an example where "Driver hits pedestrian" describes a crash, e.g., on a highway, where pedestrians are legally forbidden to be. Though the driver hit the pedestrian with their vehicle, the responsibility here is clearly not immediately evident, nor does the description implicate the driver.

In other ways, structural barriers in journalism may impede changes to predominant language patterns. Media studies research tells us that surprise is a crucial criterion for newsworthiness (Harcup & O'Neill, 2017), while neuroscience research reveals that audiences are neurologically drawn to coverage of tragedies because the brain automatically seeks to learn from others' misfortunes to avoid similar fates (Kveraga et al., 2015). Since media outlets depend on capturing attention, contextualizing traffic collisions as systemic and predictable events may conflict with their more commercially attractive portrayal as surprising incidents.

These are merely some of the complexities that feed into traffic collision reporting. While research can provide orientation, communicators face manifold and sometimes

even seemingly conflicting demands, both as individuals and institutionally. Regarding style and content, police, for example, may be sympathetic to the appeals from states' attorneys, who may encounter collision reports in court. While states' attorneys will be inclined to adhere to a legal logic, the demands of journalism may diverge from this slightly, as the goals of the two types of text differ, as do the audiences. To illustrate the complex expectations projected on collision reporting: in the process of this research, the authors spoke in workshops and meetings with journalists, police officers, states attorneys, a public statistician, traffic safety advocates, and more. Sometimes, representatives of the same group gave diverging recommendations and approached particular formulations much differently.

The path to more precise collision reporting will mirror the complexity of the actors involved and their situations. The recently published guidelines by Caviola et al. (2025) provide practical orientation for writing police reports and journalistic coverage of traffic crashes. They can play an important role in helping the public understand the systemic nature of traffic violence and support or prioritize systematic policy responses. These, in turn, can lead to safer streets and safer mobility for all traffic participants. While Caviola et al.'s (2025) guidelines do not prioritize their recommendations relative to one another, this reception study emphasizes that the 5th suggestion, namely presenting collisions in the larger context of the systematic nature of traffic collisions, is likely to be the recommendation that will have the largest effect in terms of increasing an understanding of and support for systematic and especially infrastructural prevention measures.

4.2. Limitations and further research

Although our randomization of our respondents was largely successful, political alignment showed marginal differences between groups ($p = 0.089$). Future research should control for political orientation using more sophisticated statistical analyses (e.g.: analysis of covariates). This limitation, however, does not fundamentally undermine our findings: first, the differences in political alignment only showed a marginal statistical significance; second, our aim was to replicate Goddard et al's (2019) methodology, adapting mainly for language and context; and third, the effects we observed were substantial enough that minor political imbalances are unlikely to account for the observed differences in responsibility attribution and policy preferences.

While the survey was designed to invite respondents to consider policy responses as if they were directly affected (e.g., question including "imagine you regularly use the Talstraße..."), real-world policy trade-offs may be considered differently than in a hypothetical survey setting. The results of the present study are based on reader's exposure to a single article. Further research would be required to reveal more about how cumulative exposure to various language patterns affects responsibility attribution and policy response preferences.

5. Conclusion

This study shows that established language patterns in traffic crash reporting systematically shift perceptions of responsibility toward pedestrians. These patterns also contribute to limited support for structural policy responses. The findings support those of Goddard et al. (2019) beyond the English-speaking context.

Certain effects revealed in our study are much more substantial than others. Including context information and avoiding exonerating formulations affect responsibility attribution more than naming all involved actors, replacing passive with active formulations, and avoiding reflexive formulations alone. The similarity in effects regarding preferences for policy responses in our study and Goddard et al.'s (2019) original study lends weight to our findings, but the magnitude of the effect is small in comparison with that on responsibility attribution.

Future studies could look at cumulative effects of exposure to language patterns. Further, they should consider controlling for baseline political orientations to further isolate the effects language patterns on reporting on traffic crashes.

The results reveal a systematic deflection of responsibility away from drivers. They also demonstrate a tendency toward communicative pre-indictment of traffic participants using active travel modes like walking and cycling. In a larger context, they can be understood as a support for a larger social value system that Walker & te Brömmelstroet (2025) dub *motonormativity*, a cognitive bias that sets cars as the norm.

Within this larger context, more precise formulations in reporting on traffic crashes promise not only to mitigate the effects of motonormativity, but also increase support for structural prevention measures. Our findings support the recommendations in Caviola et al.'s (2025) guidelines, a resource designed for journalists and police communicators. Some of those recommendations include mentioning all actors involved in the collision, using active instead of passive formulations whenever possible, and including context information—such as crash statistics and site descriptions. Our findings suggest that the latter is particularly important if crash reporting is to support prevention efforts. Communicators should also avoid exonerative causal attributions that excuse driver behavior. For decision-makers, highlighting the need for precise formulations to partners in police and media presents a low-cost supplement to existing efforts to increase traffic safety. Though traffic collision reports describing crashes are one important aspect, a variety types of crash coverage can serve the purposes of increased prevention, including the portrayal of statistics (Te Brömmelstroet, 2024, p. 10), thematic crash reporting (Ralph et al., 2022, p. 8), or stories focusing on the people affected by traffic violence (Kwakman et al., 2024), to name a few examples.

These findings are highly relevant in contexts where structural safety and prevention measures face political opposition. Many European cities depend on narrow margins of political and popular support for such policies, making

media framing crucial for policy success. We close with the appeal made by Goddard et al. (2019): "Given the potential to save human lives and prevent injury on a large scale, implementing more intentional editorial patterns may be nothing less than an ethical imperative" (p. 7).

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CRediT Contribution

Dirk von Schneidemesser: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Validation, Writing—original draft, Writing—review & editing. **Hugo Caviola**: Conceptualization, Funding acquisition, Validation, Writing—review & editing.

Data Availability

The data will be made available at https://dataservices-cms.gfz.de/.

Declaration of competing interests

The author reports no competing interests.

Declaration of generative AI use in writing

During the preparation of this work, the author used Claude Sonnet 4 to help eliminate redundancies, check grammar, and to aid with more concise formulations, on a paragraph basis on numerous paragraphs.

Ethics statement

This study was conducted in accordance with ethical research principles. No formal ethical approval was required as the research involved anonymous survey responses from adult participants who provided informed consent, with no collection of sensitive personal data or potential for harm to participants.

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