

Resilience

The effects of the FIRST training on the behavior of people in an unexpected, threatening situation.



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Master Conflict, Risk and Safety

13 February 2018

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Abstract

Resilience becomes more important. It seems to be important to ensure that citizens are actually aware of their self-reliant behavior in times of crisis. Certain behavior must become more natural and this can be achieved through training. The FIRST training (Functional Intuitive Replication Scenario Training) has been developed to increase resilience. This study focusses on whether the FIRST training has an effect on the behavior of people in an unexpected, threatening situation. The main question of this study is: What effect does the FIRST training have on the behavior during an unexpected (ambush) situation? The behaviors which are observed are divided into flight-, freeze- and fight reactions. Almost all behaviors that are included in the schedule were visible in practice. The respondents after the training, the experimental group, showed more behaviors that are subdivided into the category 'fight'. In addition, the respondents before the training, the control group, showed the most behaviors that are subdivided into the category 'flight'. There is no sequence in which the behaviors are shown. There are only behaviors that are often shown in groups. The respondents before the training, the control group, showed virtually no tactical responses. The respondents after the training, the experimental group, showed more often a tactical response. A goal of the FIRST training is to reduce the time between the flinch reaction and the first tactical response. It seems that the time between the flinch reaction and the first tactical response decreased after the FIRST training. However, there has been no statistical analysis done. There are some explanations found for the results. For example, an explanation for not significant results is the small and not varied sample. This is also one of the limitations of this study and a recommendation for a follow-up study.

Samenvatting

Weerbaarheid wordt steeds belangrijker. Mensen zullen moeten geloven in hun zelfredzame gedrag ten tijde van crisis. Om hiervoor te zorgen, zal bepaald gedrag natuurlijker moeten worden en dit kan worden bereikt door middel van training. De FIRST training (Functional Intuitive Replication Scenario Training) is ontwikkeld om de weerbaarheid van mensen te vergroten. Deze studie richt zich op de vraag of de FIRST training effect heeft op het gedrag van mensen in een onverwachte, bedreigende situatie. De hoofdvraag luidt als volgt: Welk effect heeft de FIRST training op het gedrag tijdens een onverwachte situatie? Het gedrag dat wordt waargenomen is verdeeld in drie soorten reacties: vluchten, bevriezen en vechten. Bijna alle gedragingen die in het observatieschema zijn opgenomen, waren in de praktijk zichtbaar. De respondenten na de training, de experimentele groep, toonden meer gedragingen die zijn onderverdeeld in de categorie ‘vechten’. Daarnaast toonden de respondenten vóór de training, de controlegroep, de meeste gedragingen die zijn onderverdeeld in de categorie ‘vluchten’. Er is geen volgorde waarin het gedrag (vaak) wordt getoond. Er zijn wel gedragingen die vaak in groepen worden vertoond. Daarnaast toonden de respondenten vóór de training, de controlegroep, vrijwel geen tactische reacties. De respondenten na de training, de experimentele groep, toonden vaker een tactische reactie. Een doel van de FIRST training is om de tijd tussen de ‘flinch’ reactie en de eerste tactische reactie te verkorten. Uit de resultaten van dit onderzoek lijkt dit doel te zijn bereikt. Echter is er geen statistische analyse uitgevoerd. Voor de resultaten zijn er enkele verklaringen gevonden. Een verklaring voor de niet-significante resultaten is bijvoorbeeld de kleine en niet-gevarieerde steekproef. Dit is ook één van de beperkingen van deze studie en een aanbeveling voor een vervolgonderzoek.

Index

1. Introduction	6
2. Theoretical framework	7
2.1 Defining resilience	7
2.2 Protective and risk factors	8
2.2.1 Protective factors	8
2.2.2 Risk factors	9
2.3 Cognition, emotion and behavior	10
2.3.1 Cognition	10
2.3.2 Emotion	10
2.3.3 Behavior	11
2.4 FIRST training	12
2.5 Memory and learning	13
2.6 Conceptual framework	14
3. Method	15
3.1 Participants and design	15
3.2 Procedure	16
3.3 Analysis	17
4. Results	18
4.1 The general reaction (flight, freeze and fight)	18
4.2 The behaviors in an unexpected situation	20
4.3 The sequence of the behaviors	22
4.5 Additional analyses	25
5. Discussion	26
5.1 Overview of findings	26
5.2 Explanations of the results	27
5.3 Adapted conceptual framework	30
5.4 Limitations and recommendations	30
5.5 Take home message	31
References	32
Appendix	36

1. Introduction

Raising the resilience becomes more important. Nowadays, everybody is reading it everywhere.

“Charlie Hebdo attack” or “Two explosions at Brussels Airport and a third in the Brussels subway, 32 killed (excluding 3 perpetrators) and 300 injured” (Metro, 2016). It seems that terrorism is getting closer. It is increasingly common in Europe. Several times in Paris, several times in London, once in Nice, the truck that entered the Christmas market in Berlin and the suicide attack in Manchester after the Ariana Grande concert (Metro, 2016, 2017). The number of fatal victims caused by terrorism has grown extremely (De Volkskrant, 2016). However, there has not been an attack in the Netherlands.

Despite that there has not been an attack in the Netherlands, the worldwide attacks seems to have an effect on the feelings of the Dutch people. Van der Woude indicates on Nu.nl (2016) that the Dutch people responded strongly after the attacks in Madrid (11 March 2004) and London (7 and 21 July 2005). The reaction of Dutch people was intense after 9/11, but after the attacks in Madrid and London the reactions were that it is getting closer. Van der Woude also appointed that these attacks caused much fear. Dutch people indicate that they are most afraid for a terrorist attack (Nu.nl, 2016).

In line with the feelings of the Dutch people, it seems that the chance of an terroristic attack in the Netherlands is real, but there is no clear evidence that there are preparations to commit an attack. In addition, the threat level in the Netherlands is high (Rijksoverheid, 2017). As mentioned earlier, raising the resilience becomes more important. From the United States to Singapore, it is recognized that resilience is of great importance to reduce anxiety and impact of incidents and disasters.

In order to reduce the anxiety and the impact of incidents and disasters, citizens should be more aware that they can also contribute to the lack of success of terrorism by showing resilience (Bakker, 2012). This is in line with an investigation of Algemene Inlichtingen- en Veiligheidsdienst that shows awareness is growing in the Netherlands: people need to do more to reduce anxiety and unrest around terrorism. Resilience appears to be a protective factor in the perspective of contra-terrorism. It can reduce the negative impact of terrorism on society and individuals. Extreme events, such as terrorist attacks, can be restored by a resilient society. In addition, terrorists who try to attack a resilient society have less impact. Resilience can be seen as an opposite factor in the paradigm of vulnerability for terrorism (Bakker, 2012). It seems to be important to ensure that citizens are actually aware of their self-reliant behavior at the time of crisis. Certain behavior must become more natural and this can be achieved through training (Kerstholt, 2014).

A training has been developed to increase resilience. The FIRST training (Functional Intuitive Replication Scenario Training) is based on two components: recognizing and anticipating possible danger and using the flinch response (Renden, Nieuwenhuys, Willemsen & Oudejans, 2015). This is a natural shock reaction to sudden events. The FIRST training consists of a theoretical and a practical part. In the theoretical section, the flinch reaction is explained, how that reaction is achieved and how they can be effectively used in violent situations. In addition, the approach of a suspect is discussed,

the recognition of signs of threatening violence and how to anticipate it (taking into account a possible flinch reaction). Then it will be trained in an exercise room (Renden et al., 2015).

The fact that people are more anxious and that everyone can be acutely affected by a shocking event with many consequences, explains the importance of resilience. As mentioned earlier, the threat level in the Netherlands is high. This makes it important for Dutch citizens to increase their resilience as well. The focus of the FIRST training is on increasing resilience, which makes it important to investigate the effects of this training. The emphasis in this study will be on psychological effects. The main research question is as follows: What are the effects of the FIRST training on the resilience of civilians in the Netherlands? However, this research will specially focus on the behavior of people. This means that, on the basis of observation research, answer will be given on the following question: What effect does the FIRST training have on the behavior during an unexpected (ambush) situation? In the theoretical framework, general theory will be discussed, but ultimately the focus will lie on the behavior of people.

2. Theoretical framework

2.1 Defining resilience

There are many definitions of resilience. People are resilient if they have the ability to stand up for themselves and their personal limits. Some sources also mention that the other (environment) needs to be taken into account (Van Veen, 2008; Van Schaik, 2012; Lammers & Meintser, 2005). For example, Lammers and Meintser (2005) appointed that an individual is resilient if the person has learned to fight for his own wishes, limits and needs, taking into account the wishes and limits of others.

In addition, there are definitions that address dealing with difficult situations. Rutter (1985) describes that resilience does not collapse under pressure, stress or setbacks. Nicolay (2015) indicates that being resilient may require an active involvement of the person to realize something. It is not robust, but a development that one must pass through, of which the desired end result is difficult to define. It is also personally dependent whether someone is sufficiently resistant and context oriented. In the relationship with others and in a difficult situation it will be shown that someone has the ability to defend their own. Becoming competent in resilience will always have to be realized in relation to the context. In normal development, children get skills to be able to defend themselves during childhood education (Nicolay, 2015). This is in accordance with Mann et al. (2015). People can be resistant to certain changes or dangers in certain situations, but not against other changes and dangers in other situations. In addition, people can be resilient in a certain period of their lives but not/less in a different life phase (Mann et al., 2015).

In this study the definition of the field Psychology and Psychiatry will be used. In this field there is particular attention for this definition in relation with trauma, loss, stress, difficult living

conditions, retardation and abuse (Mann et al., 2015). In this context, resilience is described as “an interactive concept that refers to a relative resistance to environmental risk experiences, or the overcoming of stress or adversity” (Rutter, 2006, p. 1).

2.2 Protective and risk factors

To understand resilience, there are different levels of interaction of risk and protective factors that must be recognized. There are three levels: individual-level factors (personality characteristics, skills, talents), social-level factors (family and peer network relationships, the degree of support that can be gathered from these relationships), and societal-level factors (community, cultural norms, school environment, institutional and other outside supports). Kolar indicates the following: “These levels are meant to be understood in interaction with one another. They act as conceptual tools for research in that they serve to illustrate and identify the diverse influences that may impact resilience processes” (Kolar, 2011, p. 426). These levels will be highlighted in the following paragraphs. However, the focus in this study will be on the individual level.

2.2.1 Protective factors

According to Dyer and McGuinness (1996) protective factors are specific attributes or situations that are necessary for the process of resilience to occur. The protective factors can be divided into three groups: individual level, social-level and societal level (Olsson, Bond, Burns, Vella-Brodrick & Sawyer, 2003).

2.2.1.1 Individual level

There are many resilience researchers who made a list of protective factors. These factors are important, because they are robust predictors of resilience (Rutter, 1987). In the concept analysis of resilience by Earvolino-Ramirez (2007) a list is made by several authors. These five factors seem to be extremely importance: positive relationship, sense of personal worthiness, believes in her or his self-efficacy, sense of humor and high expectations. Some concepts will be discussed later in more detail, in the paragraph about cognition, emotion and behavior.

According to Reivich, Seligman and McBride (2011) the following protective factors that contribute to resilience are important: optimism, effective problem solving, faith, sense of meaning, self-efficacy, flexibility, impulse control, empathy, close relationships and spirituality. Some of these factors are also in the lists of the previously mentioned authors. On this basis, it is clear that the most protective factors belong to the individual level.

2.2.1.2 Social level

The second level is the social level. Mann et al. (2015) describes that citizen participation is an important part of social capital. This includes the involvement of community members at formal institutions such as, religious organizations, schools, resident associations, neighbourhood guards and self-help groups. Earvolino-Ramirez (2007) confirmed the importance of this in the concept analysis

of resilience. She appointed the factor “informal social support network”. It appears that social support and meaningful relationships with at least one peer/family member are associated with resilient outcomes. These relationships are important because they offer opportunities for communication and support (Earvolino-Ramirez, 2007). In addition, Mann et al. (2015) named that a consequence of being connected with others in their social environment ensures more trust in institutions. Thereby is building and maintaining trust a delicate matter. A small mistake can make the trust disappear.

Masten (2001) describes another point on the social level. Several studies have found many differences between resilient people and people who are not resilient. It appears that resilient people had better parenting resources and were more appealing infants. The cognitive test scores were higher when they became older and in addition, they had a more positive self-esteem and greater conscientiousness compared to people who were not resilient. It could be stated that a good education (for example, no violence and substance use) has a major influence on becoming a resilient person.

2.2.1.3 Societal level

The definition of a resilient society is given by Duijnhoven et al. (2014). A society is resilient if individuals, groups and communities are able to cope with threats and disturbances as a result of social, economic and physical changes. This can be understood in relation to changes in general, but often “community resilience” is perceived in relation to disasters. This includes the ability to prevent an incident from becoming a disaster, the ability to prepare for it, the ability to cope with the consequences of disaster when they occur and the ability to perform recovery activities in a manner that social disruption minimizes.

In addition, Gow and Paton (2008) appointed some factors which can have an influence on the resilience of the community. A factor which probably has an influence is: involving the community in decision making about risk and risk management. It is expected that the relation between people, communities and society would be improved by greater community knowledge of the trade-offs involved in creating safer environments. By consultation based on procedural justice principles, the levels of community satisfaction and risk acceptance are increased. This would have an impact on the resilience of the community and would also reduce somewhat psychological impact. According to Mann et al. (2015) is trust in institutions, discussed in the paragraph ‘social level’, related to general social trust. This can provide positive outcomes for an individual and a country. This could take into account the better functioning of a political system. It can be said that a society in which the level of trust is high works better and gives people opportunities to resist situations (Mann et al., 2015).

It seems that it is important that people trust the community and that a society/community is involved in decision making about risk and risk management in order to be a ‘resilient society’.

2.2.2 Risk factors

Rutter (1985) proposed that protective factors have an interactive relationship with risk factors and that they thereby provide beneficial effects. According to Masten (2001) are there also many risk

factors which are well-established statistical predictors of subsequent development problems. For example, a biological child of a parent with schizophrenia or low socioeconomic status to direct measures of exposure to maltreatment or violence. In addition, the theory of Masten (2001) about the influence of a good education is discussed in the paragraph ‘protective factors’.

Adriaenssens, Vanderhoeven and Vercammen (2000) appointed that the experiences at a young age influenced which way the stimuli of the environment processes and interprets. However, not all responses can be explained in this way. It seems that upbringing plays an important role in the ability to be resilient. People, especially children, also learn to be vulnerable. Although this can be positive, there are exceptions. Children learn what kind of risks dangerous situations may have and that can be useful. This can increase the resistance to a hazard. However, there is also a completely different form of ‘learned helplessness’ and this can have a negative effect on resilience. This is by a process in which fear of something is transmitted to a child, without explanation and without any incentives to reinforce a reprehensible response. In this way, the person becomes less resilient. Other sources confirm this, including Doll and Lyon (1998). They also nominate certain factors in a child’s life that affect resilience, such as family dysfunction and abuse. Mann et al. (2015) appointed another example: growing up with an alcoholic parent.

It could be stated that environmental factors and genetic factors may be potential risk factors in relation to resilience. The above are mainly examples of environmental factors. An example of genetic factors is the predisposition for a mental illness (Mann et al., 2015).

2.3 Cognition, emotion and behavior

Most factors belong to the individual level. This study will be aimed at the individual level. This level is subdivided into three concepts: cognition, emotion and behavior. Many of the mentioned factors can be fitted into these three concepts. The cognitive and emotional aspect will be briefly discussed, only the most important and most common factors. There will be more detail on the aspect of behavior, because this research focuses primarily on that aspect. This will eventually be linked to the FIRST training.

2.3.1 Cognition

According to Mann et al. (2015), Earvolino-Ramirez (2007) and Van der Ploeg (2013) the cognitive aspects of resilience include flexibility and elasticity. Someone is more resilient if his or her need for cognitive closure is low. Flexibility is emphasized in theories because it is the ability to adapt. When someone is flexible, one has the ability to cope with changes. In addition, elasticity is the ability to properly look at a stressful event or situation, to handle it flexibly and to think about how the situation can best addressed (Mann et al., 2015; Earvolino-Ramirez, 2007; Van der Ploeg, 2013).

2.3.2 Emotion

Mann et al. (2015), Veselska et al. (2009) and Rutter (1987) appointed that self-efficacy and self-esteem are important factors. Self-efficacy is the belief that one can influence his environment and the

outcome of events. According to Rutter (1987) it is protective to have a well-established feeling of one's own worth as a person together with a confidence and conviction that one can cope successfully with life's challenges. Veselska et al. (2009) emphasizes that the self-esteem can be a protective factor in the field of health and social behavior. A negative self-esteem could play an important role in the development of problems and disorders, such as violence and high-risk behaviors.

Several authors indicate that positive emotions and humor increases resilience by counteracting the negative aspects of an event (Earvolino-Ramirez, 2007; Te Brake, Van der Post & De Ruijter, 2008; Fredrickson, 2001). The broad-and-build theory can explain why having positive emotions increases resilience: in case of negative emotions the focus of attention is narrowed. Thereby, the repertoire of thoughts and actions (such as fight- and flight behavior) is limited. With positive emotions, the focus of attention and the repertoire of thoughts and actions becomes even bigger. As a consequence, people become more resourceful (Fredrickson, 2001). Mann et al. (2015) indicate that it is impossible that a resilient person never experiences negative emotions. However, it is established that a resilient person is well able to regulate negative emotions.

In addition, anxiety is an important emotions and needs some extra attention. Anxiety has many consequences and is of big importance in protecting ourselves against danger. The hormone adrenaline is created when one is afraid. Adrenaline, among other things, ensures that people pay attention and react quickly, such as flights or fighting (Bögels, 2008).

2.3.3 Behavior

Resilient people are active in social groups, the neighbourhood and/or community. In addition, they actively seek support when needed (Mann et al., 2015). An explanation for this might be that people who are more resilient often have the 'flexible' property. In addition to the fact that flexible people have the ability to cope with changes, these people are also cooperative, amiable, tolerant and have an easy temperament. This can facilitate dealing with other people (Earvolino-Ramirez, 2007). In addition, Mann et al. (2015) shows that belonging to multiple groups, or diverse group membership, makes people more resilient in the context of major life events or changes and (physical) challenges.

As mentioned earlier, Veselska et al. (2009) indicate that a positive self-esteem can be a protective factor in the field of, among other things, social behavior and that a negative self-esteem could play an important role in the development of, among other things, high-risk behaviors. Verkuil, Van Emmerik and Holtrop (2010) agrees and appointed that certain beliefs, such as low self-confidence and negative self-esteem lead to certain behaviors. This kind of behavior is impeding to be resilient and to develop resilience. Obstructive behavior must therefore be broken. For example, people can be practiced to stand up for themselves. Verkuil, Van Emmerik and Holtrop (2010) mentioned the Connor-Davidson Resilience Scale. These include items that provide higher resilience. Examples of those items are: easy to adapt to changes, dare to make tricky decisions, and take the lead in solving problems.

The way people often react in a stressful situation are globally subdivided into two responses:

avoiding the situation or entering into the confrontation (flight or fight response). Milosevic and McCabe (2015) indicate this reaction arises very quickly and is facilitated by a cascade of reflexive physiological changes (e.g., increased heart rate), which involves the release of energy to prepare the body for action. The flight-response occurs more often than the fight-response. People with an aggressive disorder show a fight-response more often (Roelofs, 2012). In addition, a freezing or tonic immobility reaction can occur as a response to a threat. Other action tendencies are considered. This happens in situations where escape or fighting is unlikely to be successful mainly (Milosevic & McCabe, 2015). People with a social anxiety disorder show a freeze reaction faster. This group of people includes people who have experienced a (psychological) trauma (Roelofs, 2012). According to Lofland (1973), the confrontation is only for the 'urban skilled'. These are people who can afford coolness and tolerance because they have great experience in how to behave in all kinds of situations. These people know how to respond flexibly to an unexpected situation (Lofland, 1973).

Naturally, it is important to look at how people's behavior can change in order to make them self-reliant and resilient. According to Kerstholt (2014), citizens are very active after an incident has occurred. In addition, people have the will and ability to intervene. In these situations, citizens need not be turned to more self-reliant behavior, because they actually are. However, the effectiveness of decisions can be improved with proper preparation. This might include the question: What can people do if they are robbed or when someone else is being robbed? Preparatory behavior is actually difficult to influence because our behavior is (often) not driven by analytical considerations but results from automatic associations. It is important to ensure that citizens can actually realize their self-reliant behavior at the time of crisis. This could be done by training, that certain behavior becomes more natural (Kerstholt, 2014).

2.4 FIRST training

A training has been developed to increase resilience: The FIRST training (Functional Intuitive Replication Scenario Training). People learn to analyse situations and pick up cues that may indicate danger. They learn to act in an early stage and to anticipate potential dangers. In this training they teach people to be better prepared to react when an attack occurs (Renden, Nieuwenhuys, Willemsen & Oudejans, 2015). These authors indicate that this is important because people often show avoidance behavior. Avoidance behavior in threatening situations is probably because people are less able to suppress stimulus-driven behavior, such as trying to prevent or limit (physical) danger and possible consequences. This makes it more difficult to act purposefully. Examples of this are: less assertive attitude, hesitation and make themselves smaller (Renden, Nieuwenhuys, Willemsen & Oudejans, 2015).

Renden, Savelsbergh and Oudejans (2016) appointed that the flinch response is a primary reflex that almost always occurs when people encounter sudden threatening events. It is a highly reliable reflex-like response and this could function as an effective protection mechanism. The FIRST

training works with reflex-based self-defence skills. People learn to convert their primary reflexes into tactical responses to achieve effective reactions. For example, the first response to a physical attack is to protect the face with the arms raised (elbows bent) and to push the danger away. However, during the training it is learned that if a person feels that the situation becomes dangerous, the person has to move to the suspect. This to reduce the space of the suspect. In doing so, the person has to keep his hands between him and the suspect, so that the flinch response could be used as effectively as possible in case of an attack. Thereafter, people are taught to spread their fingers. This because it gives the most power. Then they must push the suspect towards a wall, car, chair or floor, depending on the situation. If an attack is committed with a knife, the first reaction of a human is to turn the body away from the knife and to hit the arm which is holding the knife away. People were taught to 'let that happen' and as a follow-up to grab the arm of the suspect. Then to counter the attack by pushing the suspect towards, for example, a wall or to take the knife. An attack with a handgun uses the same principle (Renden, Savelsbergh & Oudejans, 2016).

2.5 Memory and learning

If people participate in the FIRST training, it is important to look at information about the memory and learning. How do people store information and how do people remember information? This is important if they learn certain behaviors. During the FIRST training a lot of information is given about resilience and the associated actions. It is important that people store this information for later use in practice. According to Deben-Mager (n.d.) the memory is about: the stored information and remembering. In general, memory is a system and means: storage, retrieval and encoding.

Murre (2010) appointed that learning is a process in which, as a result of our experiences and activities, changes occur in the brain that may later affect our consciousness and behavior. Sometimes learning leads to conscious memories and knowledge. Other learning builds skills that people need in daily life. Sometimes learning only leads to tendencies that people are not or hardly aware of.

Zimbardo (2013) assumes that storing ensures that the patterns are kept in the system for a longer time, by linking them to existing patterns. The better the stored form, the better the memory anchors in the long-term memory. A large amount of information ensures that one does not have enough time to fully link a part to a meaning, because the next part is mostly lost again. When people first listen to a lecture and then carefully read the material, the information is stored in a more pleasant form. The more one rehearses, the more solid the information is stored and the more powerful the memory becomes. When people encode the information more concretely, the more practical it is stored and ready to be retrieved. Often there is a cue, a stimulus that triggers the activation of the long-term memory. If stored properly, people can recall the memory to consciousness in a fraction of a second (Zimbardo, 2013).

In order to make information part of the permanent memory, the information must pass through first three stages: the sensory memory, then the working memory (short-term memory) and

lastly the long-term memory. According to this three-stage model, this course must ensure that meaningless incoming stimuli are converted into meaningful patterns, stored for later use (Zimbardo, 2013).

2.6 Conceptual framework

In this study, the effect of the FIRST training is measured. The behavior of people is considered in an unexpected situation. The previous paragraph has already revealed many behaviors. Some of these behaviors have been included in this research. A conceptual framework is designed, figure 1. This model shows the relationships between variables that are expected. In addition, it becomes clear how these are in relation to each other. The expectation was that the FIRST training will have an effect on behaviors. (Zimbardo, 2013)

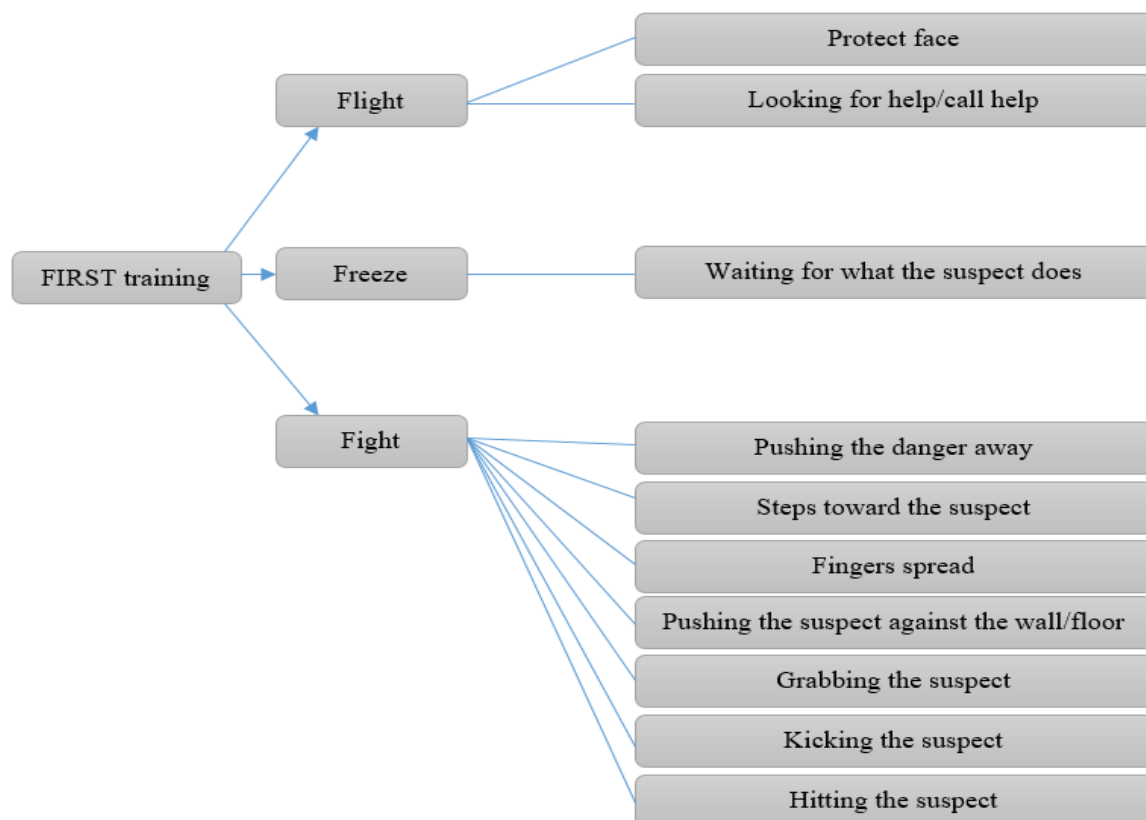


Figure 1. Conceptual framework. Expected behaviors during an unexpected situation.

In order to answer the main question, three different studies have been done. During this research, there was a cooperation with Oude Groeniger (2018) and De Witte (2018). In addition, the studies differ in the method. In the research of Oude Groeniger (2018), interviews were used. In the research of De Witte (2018) a questionnaire was used.

In this study an observation method is chosen. During the research, data was gathered by observing actual behavior. This means that the behavior has been watched and reviewed. Observation

answers the following part question: What effect does the FIRST training have on the behavior during an unexpected (ambush) situation? There is decided to pay attention to four points in the unexpected situation: the general reaction (refers to flight-, freeze- and fight reaction), which behaviors are shown, the sequence of behaviors and the time between the flinch reaction and the first tactical response. A goal of the training is to reduce the time between these two reactions, which makes it important to measure the time. These four points provide the following sub-questions:

1. What is the difference between the general reaction of the participants before and after the FIRST training?
2. Which behaviors are shown in an unexpected situation before and after the FIRST training?
3. Is there a certain sequence in which people show their behavior during an unexpected situation?
4. Does the FIRST training have an effect on the time between the flinch reaction and the first tactical response?

The following chapter describes in detail the method in which the research is conducted. That chapter will explain, among other things, how the (expected) behaviors have been measured. All the behaviors of the conceptual framework are included in the observation schedule which is discussed in the next chapter.

3. Method

As mentioned earlier, this study was part of a more extensive study which is divided in three different studies. This study examined the behavioral effects before and after following the training by creating an unexpected, threatening situation.

3.1 Participants and design

In total, 70 respondents participated in the training. For this study 22 respondents were observed. The respondents were collected by means of random sampling. The inclusion criteria are as follows: minimum 18 years (or 14+ with permission of parents/caretakers), physically qualified, voluntary participation, authorizing anonymous processing of research results, and participation in research. A total of 22 respondents have been observed over two days. Eleven respondents are observed at the first day and eleven respondents are observed at the second day of the FIRST training. There were 9 male and 13 female respondents. The average age was 36 years. On the first training day, the average was 32.6. On the second training day, the average was 39.6. They are from the Netherlands and one respondent is from Spain. The education levels are: secondary education [1], Intermediate Vocational Education (MBO) [5], Higher Vocational Education (HBO) [9], Post Higher Vocational Education (Post HBO) [1] and University [6]. Given the tight planning by the various sub-studies, the maximum

has been achieved. This means that over time the number of eleven respondents for the unexpected situations was the maximum number. Otherwise it would lead to time troubles and this is impossible because there were other studies and the trainers were only available until a certain time.

In this study, the FIRST training served as independent variable, and the resilience of people as dependent variable. On the first training day, a pretest is done. On the second training day, a posttest is done. This has been chosen so that the difference between the two groups (control and experimental group) could be measured. How the independent and dependent variable are measured can be found in the next paragraph 'procedure'.

3.2 Procedure

To recruit the respondents, a flyer has been designed and spread 45 days before the first training day. The flyer can be found in Appendix A. By sending an e-mail, the respondents could enter and specify a preferred date. In addition, they could ask questions via a created e-mail address. After a respondent has signed up, they received a standard e-mail containing the purpose of the research, the reassurance that the data is processed confidentially and that they will receive an e-mail two week prior to the first training session with further details. In Appendix B, the standard e-mail. Two weeks before the first training, a division has been made for the two training sessions. This distribution was mailed to each respondent with further information. In Appendix C, this e-mail can be read. Because three studies had to be taken during one training, a scheme was made when which part was performed. This scheme is included in Appendix D. In addition, in this part-study, a pretest and posttest is done, which requires two training days. An observation schedule has been developed based on the literature research. The behaviors discussed in the theory are included in the observation schedule, Appendix E.

Before the respondents arrived, two cameras were hung in the parking garage where the ambush situation would occur. The viewpoints of the two cameras are shown in figure 2.



Figure 2. The viewpoints of the two cameras

The respondents arrived at 9.45 am at the location. First of all, they were all welcomed. They were asked to fill in the informed consent, see Appendix F. After that, they received an explanation of the day and they were asked to fill in a questionnaire. On the first training day, during the explanation someone (random) was asked to walk with the trainer to get a box out of the car (pretext), in the parking garage. While walking to the car, the respondent was surprised with an unexpected situation

(ambush). The ambush situation looked like this: the respondent walked through the door to the parking garage. When the respondent walked towards the stairs, an actor came around the corner and called out “hey!”. The actor walked as far as possible to the respondent to see what the respondent would do. A small touch/push could be present. This whole situation only lasted a few seconds. Then the respondent was immediately informed by a researcher that it was about the study. A total of eleven respondents were taken during the explanation, one by one. These respondents did not know beforehand that they would be observed.

At 10.45 am the training started. First, the theoretical part was treated. Respondents learned to analyse situations and pick up cues that may indicate danger. This took about an hour. Then the practical part started, in which the theoretical part was put into practice. They learned to act in an early stage and to anticipate potential dangers. This means that they teach people to be better prepared to react when an attack occurs.

At 12.45 the entire training had ended. After the training, the respondents were asked to fill in a questionnaire again. After filling in the questionnaire, a debriefing took place. In this the activities were explained that they had gone through, there was time to ask questions and they were thanked for their participation in the training and research. The respondents who had given up to participate in an interview, were asked to take place in a closed room where the interviews would take place. After completing the interview, they also finished their participation in the training and research.

Both training days were the same. However, on the second training day, the created unexpected situation (ambush situation) took place after training instead of before training. This meant that the training on the second day started earlier, 10.15 am. After the training, when all the respondents filled in the questionnaire, someone was asked to walk with the trainer to get a box out of the car (pretext), in the parking garage. The script of the ambush situation was exactly the same as on the first training day. Again, eleven respondents were taken, one by one. The way of observing is done exactly the same as on the first training day. This means the same video cameras were used, on the same place. After this, a debriefing was given for all the respondents. For the respondents who would not participate in the interviews, the training and research were completed. The interviews followed for respondents who had given up to participate, identical as the first training day. Their participation in training and research was completed after the interviews.

3.3 Analysis

The main question of this study was: What effect does the FIRST training have on the behavior during an unexpected (ambush) situation? In order to answer this question, the videos were viewed by three observers. An observation schedule has been used, Appendix E. For each filmed situation an observation schedule was filled in by all three observers. There has been discussed until there was one unanimously observation schedule filled in for each situation. All videos have been watched mixed. This means that during the observation it was not known whether it was an unexpected situation that

had been created before or after the training. First of all, the sequence of the behaviors was examined, then was tallied how many times a certain behavior was showed. On the basis of these behaviors was checked what the overall reaction of the participant was. Finally, the time was measured between the flinch reaction and the first tactical response.

After the observation schedules were filled in for all filmed situations, they were analyzed. The main focus was on the actions (several behaviors) and the time sequence. There was examined whether there are significant differences by using the statistical program SPSS. Lastly, explanations for the observed phenomena were sought, for example, the 'how' and 'why'. This will be discussed in the discussion. A statement will be made how often a particular behavior has taken place and in which order the behaviors were shown. In addition, a statement will be made about how long it takes for a tactical response occurs. This method has been chosen based on the book of Van de Sande (2001). This all made it possible to see if there was a difference between the pretest and the posttest. In this way, it could be concluded what the effect of FIRST training is on behavior during an unexpected (ambush) situation.

It is important to mention that the variable 'stress' from the questionnaire of De Witte (2018) is recoded. This meant that a high score on stress means less stress experience. However, this is recoded in the results: a high stress score means a high stress experience.

4. Results

In this chapter answers will be given to the four sub-questions. The most important outcomes, resulting from the research, will be described. Each paragraph discusses a sub-question.

4.1 The general reaction (flight, freeze and fight)

The first sub-question is as follows: What is the difference between the general reaction of the participants before and after the FIRST training? The respondents of the experimental group showed different behaviors than the respondents of the control group. As shown in the observation schedule, certain behaviors belong to an overarching category: flight, freeze or fight.

The most behaviors that are showing by the respondents of the control group are the behaviors that are subdivided into the category 'flight'. A total of 9 respondents of the control group showed behaviors of this category, so 81.80% of the control group showed 'flight' as general reaction. In addition, there are 4 respondents of the experimental group who showed some behaviors that are subdivided into the category 'flight', 36.40%. This is clearly less than the control group. Important to mention is that there are 2 respondents of the experimental group who are assessed with 'flight' as general reaction, but later they showed the behavior '90 degrees angle arm'. This behavior falls more under the fight response. To test whether the values of flight, freeze and fight differ between the two groups (control group and experimental group), the Mann-Whitney U test is used. It becomes clear

that there is no significant difference between the distribution of the mean of flight and the two groups: $p > 0.89$ ($U = 58.00$) by using the Mann-Whitney U test. The mean of the behavior ‘flight’ is for both groups the same: 0.27. The results of the means can be found in figure 4.

Behaviors that are subdivided into the category ‘freeze’ are only showed by the same group of respondents, the control group. In total 2 respondents of the control group, 18.20%. This means that no respondent of the experimental group showed the freeze response as a general reaction. There is also no significant difference found between the distribution of the mean of freeze and the two groups: $p = 0.27$ ($U = 43.50$). The mean of the behavior ‘freeze’ of the control group (before training) is 0.36 and the mean of the experimental group (after training) is 0.24, see figure 4.

The respondents of the experimental group have shown more behaviors that are subdivided into the category ‘fight’. A total of 7 respondents of the experimental group showed behaviors of this category, 63.60%. No respondent of the control group showed the fight response as a general reaction. By using the Mann-Whitney U test, there is only a significant difference found between the distribution of the mean of fight and the two groups: $p < 0.01$ ($U = 17.50$) The mean of the behavior ‘fight’ of the control group (before training) is 0.06 and the mean of the experimental group (after training) is 0.24 (Figure 4).

It seems clear that after participating the FIRST training respondents show more fight reactions. While it looks like respondents generally show more flight and freeze reaction when they have not participated in the training. Figure 3 shows this clearly. A significant difference is found in the overall reaction between the control group (no training) and the experimental group (training): $p < 0.01$ (Fisher’s Exact Test).

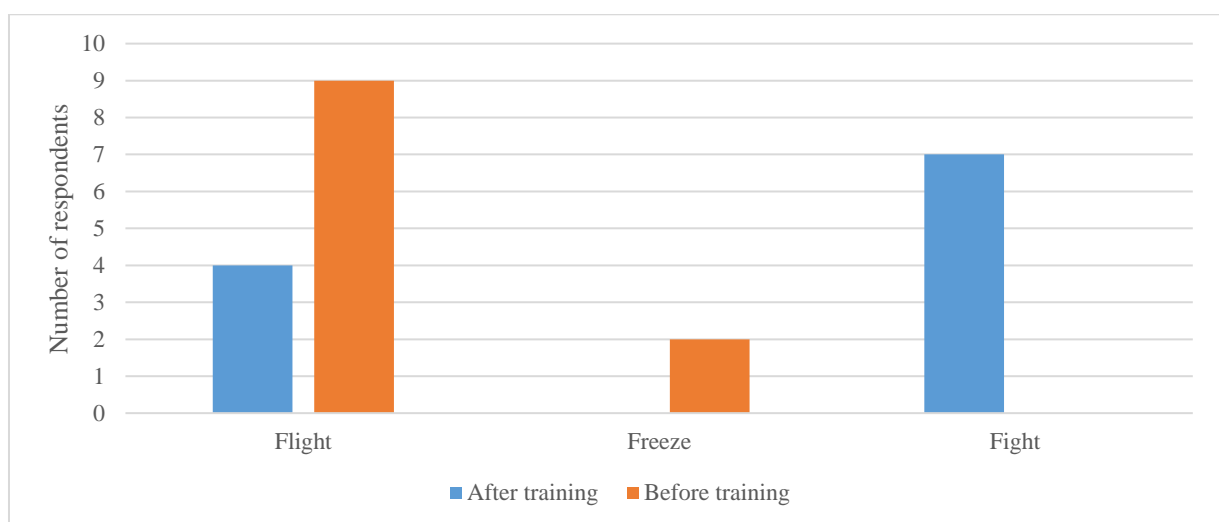


Figure 3. Differences between general reaction.

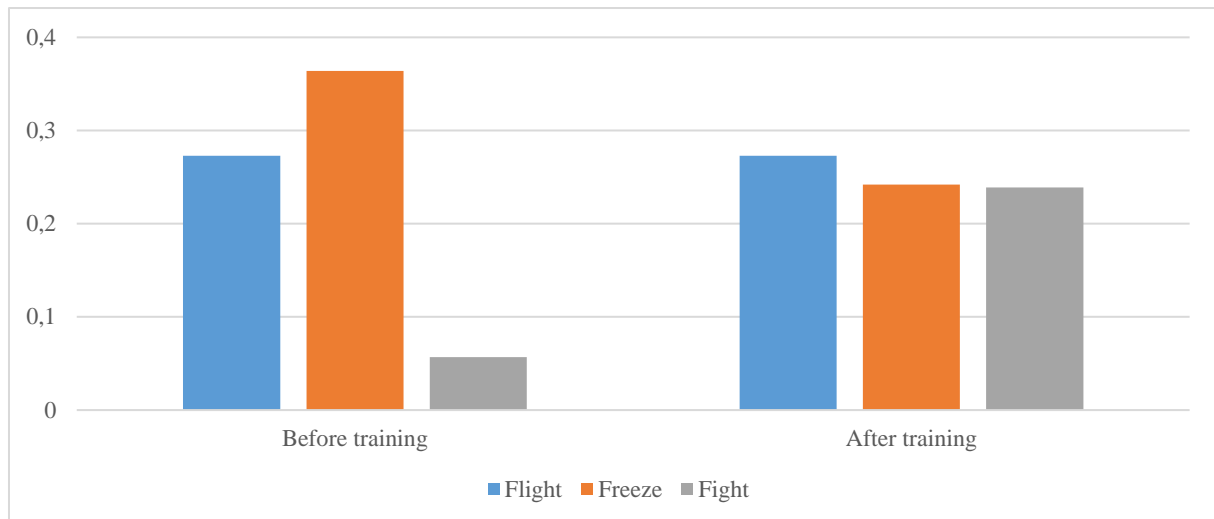


Figure 4. Averages of the behaviors flight, freeze and fight for both groups.

4.2 The behaviors in an unexpected situation

The second sub-question is connected to the first sub-question: Which behaviors are shown in an unexpected situation before and after the FIRST training? As became clear with the first sub-question, the respondents of the experimental group showed more the fight reaction as general reaction and the respondents of the control group, showed more the flight reaction as general reaction. This means that it is expected that the group after the training (experimental group) has shown more behaviors that fall under the fight reaction and the group before the training (control group) will have shown more behaviors that fall under the flight reaction. It is important to mention that the following results should be interpreted carefully because no statistical analysis has been done.

As mentioned earlier, there is an observation schedule made in advance with the behaviors that were expected. It could be stated that almost all behaviors that are included in the schedule in practice were visible. As expected, the flinch reaction was visible by all respondents (22 times). Two behaviors were not shown by the respondents and these are the following: Looking for help/call help and kicking the suspect.

It is striking that there are 6 behaviors that were only shown by the respondents who participated in the unexpected situation after the training, the experimental group. These 6 behaviors were not shown by the respondents who participated in the unexpected situation before the training, the control group. This involves the following 6 behaviors: Running away (2 times), steps toward the suspect (1 time), pushing the suspect against the wall/floor (1 time), grabbing the suspect (1 time), hitting the suspect (3 times) and 90 degrees angle arm (7 times).

Spreading the fingers is an important behavior that has been appointed in the FIRST training. Spreading the fingers provides more power. There are two respondents who showed this behavior, one respondent of the control group and one respondent of the experimental group. The squeeze reflex occurs more often and this causes fists, so the fingers are not spread out. However, the squeeze reflex

is less visible by the respondents of the experimental group: 4 times compared 6 times in the control group.

There are some behaviors that are shown more by the respondents of the control group. This mainly concerns flight and freeze reactions such as, steps back from the suspect (8 times in the control group, 5 times in the experimental group), protect chest (7 times in the control group, 3 times in the experimental group) and waiting for what the suspect does (3 times in the control group, 1 time in the experimental group). In addition, there are two behaviors that are shown more by the respondents of the experimental group: protect face (7 times in the experimental group, 2 times in the control group) and pushing the danger away (7 times in the experimental group and 4 times in the control group).

Another important point to mention is that ‘turning the back to the suspect’ is shown by one respondent of the control group and also by one respondent of the experimental group. The same applies to ‘making the body small’, in both groups three respondents showed this behavior.

Figure 5 shows all the behaviors included in the observation schedule. This graph shows clearly which behaviors are shown more by the respondents who participated in the unexpected situation before the FIRST training, the control group and which behaviors are shown more by the respondents who participated in the unexpected situation after the FIRST training, the experimental group.

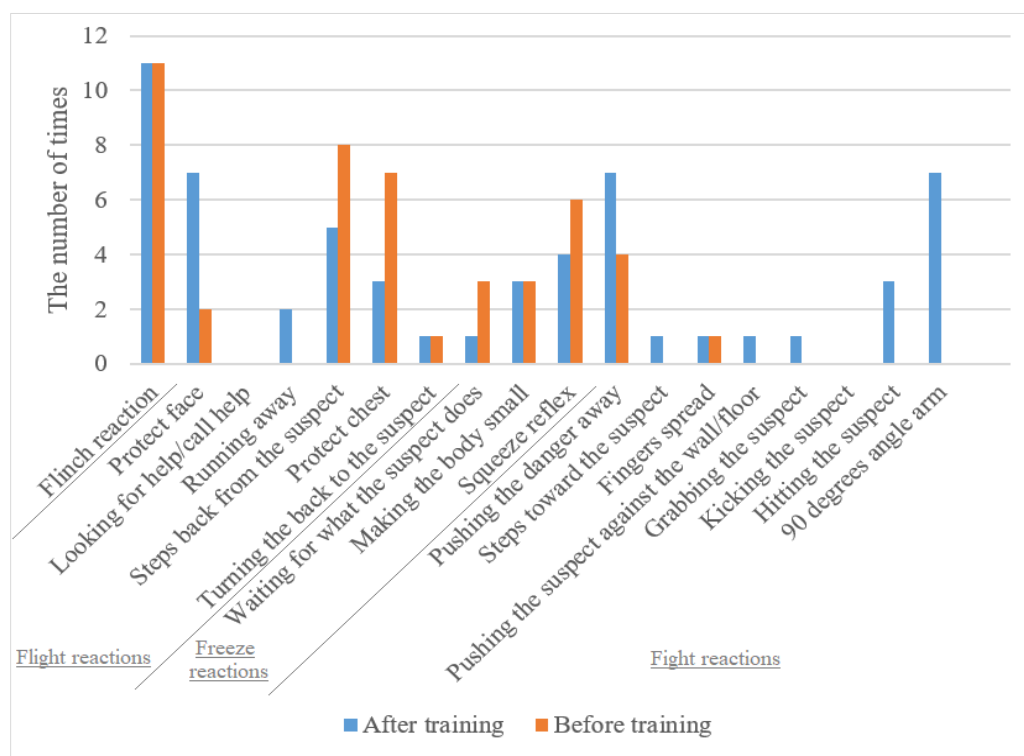


Figure 5. The number of times a behavior is shown in both conditions.

An examination of the number of fight behaviors and the two groups (before training and after training) revealed a significant difference between number of fight behaviors and the two groups. An

analysis using Fisher's Exact Test supported this observation: $p = 0.03$. Table 1 shows the number of times a fight behavior is shown over the two days. In total, 7 respondents of the control group (no training) showed none fight behaviors and that nobody showed a total of 4 fight behaviors. However, there are 2 respondents of the experimental group (training) who showed 4 fight behaviors and only 1 respondent who showed none fight behaviors.

Table 1.

How many times a fight behavior is shown.

	0	1	2	4
Before training	7	3	1	0
After training	1	3	5	2
Total	8	6	6	2

However, an examination of the number of flight behaviors and the two groups (before training and after training) revealed a not significant difference between number of flight behaviors and the two groups: $p = 0.817$ (Fisher's Exact Test). The same applies to freeze behaviors. No significant difference is found between the freeze behaviors and the two groups: $p = 0.461$ (Fisher's Exact Test).

4.3 The sequence of the behaviors

To answer the third sub-question, the sequence of the behaviors that the respondents showed is viewed: Is there a certain sequence in which people show their behavior during an unexpected situation? There has been investigated whether there are some similarities when a certain behavior is shown. All respondents, for both groups, shown the flinch reaction as the first reaction as expected.

In the control group (before training), it is visible that protecting the face or chest often occurs immediately after the flinch reaction, table 2. This is often followed by the behavior 'steps back from the suspect'. Sometimes these behaviors are reversed. This means that after the flinch reaction, the first behavior is 'steps back from the suspect' and after that 'protect face/chest'. There is one more behavior that comes before or sometimes after protecting the face/chest and stepping back from the suspect: the squeeze reflex. This reflex is not shown every time, but also occurs regularly as one of the first behaviors (5 times). It could be stated that protecting the face/chest, stepping back from the suspect and the squeeze reflex are shown right behind each other. However, the sequence differs. Sometimes this is accompanied by a wait-and-see attitude. If this is included, these behaviors occur in consecutively, different order by 6 of the 11 respondents. Table 2 clearly shows the times a behavior is shown after the flinch reaction. Table 3 shows the number of times a behavior is shown as second behavior.

The same about protecting the face or chest is visible by the experimental group (after training), table 2. Only it occurs more often in this group: 6 of the 11 respondents shown this behavior

pretty directly after the flinch reaction. If this behavior does not immediately follow the flinch reaction, there is (as in the other group) a short reaction before the protecting behavior such as the squeeze reflex, table 2 and 3. The behavior ‘pushing the danger away’ is regularly shown (7 times). This behavior is often the last or second to last behavior (6 out of 7 times), table 4 and 5. Another behavior follows 2 times as last reaction: running away, table 4. The 90 degrees angle arm has been learned during the physical part of the FIRST training. This behavior is used by 7 respondents who participated in the unexpected situation after the training, the experimental group and not once by the control group. It is striking that this behavior is not used directly, but often at the end, 5 times one of the last two shown behaviors, table 4 and 5. However, there is one respondent who shows this behavior after the flinch reaction immediately which is visible in table 2.

Table 2.

Number of times a behavior follows immediately after the flinch reaction.

	Control group	Experimental group
Protect face	2 times	3 times
Protect chest	2 times	3 times
Steps back from the suspect	2 times	0 times
Squeeze reflex	3 times	2 times
Waiting for what the suspect does	2 times	0 times
90 degrees angle arm	0 times	1 time
Fingers spread	0 times	1 time
Turning the back to the suspect	0 times	1 time
Total	11 times	11 times

Table 3.

Number of times a behavior is shown as second behavior.

	Control group	Experimental group
Protect face	0 times	4 times
Protect chest	1 time	0 time
Steps back from the suspect	4 times	3 times
Squeeze reflex	2 times	1 time
Waiting for what the suspect does	1 time	0 times
Making the body small	2 times	3 times
Fingers spread	1 time	0 times
Total	11 times	11 times

Table 4.

Number of times a behavior is shown as last behavior.

	Experimental group
Pushing the danger away	3 times
Running away	2 times
90 degrees angle arm	2 times
Hitting suspect	1 time
Steps back from the suspect	1 time
Waiting for what the suspect does	1 time
Pushing the suspect against the wall/floor	1 time
Total	11 times

Table 5.

Number of times a behavior is shown as second-last behavior.

	Experimental group
Pushing the danger away	3 time
90 degrees angle arm	3 times
Hitting suspect	2 times
Steps back from the suspect	2 times
Protect chest	1 time
Total	11 times

There can be no hard conclusion be drawn on this sub-question. There is no order in which the behaviors are (often) shown. There are only behaviors that are often shown in groups. For example, protecting the face/chest, steps back from the suspect and the squeeze reflex.

While looking at the sequence of the behaviors, there was another point that was clearly visible: the respondents after the training, the experimental group, showed more behaviors. The average number of shown behaviors in this group is 5.73 and the average number of shown behaviors in the group of respondents of the control group is 4.09.

4.4 Time between the flinch reaction and the first tactical response

The last, fourth, sub-question is: Does the FIRST training have an effect on the time between the flinch reaction and the first tactical response? The control group (before training) showed virtually no tactical responses. This made it impossible for seven of the eleven respondents to measure the time between the flinch reaction and the first tactical response. In total, 4 respondents of the control group

did show a tactical response. The average of time between the flinch reaction and the first tactical response is: 1.43 seconds.

The respondents of the experimental group (after training) showed more often a tactical response. Namely, 10 of the 11 respondents showed a tactical response. The average of time between the flinch reaction and the first tactical response in this group is: 1.05 seconds.

A goal of the FIRST training is to reduce the time between the flinch reaction and the first tactical response. It could be stated that the time between the flinch reaction and the first tactical response after the FIRST training is decreased by 0.37 seconds. Figure 6 shows this difference clearly. It is visible that the time is decreased by 26.19%. However, this is not a hard conclusion because there are many respondents of the control group who have not shown a tactical response. This conclusion must be handled carefully because no statistical analysis has been done.

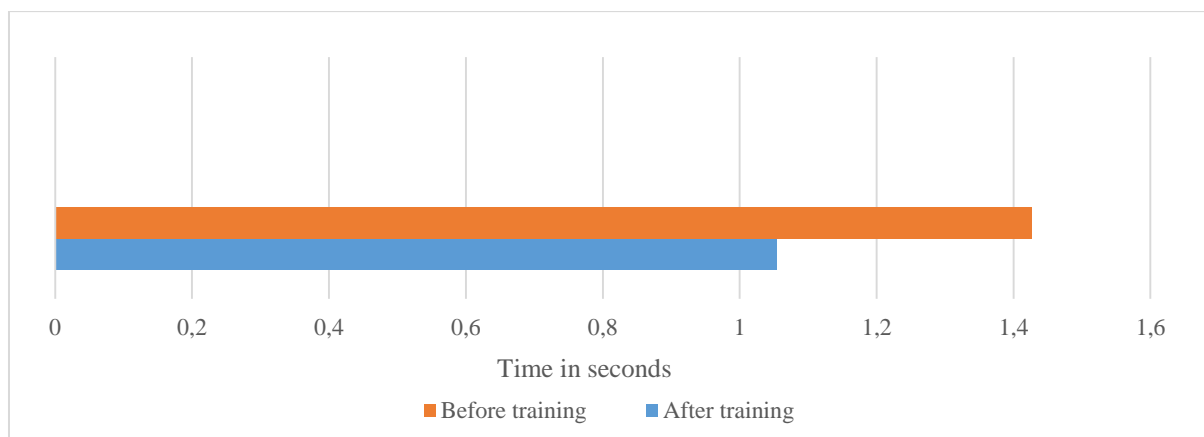


Figure 6. Average of the time between the flinch reaction and the first tactical response.

4.5 Additional analysis

For these additional analysis, the questionnaire of De Witte (2018) is linked with this study to see if there are correlations with the behavioral variables (flight, freeze and fight). A total of two significant correlations are found. It is important to mention that a high score on optimism/pessimism means that a person is optimistic. All correlations are visible in table 6.

There is a negative correlation between severity and fight reaction: $r = -0.50$ ($p < 0.02$). This means the more severity a person experiences, the lower the fight reaction of the person. In addition, there is a positive correlation between susceptibility and flight reaction: $r = 0.62$ ($p < 0.01$). The more susceptibility of a person, the more flight reaction of the person. The two significant correlations are 0.50 and 0.62. This means that the correlations are moderate in strength. Table 6 shows all (significant) correlations.

Table 6.

Correlations

	Flight reaction	Freeze reaction	Fight reaction
1. Resilience	-0.10	0.26	-0.09
2. Stress	0.20	-0.09	0.20
3. Optimism – Pessimism	0.20	-0.01	-0.18
4. Self-efficacy	0.26	-0.01	-0.10
5. Response efficacy	0.32	0.07	-0.34
6. Severity	0.34	-0.27	-0.50*
7. Susceptibility	0.62**	-0.34	0.01
8. Risk perception	0.30	-0.06	-0.02
9. Feeling	-0.42	0.08	0.10
10. Flight reaction	-	-0.26	-0.41
11. Freeze reaction		-	-0.15
12. Fight reaction			-

Note: N = 22 for all variables, except for response efficacy: N = 11.

5. Discussion

5.1 Overview of findings

The results showed the general reaction (flight, freeze and fight) of the respondents. It became clear that the respondents of the control group mainly showed a flight reaction. A few respondents showed a freeze reaction, but not a single respondent showed ‘fight’ as a general reaction. No respondent of the experimental group showed a freeze reaction as a general and dominant reaction. The majority of the experimental groups showed ‘fight’ as a general reaction. However, a few respondents also showed a flight reaction, but this reaction was clearly less showed. This can be used to answer the first sub-question: What is the difference between the general reaction of the participants before and after the FIRST training? So, the majority of the experimental group showed a fight reaction as general reaction and the majority of the control group showed a flight reaction as general reaction.

In this study, it has become clear which behaviors occur by people in an unexpected situation which answers the second sub-question: Which behaviors are shown in an unexpected situation before and after the FIRST training? In the results six behaviors were named that were only shown by the respondents of the experimental group: Running away, steps toward the suspect, pushing the suspect against the wall/floor, grabbing the suspect, hitting the suspect and 90 degrees angle arm. In comparison with spreading the fingers, it seems that the squeeze reflex is shown more often. However, it seems that this reflex is shown less often in the experimental group. In general, the respondents of the control group showed more flight and freeze reaction, such as, stepping back from the suspect, protecting one’s chest and waiting for what the suspect does. In addition, protecting the face is shown

more by the experimental group. The same applies to the behavior 'pushing the danger away'. There is no difference between the two groups concerning the behaviors 'turning the back to the suspect' and 'making the body small'.

The third sub-question is: Is there a certain sequence in which people show their behavior during an unexpected situation? All respondents, for both groups, shown the flinch reaction as first reaction. In the control group it is visible that there are some behaviors that often occur after the flinch reaction: protecting the face/chest, stepping back from the suspect, the squeeze reflex and waiting for what the suspect does. However, the sequence of these behaviors differs. Protecting the face/chest is also visible in the experimental group, only it occurs more often in this group. If this behavior did not immediately follow the flinch reaction, the squeeze reflex is shown. Pushing the danger away and 90 degrees angle arm are two behaviors that are often shown as the last or second last behavior by the respondents of the experimental group. There is no certain sequence in which people showed their behavior during an unexpected situation, but it seems that there are behaviors that regularly followed each other. In addition, another point, the respondents of the experimental group showed more behaviors in total in comparison with the control group.

As last, the time between the flinch reaction and the first tactical response is measured. Seven of the eleven respondents of the control group showed no tactical response. There was one respondent of the experimental group who showed no tactical reaction. It seems that the FIRST training has an effect on showing a tactical response, because almost all respondents showed a tactical response after the training in comparison with the respondents before the training. In addition, it became clear that the average of the time of experimental group is lower than the average of the time of the control group. This means that the time between the flinch reaction and the first tactical response decreases after following the FIRST training. However, this conclusion must be interpreted carefully because few respondents before the training have shown a tactical reaction. This answers the last, fourth, sub-question: Does the FIRST training have an effect on the time between the flinch reaction and the first tactical response?

5.2 Explanations of the results

It is not surprising that there are six behaviors which are not shown by the respondents of the control group. These behaviors are all named and partly taught during the training, because these behaviors can be effective in a unexpected situation. It is not strange that the behavior 'hitting the suspect' is shown after the training. All respondents participated in the physical part of the training. They have mainly learned to defend themselves, making it more plausible that they will take this into the unexpected situation that followed shortly afterwards. In addition, perhaps the respondents who participated after the FIRST training in the created unexpected situation, can be called 'urban skilled'. According to Lofland (1973) these people know how to respond flexibly to an unexpected situation because they have experience with this kind of situations. The respondents have gained experience

through the FIRST training in responding to an unexpected situation, which may have made them more flexible in responding. This could also be an explanation for the fact that the respondents of the experimental group showed more behaviors in total than the respondents of the control group.

Another explanation for the fact that the respondents of the experimental group showed more fight reaction may be that, despite of the small and random sample, these respondents are more aggressive than the respondents of the control group. Roelofs (2012) assumes that people with an aggressive disorder show a fight-response more often. However, this explanation is not likely. Irritability or aggressiveness that leads to violence is common by people with an antisocial personality disorder. In 2009, 3% of the Dutch population (18-65 years) had ever had an antisocial personality disorder in his/her life. For men, the risk of ever receiving antisocial personality disorder is 4.3%, for women this is 1.7% (Rijksinstituut voor Volksgezondheid en Milieu, n.d.-b). Given this probability is small and the number of people with an personality disorder is low makes this statement weak. In addition, despite the fact that the sample was small, it was random which can also makes this statement weak.

There is only one respondent after the training who showed spread fingers while this has been learned during training. This may mean that this behavior is not easy to learn. This can also be caused by the squeezing flex because this behavior is automatic. Another explanation can be the way of storing information. As mentioned earlier, Zimbardo (2013) assumes that storing information ensures that the patterns are kept in the remembrance for a longer time, by linking them to existing patterns (from previous experiences). It is possible that the patterns are not linked to existing patterns. A large amount of information was given during the training and this can achieve that people do not have enough time to fully link them to existing patterns. People encoded the information not concretely, so it is not stored practically and not ready to be retrieved (Zimbardo, 2013). This can also be the reason why the 90 degrees angle arm is often shown late instead of directly. The respondents have learned this during the training, practiced it several times, but this action is not fully automated. An explanation for this can be the not fully linked patterns in the memory, but also that this action is not yet properly included in the system of the people. If information is stored properly, people can recall the memory to consciousness in a fraction of a second (Zimbardo, 2013). However, it is important to mention that respondents who showed the 90 degrees angle arm at the end also showed this within almost a second. The same applies to 'turning away to the suspect' and 'making the body small'. These behaviors are also discussed during the training. It is surprising that a respondent after the training turns the back to the suspect and that there are still three respondents who showed a freeze reaction after participating in the training. Namely, during the training is told that this is dangerous. In addition, it is possible that these respondents have a social anxiety disorder which makes it possible to show a freeze reaction more quickly. The majority of the respondents have experienced a threatening situation in the past and this can lead to a (psychological) trauma. Example of this are: verbal violence, vandalism, abuse and armed robbery. People who have experienced a trauma show a freeze reaction

earlier (Roelofs, 2012). However, this is not likely because in 2011 196.900 persons were (aged 18-65) diagnosed with anxiety disorder in the Netherlands: 12.5 per 1.000 men and 29.6 per 1.000 women (Rijksinstituut voor Volksgezondheid en Milieu, n.d.-a). Given that this number is low and all respondents of both groups have experienced a threatening situation in the past, it seems that this explanation is in probable. In other words, the probability that all respondents who showed a freeze reaction also belong to the low number of people who have developed a social anxiety disorder is small.

A final explanation for the fact that some respondents have not included certain information/behaviors of the training in the created unexpected situation can be one of the seven sins of memory. Zimbardo (2013) indicates seven sins of memory: volatility (forgetting curve), distraction (result of holes in attention), blocking (tip of the tongue phenomenon), wrong attribution (memory error), suggestibility (disturbance of memory), bias (memories these are distorted by beliefs, attitudes and opinions) and unwanted persistence (if someone is unable to forget unwanted memories). During the training there were people who walked in and out of the gym (the location), which could cause distraction (a sin of memory).

The most obvious explanation is that the respondents have absolutely no idea before the training how they can respond at all. The respondents after the training have just learned actions and can take them into the unexpected situation. As mentioned earlier, this can make them 'urban skilled'. The people who are 'urban skilled' can afford coolness and tolerance because they have great experience in how to behave in all kinds of situations. These people know how to respond flexible to an unexpected situation (Lofland, 1973).

The results showed that the respondents who participated in the unexpected situation after the training showed more resilient behaviors. An explanation for this could be that the respondents who participated in the unexpected situation after the training showed more fight reactions. When respondents show flight or freeze reactions (as in the other group), there are only three freeze behaviors and six flight behaviors which could occur. For example, if someone's general reaction is 'freeze', the person is unable to show other behaviors. If someone's general reaction is 'fight', the person will be able to show a lot of different behaviors such as hitting the suspect, grabbing the suspect, pushing the suspect against the floor/wall, et cetera.

In addition, the increased adrenaline may be an explanation for the decreased time between the flinch reaction and the first tactical response of the experimental group. Adrenaline ensures that people pay attention and react quickly (Bögels, 2008). In other words, it makes the body ready to fight or flight (Prinsen, 2010). Adrenaline can be generated by the FIRST training, allowing people to show a tactical response faster, such as a flight or fight reaction. Due to this accelerated reaction, the time between the flinch reaction and the first tactical response decreases. Of course, the FIRST training can also be the explanation for this result. People have more skills to be able to act in an unexpected situation after the training. It is possible that it is an interaction between these two statements.

The two significant correlations of the extra analyses are logical and not strange or surprising. When a person experiences a lot of susceptibility, it is likely that someone shows a flight reaction faster. In addition, when someone experiences a lot of severity, it is evident that the fight reaction is less shown. Several authors indicate that positive emotions increase resilience (Earvolino-Ramirez, 2007; Te Brake, Van der Post & De Ruijter, 2008; Fredrickson, 2001). This can explain the two correlations. If someone is susceptible for a threatening situation, for example, there will be a lot of fear, which can cause a flight reaction faster. In addition, Roelofs (2012) states that a flight reaction occurs more often.

There are some correlations that are not significant in the extra analyses. For example, it is striking that self-efficacy does not correlate significantly with, for instance, a high fight reaction while self-efficacy is the belief that one can influence the environment and the outcome of events (Mann et al., 2015; Veselska et al., 2009; Rutter, 1987). However, the sample is small (22 respondents) and not varying (many respondents are members of CrossFit) which can produce non-significant results and seems to be the most obvious explanation.

5.3 Adapted conceptual framework

Prior to this, a conceptual framework was developed based on theories. While conducting the study and observing the videos, clearly more behaviors emerged. As a result, the conceptual framework does not appear to be complete and it has been adjusted, figure 7.

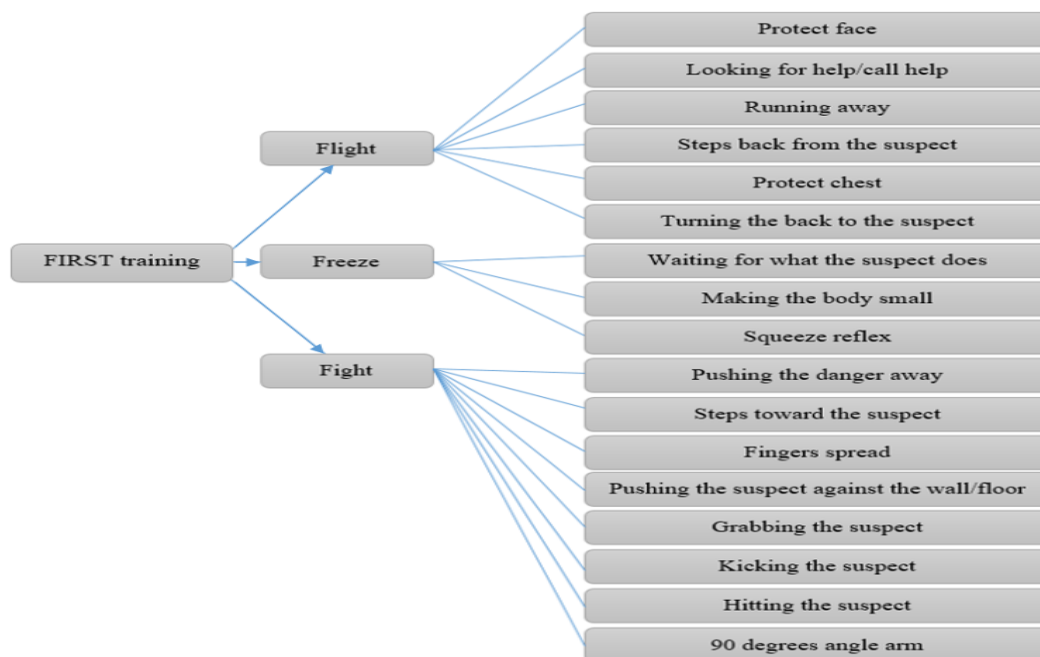


Figure 7. The adapted conceptual framework.

5.4 Limitations and recommendations

Some limitations have emerged in this study. The sample was small, because 22 respondents participated in the created unexpected situation. Despite the fact that this was the highest possible, it is

a small number. Besides, this is the most obvious explanation for the non-significant results. The same applies to the small variation of respondents because many respondents practice CrossFit. In addition, there are some explanations found for the results, but some explanations cannot be excluded by lack of information, such as no information about previous experiences/traumas. This was possible if more background information about the respondents was available. This could include information whether respondents have fears and/or trauma. If it was known whether the respondents suffer from trauma or anxiety, this can be a logical explanation for, for example, the freeze behavior (Roelofs, 2012). Further, the question how these respondents reacted in their perceived threatening situation at the time is not asked. Answers to this question might give an explanation of the difference between their previous experience and now. If there is a difference, this can be an effect of the FIRST training. Lastly, it is not possible to check whether the respondents have properly incorporated the information of the training and whether they understand it. Because of this, the seven sins of the memory cannot be excluded, so there is a chance that one of these seven sins plays a role. For example, volatility (forgetting curve) and distraction (result of holes in attention) may have played a role (Zimbardo, 2013). This could have been measured by giving a kind of test after the training, with which there could have been measured whether the respondents had the correct knowledge. These are recommendations for a follow-up study.

In addition, there are some recommendations for the FIRST training. A lot of information is given during the training. People may not be able to absorb all of this in a short time. Therefore, it seems more effective to tell less information and to repeat this information. The information of the short-term memory is stored in the long-term memory. This will ensure that people will remember certain behaviors and information more quickly, allowing them to act more effectively in an unexpected situation. As Zimbardo (2013) indicates: the more one rehearses, the more solid the information is stored and the more powerful the memory becomes. When people encode the information more concretely, the more practical it is stored and ready to be retrieved. If stored properly, people can recall the memory to consciousness in a fraction of a second.

5.5 Take home message

Summarizing all the results, it can be stated that the FIRST training has a positive effect on the behavior of people in an unexpected situation. It seems that after participating the training, people have more capacities to show resilient behaviors. As mentioned earlier, there are some limitations in this study and recommendations have been made for a follow-up study. The main point is to use a larger and more varied sample. This is important in order to draw stronger conclusions. In addition, more background information of the respondents can provide explanations or just exclude explanations.

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Appendix

Appendix A – Flyer



Weerbaarheid vergroten?

Wil jij weten en leren wat je kunt doen als je in een gewelddadige situatie terecht komt? Doe dan mee aan de FIRST training op 21 oktober of 28 oktober! De training zal beginnen om 9.45 uur en uiterlijk eindigen om 14.00 uur. Hiermee help je niet alleen ons, door mee te doen aan een weerbaarheidsonderzoek van Universiteit Twente, maar ook jezelf en jouw omgeving!

Ben jij minimaal 18 jaar (of 14+ met toestemming van jouw ouders) en lichamelijk fit? **Geef je dan nú op!**

Stuur een e-mail vóór 16 oktober met jouw voorkeursdatum naar:
utweerbaarheidsonderzoek@hotmail.com



De training zal bestaan uit een klein theoretisch gedeelte en fysiek gedeelte!



CrossFit

De training vindt plaats bij Reebok CrossFit 020:
Hoogoorddreef 3
1101 BA Amsterdam-Zuidoost

De deelname is vrijwillig en door je op te geven, geef je automatisch toestemming voor deelname aan een onderzoek en het anoniem verwerken van de onderzoeksresultaten.

**GRATIS
TRAINING
T.W.V. €250,- P.P.**

Appendix B – First default email

Hallo,

Bedankt en erg leuk dat jij mee wilt doen aan de weerbaarheidstraining en het onderzoek van Universiteit Twente. In deze mail zullen wij ons voorstellen en verdere informatie geven.

Wij zijn drie studenten van Universiteit Twente: Lara, Megan en Linda. Op dit moment zijn wij bezig met de master 'Conflict, Risk and Safety', dit is een specialisatie van psychologie. Wij doen onderzoek naar weerbaarheid en hiervoor hebben wij jou nodig! Wij zijn ontzettend blij met jouw aanmelding. Wij hopen dat jij na de training weerbaarder bent geworden en jezelf ook weerbaarder voelt.

Hoe zal de ochtend eruit zien? Wij vragen je om 09.45 uur aanwezig te zijn. Allereerst zullen wij jullie vragen een toestemmingsverklaring te tekenen, waarmee je akkoord gaat met de algemene voorwaarden voor deelname aan het onderzoek. Het eerste half uur/uur van de training zal in het teken staan van een theoretisch gedeelte. Hierna start het praktische gedeelte. De training zal rond 13.00 uur afgelopen zijn. Voor het onderzoek zal er dan nog een meting volgen en zullen er nog enkele mensen geïnterviewd worden. Hiervoor zijn wij nog op zoek naar vrijwilligers, dit zal ongeveer een half uur in beslag nemen en ter vergoeding krijgen zij een klein presentje. Wil jij je hiervoor aanmelden, stuur dan even een mailtje. Dit betekent dat de uiterlijke eindtijd indien je meedoet met het interview 14.00 uur zal zijn.

Er zal nog verdere informatie via de mail bekend worden gemaakt.

Nogmaals bedankt voor jouw aanmelding en tot snel!

Groetjes,

Lara, Megan en Linda

Appendix C – Email with the group distribution

Hallo,

Nogmaals bedankt voor je aanmelding! In deze mail volgt verdere uitleg over de dag.

Graag zien wij jou op ... oktober om 9.45 bij sportschool Reebok CrossFit 020. Het adres is: Hoogoorddreef 3, 1101 BA Amsterdam-Zuidoost.

Kom je met de auto? Geen probleem! Parkeer je auto dan in de parkeergarage P9. Deze ligt direct naast de locatie. De kosten van het parkeren zijn voor jezelf, maar wel met korting. Daarnaast is het ook makkelijk te bereiken met het openbaar vervoer.

Als laatst willen wij je vragen in makkelijke kleding te komen. Sportkleding is altijd goed en een flesje water is soms ook wel fijn. Wij vragen je een eigen lunchpakketje mee te nemen, maar daarnaast is het ook mogelijk om gezonde snacks daar te kopen.

Mochten er nog mensen zijn in je netwerk die nog graag mee willen doen met de training, dan horen wij het graag. Het is nog mogelijk om hiervoor aan te melden!

Wij hopen dat je er zin in hebt en nieuwsgierig bent naar de training. Wij hebben er in ieder geval zin in!

Mochten er nog vragen zijn, dan horen wij het graag.

Tot ... oktober!

Groetjes,

Lara, Megan en Linda.

Appendix D – Scheme

First training day

09.45	Verzamelen bij de sportschool.
10.00	Toestemmingsverklaringformulier laten invullen, vragenlijst (kwantitatief onderzoek) en ambush bij enkele respondenten (observatie onderzoek).
10.45	Start training.
12.45	Einde training. Vragenlijst laten invullen (kwantitatief onderzoek) en debriefing.
13.00	Drie respondenten worden geïnterviewd.
13.30	Drie respondenten worden geïnterviewd.
14.00	Einde trainingsdag.

Second training day

09.45	Verzamelen bij de sportschool.
10.00	Toestemmingsverklaringformulier laten invullen, vragenlijst (kwantitatief onderzoek).
10.15	Start training.
12.15	Einde training. Vragenlijst laten invullen (kwantitatief onderzoek), ambush bij enkele respondenten (observatie onderzoek) en debriefing.
13.00	Drie respondenten worden geïnterviewd.
13.30	Drie respondenten worden geïnterviewd.
14.00	Einde trainingsdag.

Appendix E – Observation schedule

Observers	
Respondent	
Training day (date)	

Behaviors	Abbreviation
Flinch reaction	FR
Protect face	PF
Looking for help/call help	LCH
Running away	RA
Steps back from the suspect	SB
Protect chest	PC
Turning the back to the suspect	TB
Waiting for what the suspect does	W
Making the body small	MS
Squeeze reflex	SR
Pushing the danger away	PD
Steps toward the suspect	ST
Fingers spread	FS
Pushing the suspect against the wall/floor	PWF
Grabbing the suspect	GS
Kicking the suspect	KS
Hitting the suspect	HS
90 degrees angle arm	AA

<p><u>The observation</u></p> <p>The sequence:</p> <p>The time between the flinch reaction and the first tactical response:</p>

The number of times a behavior is shown:

Flight reactions:

Protect face	
Looking for help/call help	
Running away	
Steps back from the suspect	
Protect chest	
Turning the back to the suspect	

Freeze reactions:

Waiting for what the suspect does	
Making the body small	
Squeeze reflex	

Fight reactions:

Pushing the danger away	
Steps toward the suspect	
Fingers spread	
Pushing the suspect against the wall/floor	
Grabbing the suspect	
Kicking the suspect	
Hitting the suspect	
90 degrees angle arm	

General reaction:	
Comments:	

Appendix F – Informed consent

Toestemmingsverklaringformulier

Titel onderzoek: Weerbaarheid vergroten

Verantwoordelijke onderzoekers: Linda Willemsen, Megan Oude Groeniger en Lara de Witte

In te vullen door de deelnemer

Ik verklaar op een voor mij duidelijke wijze te zijn ingelicht over de aard, methode, doel en de risico's en belasting van het onderzoek. Ik weet dat de gegevens en resultaten van het onderzoek alleen anoniem en vertrouwelijk aan derden bekend gemaakt zullen worden. Mijn vragen zijn naar tevredenheid beantwoord. Ik begrijp dat film-, foto, en videomateriaal of bewerking daarvan uitsluitend voor analyse en/of wetenschappelijke presentaties zal worden gebruikt. Ik stem geheel vrijwillig in met deelname aan dit onderzoek. Ik behoud me daarbij het recht voor om op elk moment zonder opgaaf van redenen mijn deelname aan dit onderzoek te beëindigen. Als ik verder informatie wil betreft het onderzoek nu of in de toekomst, kan ik contact opnemen met utweerbaarheidsonderzoek@hotmail.com.

Naam deelnemer:

Datum:

Handtekening deelnemer:

Handtekening ouder/verzorgen (Leeftijd <18):.....

In te vullen door de uitvoerende onderzoekers

Wij hebben een mondelinge en schriftelijke toelichting gegeven op het onderzoek. Wij zullen resterende vragen over het onderzoek naar vermogen beantwoorden. De deelnemer zal van een eventuele voortijdige beëindiging van deelname aan dit onderzoek geen nadelige gevolgen ondervinden.

Datum:

.....

Naam onderzoeker Handtekening

.....

Naam onderzoeker Handtekening

.....

Naam onderzoeker Handtekening

Informed consent

Titel research: Increasing resilience

Responsible researchers: Linda Willemsen, Megan Oude Groeniger en Lara de Witte

To fill in by the participant

'I hereby declare that I have been informed in a manner which is clear to me about the nature and method of the research as described in the aforementioned information. My questions have been answered to my satisfaction. I agree of my own free will to participate in this research. I reserve the right to withdraw this consent without the need to give any reason and I am aware that I may withdraw from the experiment at any time. If my research results are to be used in scientific publications or made public in any other manner, then they will be made completely anonymous. My personal data will not be disclosed to third parties without my express permission. If I request further information about the research, now or in the future, I may contact utweerbaarheidsonderzoek@hotmail.com.

Signed in duplicate:

Datum:

.....
.....

Name participant

Signature

Signature parents/caretakers

To fill in by the researchers

I have provided explanatory notes about the research. I declare myself willing to answer to the best of my ability any questions which may still arise about the research.'

.....

Name researcher Signature

.....

Name researcher Signature

.....

Name researcher Signature