

IDENTIFYING PREDICTORS OF SCHOOL VIOLENCE: LESSONS FROM SEVEN INCIDENTS USING A STRUCTURED WARNING-SIGN TYPOLOGY

Tibor A. Brečka, & Vojtěch Zwettler

Department of Health Care and Population Protection, Faculty of Biomedical Engineering of the Czech Technical University in Prague (Czech Republic)

Abstract

School violence remains a growing concern in Central Europe, yet empirical analyses of specific incidents are limited. This study aims to identify recurring behavioural warning signs preceding serious violent acts in school settings. Using a structured comparative case-study design, seven violent incidents that occurred in Czech and Slovak schools between 2014 and 2025 were analysed. The analytical framework applied Brečka's typology of 44 warning signs of aggression, enabling systematic identification of present indicators and their intensity. Data extracted from verified public sources were coded across all 44 categories. The analysis revealed that all seven incidents were preceded by at least one high-intensity warning sign, and that three indicators appeared most consistently: low frustration tolerance and poor stress coping (6/7 cases, always strong intensity), hostility toward a specific individual (6/7), and a perceived sense of injustice (5/7). Additionally, leakage of intent occurred in 6/7 cases, although usually with low recognisability. Two incidents exhibited seven distinct warning signs, indicating substantial missed intervention opportunities. These findings provide structured evidence for the practical relevance of warning-sign monitoring in school environments. The study concludes that early detection, interdisciplinary communication, and crisis preparedness remain critical weaknesses in current practice. Implications for prevention frameworks and school safety policy are discussed.

Keywords: *School violence, behavioural warning signs, psychological risk factors, aggression assessment, prevention strategies.*

1. Introduction

Crime and violence in schools are complex phenomena that affect both students' and staff's sense of safety and public trust in schools' ability to detect and manage risk in a timely manner; serious incidents also raise questions about prevention failures, identifying at-risk individuals, and the effectiveness of crisis planning (Wienclaw, 2023). International research shows that school attacks typically arise from interactions among psychological, social, and institutional factors, with particular emphasis on school climate, peer relationships, and institutional procedures, especially how schools handle information about risky behaviour and their capacity for early intervention (Benbenishty & Astor, 2019; Cornell et al., 2021). Experiences of rejection, ridicule, or victimization are frequently reported antecedents, as they may foster frustration, anger, and fixation on violence as a means of "settling" perceived injustice; bullying/victimization and peer rejection are therefore repeatedly highlighted in case-based research (Leary et al., 2003; Verlinden et al., 2000; Vossekuil et al., 2002; Wike & Fraser, 2009).

At the same time, technical and repressive measures (e.g., CCTV, metal detectors) tend to have limited impact without preventive strategies and sustained work on school climate. Accordingly, international approaches (e.g., Safe and Supportive Schools, Whole-School Approach) emphasize system-level efforts to build a safe environment, mental-health support, and partnership-based cooperation between schools, parents, and institutions (Cohen, 2021). In the Czech and Slovak context, the perception of schools as relatively safe still contrasts with the occurrence of rare but highly serious incidents; the thesis underlying this article therefore applies in-depth case studies of incidents in Czech and Slovak schools (2014–2025), combining media analysis with cross-case synthesis. Central to this approach is the concept of warning signs—behaviours that deviate from a student's usual functioning or age- and context-expected patterns, potentially reflecting distress or stress that may escalate into aggression (Brečka, 2024). In the Czech setting, a key framework is a typology of 44 warning signs derived from a large-scale study (N = 4,085), enabling structured mapping across academic performance, relationships, behaviour, and physical/mental state; early detection and a sensitive professional response may be crucial for preventing severe events, including active shooter-type attacks (Brečka, 2024).

2. Methodology

The study uses a comparative qualitative case-study design (Zwettler, 2025), combining media analysis with cross-case synthesis to describe incidents of school violence and identify recurring patterns—especially the presence and intensity of behavioural warning signs prior to the event. Each incident is examined across three phases: pre-incident (warning signs), incident course, and post-incident responses by institutions and society.

To ensure comparability, cases were included only if they (a) occurred in the Czech Republic or Slovakia; (b) fell within 2014–2025 (an 11-year span) to reflect the contemporary context shaped by digital communication and current security strategies; (c) involved primary or secondary schools (tertiary settings were excluded); (d) involved aggression, direct violence, or an attempted attack in the school environment; and (e) were sufficiently covered in the media to reconstruct the event and obtain basic background information from verifiable public sources. Suicides without a clear link to prior violence and bullying cases without physical assault were excluded. Applying these inclusion criteria to publicly available sources for the 2014–2025 period yielded seven eligible incidents with sufficient verifiable information for cross-case comparison.

Because many incidents are not covered in academic literature or detailed official reports, the analysis relied primarily on open sources, especially reputable media with editorial oversight and ties to verifiable information and official statements (e.g., ČTK, ČT24, Czech Radio, Deník N, Hospodářské noviny, iDNES.cz, Novinky.cz, CNN Prima News). Tabloid and sensationalist outlets (e.g., Extra.cz, Expres.cz) were excluded due to higher risk of speculation and emotionally manipulative framing. Information was triangulated across multiple independent sources; where available, police press releases, school statements, and other public documents were incorporated. Media coverage was also tracked over time to capture shifts in framing from initial reports to institutional, expert, and public responses.

Warning signs were coded using the typology of 44 warning signs of aggression (Brečka, 2024), allowing structured identification across academic functioning, relationships, behaviour, psychological state, and situational risks. Signs were identified either explicitly (directly reported) or inferentially based on consistent descriptions in verified sources. Each sign's intensity was rated dichotomously as low versus high (also described as “weak/strong” in the thesis): low indicates presence without clear escalation or repetition, whereas high indicates marked, repeated, escalating manifestations or signs directly relevant to imminent violence. Intensity ratings were briefly justified with reference to available evidence.

All cases were processed using a unified analytical template (case title; date/location; school type; chronological narrative and termination; participants; pre-incident warning signs with intensity; motives/triggers; institutional and public reactions; media portrayal; impacts; and a brief “lesson learned”). Cross-case analysis then examined (a) frequencies and combinations of warning signs, (b) differences by attack type and context, and (c) recurring prevention-relevant patterns. Simple quantitative summaries were used for clarity without aiming at statistical generalization. Validity was supported by the standardized template, source triangulation, and consistent use of a single warning-sign framework; limitations stem from reliance on secondary data and the retrospective nature of reconstruction. The study uses only publicly available information and avoids identifying sensitive personal data beyond what is contained in verified public reporting.

3. Results

The analysis included seven serious incidents of school violence in the Czech Republic and Slovakia during 2014–2025. In most cases, the perpetrators were students attending the respective school (5/7), aged 13–19 years; in two cases, the perpetrators were external to the school (a 26-year-old woman—Žďár nad Sázavou, 2014; a 21-year-old man—Plzeň, 2018). In terms of gender, perpetrators were predominantly male (6/7).

Victims were, to a similar extent, teachers (3 cases) and students (3 cases); in one case, both groups were targeted. In terms of victims' gender, females (5) predominated over males (3). Overall, there were two incidents involving one fatality and one incident involving two fatalities (i.e., three fatal cases in total). The most common means of attack were sharp or cutting instruments (scissors, knives, a machete; 5 cases). In addition, there was an attempted use of a firearm (the weapon did not discharge) and, in one case, an airsoft gun; in one case, the incident was assessed as an unarmed attack. In two cases, a combination of multiple weapons was present.

Regarding legal consequences, two underage perpetrators were referred to child protection authorities; the remaining older perpetrators faced standard criminal proceedings. In one case, a 14-year sentence was imposed; in one case, an exceptional sentence was possible under Czech law; one female perpetrator was committed to a psychiatric facility.

A key outcome was the cross-case synthesis of warning signs based on Brečka's typology (44 indicators) across all cases. In the thesis, intensity is described as "weak" versus "strong," corresponding in practice to "low" versus "high" intensity.

Several robust findings emerged from the comparison of cases:

In each analyzed case, at least one warning sign of high ("strong") intensity was present. This has a crucial practical implication: with systematic monitoring, risk may be detected in some cases before escalating into an actual act of violence. The most frequent and most consistent warning sign was:

- No. 14—difficulties managing stress/anger, low frustration tolerance: 6/7 cases, always at high ("strong") intensity.
- Other highly frequent indicators included:
- No. 27—hostility toward a specific person: 6/7 cases; in 4 cases at high ("strong") intensity.
- No. 22—perceived victimization/injustice: 5/7 cases (often described as a key motivational frame).
- No. 28—"leakage" (information about a planned act "leaking" out): 6/7 cases, but predominantly at low ("weak") intensity, suggesting difficult detectability and a risk of being underestimated by others.

In terms of the overall "load" of warning signs, three cases stood out: the highest number of signs was identified in the Spišská Stará Ves incident (7 signs) and equally in the Kralovice case (7 signs); the second-highest number occurred in the Rudolfov incident (6 signs).

The comparative analysis revealed recurring patterns in offender profiles, motivations, triggers, and incident dynamics.

Psychological characteristics of perpetrators: Across cases, impulsivity and low frustration tolerance predominated (6/7), except for Žďár nad Sázavou, where a psychotic state was the primary factor. Signs of social maladaptation and difficulties in peer relationships were also frequent (5/7), particularly in the cases Kralovice 2016, Prague 2022, Prague-Krč 2024, Spišská Stará Ves 2025, and Rudolfov 2025.

Motivational factors: A prominent shared element was the subjective sense of grievance and injustice as a driving force of violence. In five cases, a motive of retaliation/revenge was identified (Kralovice 2016, Plzeň 2018, Prague 2022, Spišská Stará Ves 2025, Rudolfov 2025), with three of these representing a targeted vendetta against a specific person (a teacher in Prague 2022; a deputy headteacher in Spišská Stará Ves 2025; a teacher in Rudolfov 2025). Distinct motivations were observed in Žďár 2014 (psychotic episode) and Prague-Krč 2024 (acute interpersonal conflict).

Triggering mechanisms: In five cases, a specific proximal trigger was identified, typically academic failure (Prague 2022) or the threat of expulsion (Spišská Stará Ves 2025), or an acute conflict (Prague-Krč 2024; Rudolfov 2025). In two cases, no clear school-related trigger was identified (Plzeň, 2018; Žďár, 2014).

External vs. internal perpetrators: Most attacks were "internal" (students of the school), whereas two cases involved external perpetrators without a direct link to the school process. These two cases (Žďár 2014; Plzeň 2018) differed in dynamics and motivation (psychotic disorder vs. partner conflict) compared with internal cases, where school-related frustration and conflicts predominated.

Planned vs. impulsive attacks: Four cases showed signs of preparation (Kralovice 2016, Prague 2022, Spišská Stará Ves 2025, Rudolfov 2025), and two were more impulsive (Plzeň 2018, Prague-Krč 2024). In Žďár 2014, the perpetrator acted while legally insane. Planned attacks were assessed as more severe in terms of consequences and systematic nature.

Psychopathology: Marked psychopathology was identified in two cases: Žďár 2014 (diagnosed schizoaffective disorder) and Spišská Stará Ves 2025 (a combination of high intelligence with pronounced personality pathology and absence of empathy). The remaining cases showed features more consistent with emotional disorders and maladaptive behaviour than with severe psychotic symptomatology.

4. Discussion

Findings from the seven analyzed incidents support the view of school violence as an escalation process in which recognizable behavioural indicators tend to emerge before an attack. The fact that in every case at least one warning sign of high intensity was present is consistent with the "threat assessment" framework, which emphasizes identifying the developmental trajectory of risk rather than constructing a universal offender profile (Benbenishty & Astor, 2019; Vossekuil et al., 2002).

Across cases, the most stable indicator was warning sign No. 14 (low frustration tolerance, difficulties managing stress and anger), present in 6/7 cases and always at high intensity. This finding aligns with accounts of mechanisms in which frustration, emotional dysregulation, and impaired coping contribute to a shift from conflict to violent action, particularly in contexts of marginality and chronic stress (Harding et al., 2003; Wienclaw, 2023). In practical terms, this sign functions as an "early amplifier": on its own it

does not imply violence, but in combination with other indicators it may signal rising risk and the need for intervention.

A second consistent domain was the targeted nature of hostility (warning sign No. 27), which appeared in 6/7 cases. In many school attacks, violence is directed toward a specific person or institution rather than an undefined “environment.” This pattern is consistent with findings that grievance narrative and personalized blame—“someone did this to me”—often play a major role in the genesis of attacks, increasing the likelihood of targeted violence (Leary et al., 2003; Vossekuil et al., 2002). Related to this is warning sign No. 22 (perceived victimization/injustice), identified in 5/7 cases. In international literature, “grievance” has long been viewed as a key link between experiences of humiliation or rejection and the rationalization of an attack as “just retribution” (Benbenishty & Astor, 2019; Cohen, 2021; Vossekuil et al., 2002). For school practice, it is important that this sign often does not take the form of an explicit threat, but rather a shift in the person’s interpretation of reality—rigidity, fixation on a “wrong,” and a gradual loss of alternative solutions.

A particularly important finding is the high frequency of warning sign No. 28 (“leakage”) in 6/7 cases, predominantly at low intensity. The low intensity of “leakage” helps explain why hints of intent are often overlooked: they may be masked by irony, provocation, online symbolism, or ambiguous statements. This pattern corresponds to conclusions from the Safe School Initiative, which found that perpetrators often communicate their intentions in some way beforehand, yet the information is lost in everyday school routines if no effective mechanism for capturing and sharing it exists (Vossekuil et al., 2002). The results therefore support the claim that prevention depends not only on recognizing individual signs, but primarily on a school’s organizational capacity to collect, evaluate, and translate warning signals into concrete steps.

In the analyzed cases, the relational dimension and experiences of rejection or victimization were reflected mainly in the combination of warning signs 22 and 27. This linkage is consistent with case-study research on school shootings emphasizing peer rejection, ridicule, or long-term relational frustration as a risk backdrop (Leary et al., 2003; Verlinden et al., 2000; Wike & Fraser, 2009). From a prevention perspective, this strengthens the importance of systematic work on school climate and conflict management, as these factors may operate as cumulative stressors.

Interpretation should remain cautious. The study relies on secondary data (publicly available information and media sources) and includes a limited number of cases, which precludes statistical generalization. Nevertheless, structured mapping of warning signs can identify recurring combinations of indicators across different types of incidents. This conclusion is compatible with literature that warns against a “single profile” approach while simultaneously describing stable process features and risk patterns that can be practically applied in school prevention and crisis preparedness (Benbenishty & Astor, 2019; Cornell et al., 2021; Vossekuil et al., 2002).

5. Conclusion

This study examined seven serious incidents of school violence in the Czech Republic and Slovakia (2014–2025) to identify recurring patterns, key drivers, and recommendations for improving school safety. Using a case-study design with media analysis, each case was assessed in terms of motivation, incident course, and—most importantly—the presence of warning signs based on a 44-indicator typology.

Although such attacks may appear rare, they markedly affect school climate and community perceptions of safety. Recognizable warning signs often preceded the incidents but were frequently not captured or evaluated early enough in real time. The most salient indicators were difficulties managing stress/low frustration tolerance (No. 14), hostility toward a specific person (No. 27), and perceived victimization/injustice (No. 22); together they may form a risk-relevant constellation that, when cumulative and escalating, increases the likelihood of violence. “Leakage” (No. 28) was also common but typically low intensity, which may explain why it is easily overlooked. These patterns align with international analyses linking experienced bullying/victimization to targeted hostility toward specific individuals (Doss & Shepherd, 2015).

From a practical standpoint, the findings suggest that prevention cannot be one-dimensional and should integrate psychological, educational, and organizational measures: (1) systematic staff training to recognize warning signs and interpret their intensity (low/high), (2) clear procedures for threat management and internal information-sharing, (3) regular crisis-scenario exercises with debriefing, and (4) effective cooperation with school counseling services, police, and social services both preventively and during crises. At the system level, the study also underscores the need to strengthen technical and procedural security and to rely on comprehensive frameworks (e.g., ČSN 73 4400 – UNMZ, 2016). Two broader gaps emerge: inter-institutional communication (including privacy-sensitive information sharing) and limited psychological support capacity in schools.

Limitations include reliance on secondary (media) sources, retrospective design, and a small case number, restricting generalizability. Nevertheless, the study contributes by testing the warning-sign typology in the Czech and Slovak context and providing actionable guidance for practice; future research should focus on school climate and comparisons of different organizational models (e.g., varying hierarchical structures) and their links to bullying and other risk behaviours.

References

- Benbenishty, R., & Astor, R. A. (2019). Conceptual foundations and ecological influences of school violence, bullying, and safety. In M. J. Mayer & S. R. Jimerson (Eds.), *School safety and violence prevention: Science, practice, policy* (pp. 19–44). American Psychological Association. <https://doi.org/10.1037/0000106-002>
- Brečka, T. (2024). *Agrese ve školním prostředí: Varovné signály, prevence a řešení*. Nakladatelství Leges.
- Cohen, J. (2021). School safety and violence: Research and clinical understandings, trends, and improvement strategies. *International Journal of Applied Psychoanalytic Studies*, 18(3), 252–263. <https://doi.org/10.1002/aps.1718>
- Cornell, D. G., Mayer, M. J., & Sulkowski, M. L. (2021). History and future of school safety research. *School Psychology Review*, 50(2–3), 143–157. <https://doi.org/10.1080/2372966X.2020.1857212>
- Doss, K., & Shepherd, C. (2015). *Active shooter: Preparing for and responding to a growing threat* (1st ed.). Elsevier.
- Harding, D. J., Mehta, J. D., & Newman, K. (2003). No exit: Mental illness, marginality, and school violence in West Paducah, Kentucky. In *National Research Council & Institute of Medicine, Deadly lessons: Understanding lethal school violence* (pp. 132–162). National Academies Press.
- Leary, M. R., Kowalski, R. M., Smith, L., & Phillips, S. (2003). Teasing, rejection, and violence: Case studies of the school shootings. *Aggressive Behavior*, 29(3), 202–214. <https://doi.org/10.1002/ab.10061>
- ÚNMZ-Úřad pro technickou normalizaci, metrologii a státní zkušebnictví. (2016). *Prevence kriminality – řízení bezpečnosti při plánování, realizaci a užívání škol a školských zařízení* (ČSN 73 4400:2016). ÚNMZ.
- Verlinden, S., Hersen, M., & Thomas, J. (2000). Risk factors in school shootings. *Clinical Psychology Review*, 20(1), 3–56. [https://doi.org/10.1016/S0272-7358\(99\)00055-0](https://doi.org/10.1016/S0272-7358(99)00055-0)
- Vossekuil, B., Fein, R., Reddy, M., Borum, R., & Modzeleski, W. (2002). *The final report and findings of the Safe School Initiative: Implications for the prevention of school attacks in the United States*. U.S. Secret Service & U.S. Department of Education.
- Wienclaw, R. A. (2023). *Crime and violence in schools*. EBSCO Information Services.
- Wike, T. L., & Fraser, M. W. (2009). School shootings: Making sense of the senseless. *Aggression and Violent Behavior*, 14(3), 162–169. <https://doi.org/10.1016/j.avb.2009.01.005>
- Zwettler, V. (2025). *Analýza vybraných incidentů ve školských zařízeních* [Diplomová práce, České vysoké učení technické v Praze, Fakulta biomedicínského inženýrství; vedoucí práce: Mgr. Tibor Brečka, Ph.D. et Ph.D., MBA, LL.M.]