Simulation for Education: Improving Personal Responsiveness in Case of Violent Attack

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Abstract

This article is focused on our proposal of simulation for education. Our deal was to create a tool that would help people improve their responsiveness in a violent attack. Our research analyses the terrorist attacks and other violent attacks, and we try to find the best possibilities of security measures. In the last years, Soft targets are a huge problem in the area of security and safety. The security measures are limited for protecting the Soft targets, which are the place or event with many people's accumulation and weak security measures against violent attacks. The critical factor is time - time to the reaction of the attacks. So, we want to prepare the people for a possible conflict situation. This article presents our educational platform that people can use for training, education, and improving their ability (quick decision-making, responsiveness, etc.). This article is divided into several parts. We present state of the art, Soft targets – definition, characteristics, statistics of the terrorist attacks. Then we introduce our educational platform, which is based on videos and photos.

Keywords: Violent attack; Soft targets; Responsiveness; Education; Simulation and Modeling

1. Introduction

Our research is focused on Soft targets and their protection. "As "Soft Targets" can be referred to those objects, (open) spaces, or events characterized by the accumulation of a large number of people, the absence or low level of security measures against violent assaults and their omission among critical infrastructure and hard target objects." (Kalvach, 2017)

These objects, spaces, and events are the targets of terrorist attacks and other violent attacks in Europe since 2014. This year, the Islamic State declared a caliphate and started with the terrorist attacks on the whole world (Nevrkla et al., 2019). For Europe, the attacks are something new and alarming. The last significant attacks were in 2004 and 2005 in Madrid and London. Al-Káida caused these attacks. From 2014, the terrorist attacks were very frequent, as you can see in Fig. 1.

For our research, we create our database of violent attacks (DoVA). We are limited to Europe, the European part of Russia, and Turkey from 2014 to the present (2021). This information is very important for us because they help us to understand attackers – motivation, modus operandi, etc. (Sternova, 2017)
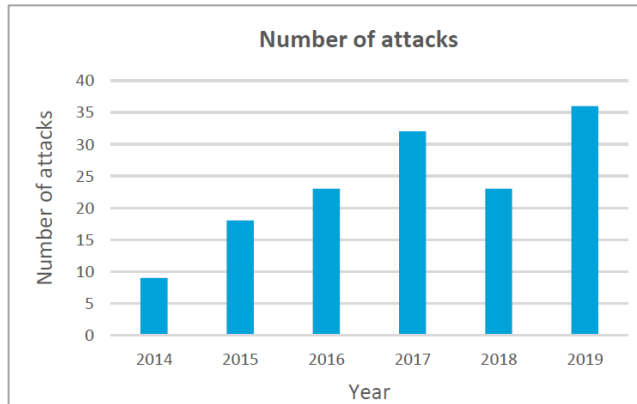
Figure 1. Number of attacks 2014 – 2019 (Kotkova et al., 2020)

At the beginning of this article, we present our motivation and the basic information about the Soft targets (definition, specification) and statistics of terrorist and other violent attacks. The most important part is section 3, about Simulation for education. We present information about the tool which we create. In the end, we discuss the results.

1.1. Motivation

In our life, we move to many different places. Many of them are Soft targets that can be the target of violent attacks (Duricova and Hromada, 2018). It does not have to be just terrorist attacks but also revenge, violent crime, extremism, organized crime, etc. In several years ago, we started to teach self-defence and professional defence. But it is not enough. When we want to be prepared for violent attacks, we need other abilities - crisis communication, first aid, quick decision making, etc.

In the case of the attack, we are in a place of conflict, and we must care about us ourselves. The police are not in the place, and they must arrive. For example, the guards (in the shopping centers) do not also have to be in the place. So, we are alone. Only we and the attacker. And it is only about our abilities, our quick and correct decision making and about our will to survive. And for this, we want to give the people knowledge and skills.

It is the reason why we create the educational platform because we believe that people could learn more quickly and effectively with help of our tool.

The educational platform is divided into three parts, which are focused on the analyses of the knowledge of the person, self-education, and interactive scenarios. These scenarios serve the purpose to try the conflict situation and make the decision for another step.

2. State of art

2.1. Soft targets

The Soft targets are places, object or events which are characterized with a large number of people, low level of security measures against violent assaults,

attractiveness and media interest. Very important for planning security measures is their purpose. We can divide the purpose of the security measures into four categories:

- Deter
- Detect
- React
- Mitigate

The react is understood as the time of reaction of police. But we think that very important are people which are in the place of the conflict situation. They have the best options for defense, neutralization of attacker, helping of other people, etc. That's why we added one new category – responsiveness (preparedness; security threat awareness in case of an attack on the general population).

Soft targets are for example – schools, cultural (Jenčková, 2019) and sports events, hospitals, shopping centers, touristic centers, etc.

It is very complicated to take the security measures from other countries because each country has its own culture, security environment, the mentality of people, level of security measures, etc. It is the reason, why we create our own education tools with specification Czech culture and people.

Some authors create the tools for the identification of the Soft targets and for assessment of vulnerability (Duricova et al. 2017, 2019). Our research is focused on the education of staff and students.

2.2. Statistics

For our research, we create our database of the violent attacks in Europe, the European part of Russia, and Turkey. We started in 2014.

For this article, the important is the presence of physical security (guards). Many people have the idea that guards solve the conflict situation in case of violent attacks. The problem is many guards do not have any training or only horrible training.

According to our database, where we have 141 attacks, the presence of the guards is very changeable (Figure 2). Several attacks are connected, so we have other numbers of attacks in Figure 2.

In Figure 2, there is shown the presence of the guards was only in 21 situations. How we have said early, the presence of the guards does not have to mean anything. We do not know how quality training they have.
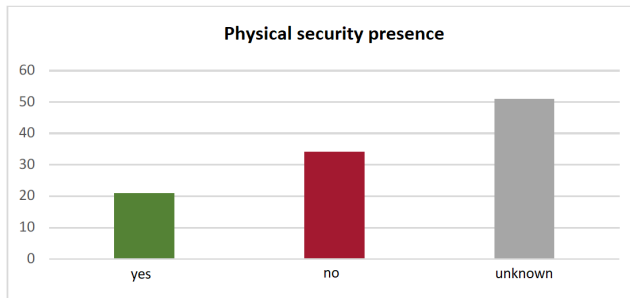
Figure 2. Physical security presence

In many conflict situations, personal responsiveness is the most important for survival – speed, quality, effectivity, etc.

3. Simulation for education

We create an education platform that helps with the improvement of responsiveness.

In the beginning, several facts are very important:

- At the scene of the attack, professional assistance is not available until the arrival of the
- There are always people at the scene of an attack
- Prompt response from a citizen (even a layman) can rapidly reduce the impact on lives and health
- The key is not the physical or material predisposition, but especially the mental readiness of a person to react
- It is not necessary to go through situations physically for the brain to subconsciously learn patterns of behavior and people's reactions to given situations

Our educational platform is divided into several steps:

1. Questionnaire
2. Library for self-education
3. Interactive scenarios

Questionnaire

- The respondent is asked for a list of questions from critical areas (self-defence, crisis communication, first aid)
- Creating a profile of the respondent, from which the possibilities and probabilities of success in the interactive part are based
- According to the profile, a simplified variant of scenarios is recommended from the beginning (photo scenario)

- The user profile also records the progress of behavior in scenarios - individual setting of recommendations in areas to improve the user

Library for self-education

- Database of study materials and educational videos to study the issue of the Soft targets
- Works with the profile and achieved results - targeted recommendations for study
- It includes, inter alia, areas:
  - o Detection of suspicious behavior
  - o Psychology
  - o Crisis communication
  - o Self-defence
  - o Violent attacks and terrorist attacks
  - o First aid
- Everything is richly illustrated, with emphasis on clarity (pictures, videos, animations)

Interactive scenarios

- A set of interactive videos that a user can go through
- Each scenario guides users through different phases of an attack on soft targets in different environments
- The method allows the user to choose the next step in the crucial moments
- Choices and likelihood of success are evaluated based on the user's profile

The process of the interactive scenarios is in Figure 3. In our example one scenario, the process is divided into four parts. In each step is a short video (Figure 4) and then the pause for reaction. The possibilities are (Figure 5):

- Communication
- Hide
- Fight
- Do nothing

According to the choice, the scenario continues. For each step, the time is 5 s. In the end, the educational platform evaluates the process. The tool summarizes result (lose or win), impact (injure, dead, nothing), right decision, wrong decision. The last step is the recommendation for self-education.
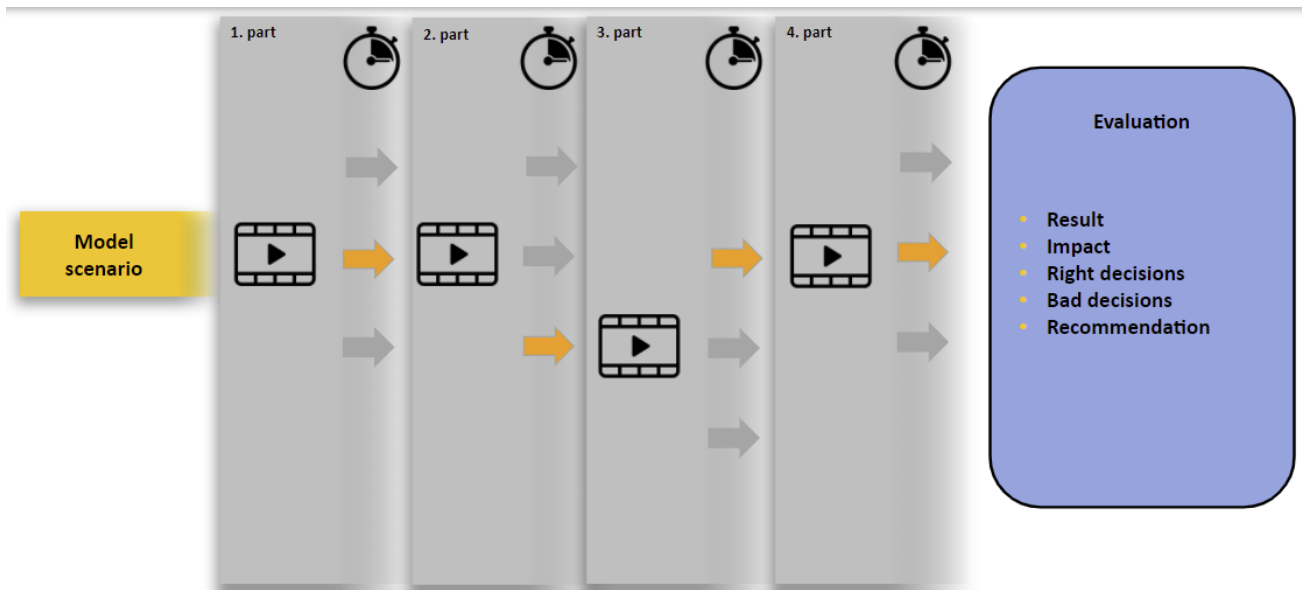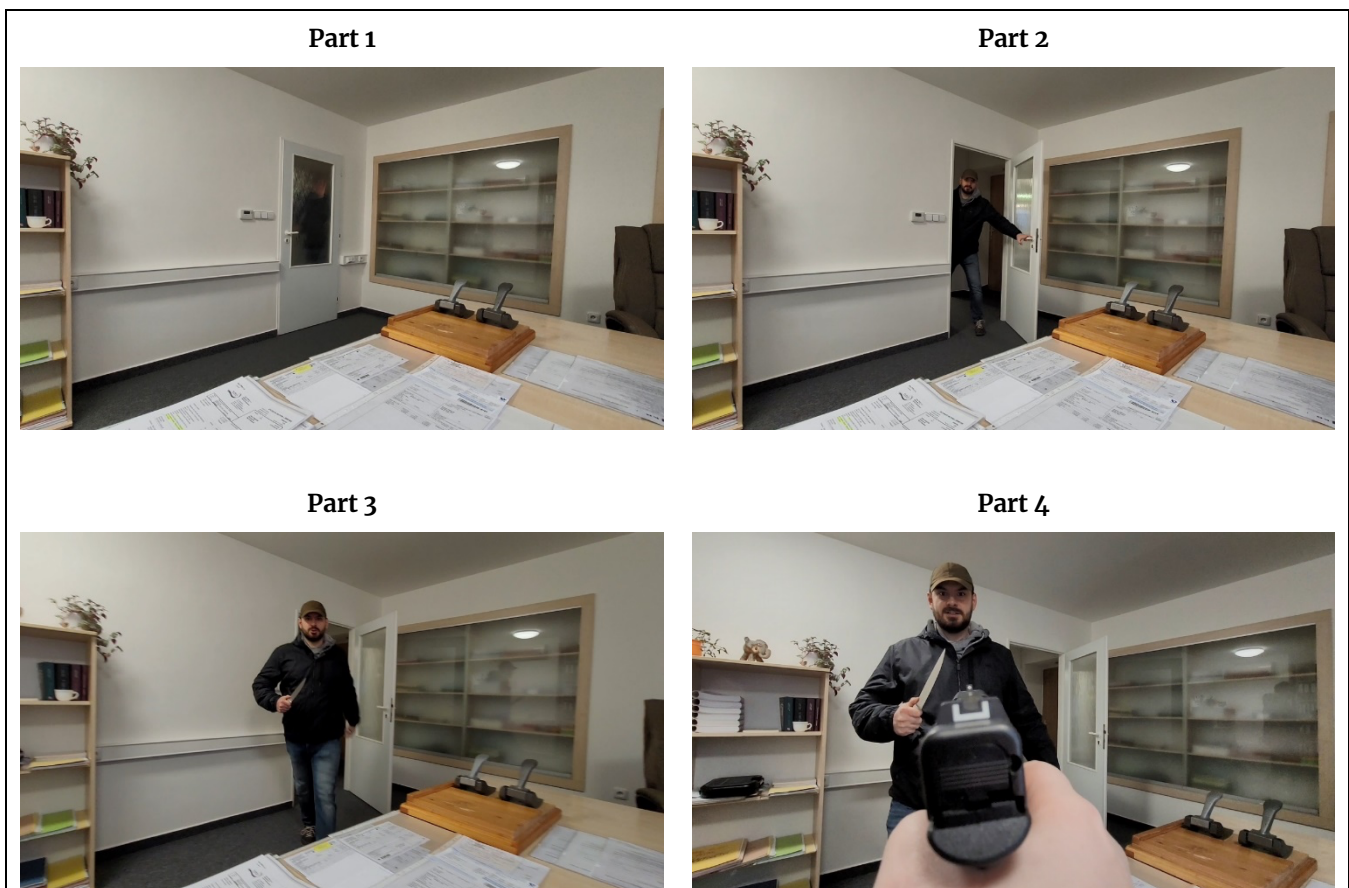
Figure 3. Process of the interactive scenarios
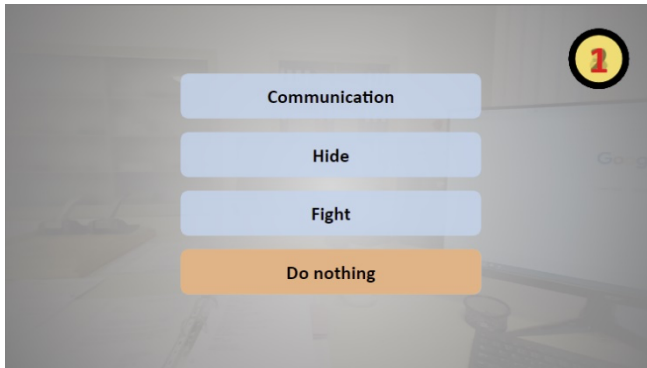

Figure 4. Model scenario with figures

Figure 5. Possibilities of reaction

We have several options for attacks:

- Without weapons (Figure 6)
- With an ax (Figure 7)
- With a knife (Figure 8)
- With a gun (Figure 9)

Figure 6. Attack without weapon

Figure 7. Attack with ax

Figure 8. Attack with knife

Figure 9. Attack with gun

Of course, we have also several options for solving of the conflict situation:

- Barricading (Figure 10)
- Hide (Figure 11)
- Improvised obstacle (Figure 12)
- With weapon/gun (Figure 13)

Figure 10. Barricading

Figure 11. Hide

Figure 12. Improvised obstacle

Figure 13. Weapon/gun

4. Results and Discussion

Our educational platform is good tool for training and for improving our responsiveness. We are focused on three categories – crisis communication, self-defence, and first aid.

The whole platform is divided into three parts:

1. Questionnaire
2. Library for self-education
3. Interactive scenarios

The first step is a questionnaire. The person learns how useful are its information and knowledge. The second step is self-educational. The most important part is the interactive scenarios. For the beginners, we have prepared the photos without time for the decision. It is suitable for slowly learning, for more time for thinking. The last step is the videos with the time for the decision. It is perfect for the real simulation scene with stress and pressure for the decision. In the end, the evaluation is.

5. Conclusions

Our research is focused on the protection of Soft targets. The very important part is the security measures, but they are limited – speed of reaction, effectiveness, functionality, etc. In this article, we present our idea that a very important part of the security of the Soft targets is people who are present in the place of the conflict situation. And we want to help with improving the quality of their preparedness for the violent attack.

Our tool is still in the process, and now we are at the start of the creation of a huge database of videos and self-education documents. We want to have the possibilities of attacks and defence (with the weapon, without the weapon, with the improvised weapon, etc.).

The finished parts of our tool were presented to security experts and also the students at our university (Tomas Bata University in Zlín, Czech Republic). The security experts have appreciated it as a great idea and the step for better training and education of security staff. We have tried the finished parts of our tools with students and then we compared obtained information, web interface, graphic design, detail of information, quality of videos and photos, etc.

Acknowledgements

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