Dangerous Minds: Understanding the Relation Between Fixation and Violence.

A Master's Thesis

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Abstract

The current study aimed to find out what exactly causes fixation to lead to an increased risk of violence caused by an individual. In this study, fixation was operationalized as the amount of time spent regarding a quest, as well as the level of personal importance regarding that quest. A total of 50 participants joined a week-long experiment in which they performed several tasks: the goal was to let one group of participants become fixated on a quest against air pollution.

First, it was expected that participants in the fixation group would hold harsh attitudes towards anyone who endangers their quest. Feelings of identification were also explored, because it was believed that these could influence attitude forming.

Second, it was expected that participants in the fixation group are more willing to cause harm to people who they believe to be endangering their quest. Lastly, it was expected that participants in the fixation group would encounter a wide range of opportunities to achieve their highly desired objective, including those of a morally questionable nature. Unfortunately, none of the expectations have been met.

The results can largely be explained by the fact that the manipulation only partly succeeded: although significant differences were found between the fixation group and the control group considering one aspect of fixation (time), it was not found that the participants in the fixation group experienced the quest to be more of personal importance, as opposed to participants in the control group. Despite the results, it should be acknowledged that this study has provided some new insights for the field of threat assessment. By making some practical adjustments, new studies can help to detect any early signs of fixation, which in turn could facilitate the threat assessment of individuals who are displaying such behaviour.

Samenvatting

De huidige studie probeerde uit te zoeken waardoor fixatie leidt tot een verhoogd risico op geweld door een individu. In deze studie werd fixatie geoperationaliseerd als de mate van tijd gestoken in een queeste, en de mate van persoonlijk belang die de participanten ervoeren met betrekking tot die queeste. In totaal hebben 50 participanten deelgenomen aan een experiment, waarbij zij gedurende één week taken uitvoerden: het doel was om één groep participanten gefixeerd te laten worden op een queeste tegen luchtvervuiling.

Ten eerste werd er verwacht dat participanten in de fixatiegroep negatievere houdingen aannamen tegenover anderen die hun queeste in de weg stonden. Gevoelens van identificatie met anderen werden hierbij ook onderzocht, omdat dit soort gevoelens houdingen vorm kunnen geven.

Ten tweede werd er verwacht dat participanten in de fixatiegroep meer bereid zijn om anderen te schaden wanneer zij hun queeste in de weg staan. Als laatste werd er nog verwacht dat participanten in de fixatiegroep veel mogelijkheden zouden erkennen om hun doel te bereiken, inclusief mogelijkheden die moreel gezien twijfelachtig zijn. Helaas zijn er geen verwachtingen uitgekomen.

De resultaten kunnen verklaard worden door het feit dat de manipulatie niet volledig gelukt is: alhoewel significante verschillen gevonden zijn met betrekking tot één aspect van fixatie (tijd), was het niet gevonden dat de participanten in de fixatie groep de queeste meer van persoonlijk belang beschouwden dan participanten in de controle groep. Ondanks de resultaten behoort het erkend te worden dat deze studie het wetenschappelijke veld heeft voorzien van enkele nieuwe inzichten, en dat aangepaste studies kunnen helpen om vroege tekenen van fixatie te detecteren, wat vervolgens de beoordeling van risico's van individuen kan faciliteren.

Introduction

A middle-aged men once developed the believe that he was treated unjustly by a manufacturer, and attempted to improve his situation through pursuing an intense quest for justice. As time passed, he wrote numerous letters to the company and became increasingly threatening towards the company. At one point, there was a potentially dangerous incident which eventually led to his arrest (Mullen et al., 2009). It is not uncommon that people can become obsessed with something or someone. It could be relatively normal and harmless for individuals to be preoccupied with other people or with a quest, but it could also develop into abnormally intense fixations (Mullen et al., 2009). These abnormally fixations could lead to violent encounters, and the concept of fixation has been classified as a warning behaviour for these violent encounters (Meloy, Hoffmann, Guldimann, & James, 2012). However, it still remains unclear why fixation may escalate into violence. Therefore, the main question this study will focus on is: how does fixation lead to an increased risk of violence within individuals?

Theoretical Framework

Violence. The concept of violence has been researched a lot and thus there are a lot of existing definitions. There are two main types of violence: affective violence and predatory violence (Meloy, Hart, & Hoffmann, 2014). The first type has a reactive and impulsive nature, whereas the latter is more instrumental and premeditated. Moreover, predatory violence is characterized by planning and preparation beforehand and differs from affective violence in a way that it is not preceded by autonomic arousal or a reaction to a perceived threat, for example a sudden attack from someone else (Meloy et al., 2014). The focus of this study lies on predatory violence, because this is the type of violence which is presupposed by threat assessment. In fact, threat assessment relies on the behaviours that will precede the attack by days, weeks, or even months, and it is nearly impossible when there are no warning behaviours beforehand (Unsgaard & Meloy, 2011; Meloy et al., 2014).

In this study, violence is viewed as an actual, attempted, or threatened physical or serious psychological harm towards another person without their consent (Douglas, Hart, Webster, Belfrage, Guy, & Wilson, 2014). Based on this definition, all communicated threats should be considered as violence, although it should be noted that not all violence involves threats. Moreover, violence includes all harm that one threatens to inflict, which is closely related to the concept of aggression. Aggression can be seen as any behaviour that is carried

out with the intent to cause harm towards another individual who would rather avoid that behaviour (Anderson & Bushman, 2002). As said before, harm could either be physical or psychological, but it could also include financial harm, disturbance of peace, or harassment.

Fixation. Fixation can be seen as any behaviour that suggests an increasingly pathological preoccupation (Mullen et al., 2009). This preoccupation can be tied to either an individual or a quest. Fixation concerns five key aspects: an increasing perseverance on the object of fixation, an increasingly strident opinion, an increasing negative characterization of the object of fixation, an impact on the associates (e.g. family) of the object of fixation, and an angry emotional undertone (Meloy et al., 2012). Moreover, fixated individuals spend a great amount of time thinking about their object of fixation and gathering information on the object. This behaviour often has a profound impact on their relationships with their family and friends as well: the fixated individual can often become isolated from their previous life (Mullen et al., 2009). Thus, the object of fixation is of great personal importance, and is very likely to dominate the thoughts of a fixated individual in their everyday life.

Categories. The domination of thoughts can occur in five different ways. Perhaps the most well-known type is the fixation of individuals considering another person. These so-called relationship seekers believe that they have, or are destined to obtain, a special relationship with their person of interest (Mullen et al., 2009). In the media, these individuals are commonly referred to as stalkers. In addition to the stalkers there are also the petitioners, who are fixated on supporting a cause or completing a quest. The objective of these individuals have become of such great personal importance to them, that they are vulnerable to any experienced ingratitude or slight (Mullen et al., 2009). Presumably, this could have negative effects on their relationships with individuals who are not as driven as they are. Moreover, petitioners are often characterized by holding a stubborn belief in the righteousness of their cause (James, Kerrigan, Forfar, Farnham, & Preston, 2010). The other remaining types of fixation are the pretenders (who claim to possess a certain position or title), and the persecuted (who believe to be persecuted by a prominent person or those who are hopelessly pleading for help). Lastly, there is also the chaotic type of fixation: these individuals are so confused in their motives and behavioural expressions by symptoms of mental illness, that their meaning remains obscure (James et al., 2010 & Mullen et al., 2009). In this study, the focus lies on the individuals who are fixated on supporting a certain cause or completing a quest: the petitioners.

Fixation as a warning behaviour. Over the past years, a lot of researchers have described the relation between fixation and violent situations such as attacks on individuals or governmental institutions (e.g. Hoffmann, Meloy, Guldimann, & Ermer, 2011; Meloy, Hoffmann, Roshdi, & Guldimann, 2014; Meloy & Amman, 2016; NTAC, 2015; James et al., 2010). These studies largely showed the same results: the objectives of the attackers were all motivated by strong devotion, and half or more of the studied cases involved fixations. Those studies have been of significant influence in the area of threat assessment, which focuses on assessing the threat level in a person to commit an act of violence (Meloy et al., 2014).

Institutions such as the Fixated Threat Assessment Centre (FTAC) in the United Kingdom assess and manage threat levels of fixated individuals based on certain warning behaviours (James, Farnham, & Wilson, 2013). These warning behaviours could estimate the probability of an act of violence in the future, so that measures can be taken considering the person who is displaying those behaviours. As stated before, fixation has also been classified as one of those warning behaviours (Meloy et al., 2012). This means that the presence of fixation within a person could increase the risk of violence committed by that person. The question that still remains however, is: why?

Explanations. A common approach for the explanation of fixated individuals to engage in violence has been to ascribe mental illness as the cause. Researchers have found that fixation often goes hand-in-hand with delusions, depressive symptoms, and poor attachment (Hoffmann et al., 2011). Moreover, a high proportion of fixated individuals have a major mental illness, and more than 80 percent were actively psychotic (Mullen et al., 2009; James et al., 2010). Although mental illness plays an important role considering the violent encounters with fixated individuals, the current study aims to find different explanations. It is believed that other factors could play a role as well. For instance, a study of Borum (2013) refers to the risk that mental illness as a diagnostic label is commonly used as the absolute explanation for all thinking and behaviour of the subject, which would be incorrect: behaviour and thinking are influenced by numerous factors such as attitudes, personality traits, and life events (e.g. Bacon, Corr, & Satchell, 2018; Lönnqvist, Verkasalo, & Walkowitz, 2010; Ratliff & Nosek, 2011). Moreover, only a small number of individuals with mental health issues fixate, threaten, or attack[1]: there could be more contributing factors for the violent behaviour than solely having a mental illness.

[1] One in five adults in the United States experience mental illness – that is 44.7 million people in 2016 (National Alliance on Mental Illness, NAMI).

Attitude forming. The first possible explanation that will be discussed is based on attitudes, which are evaluations that people hold about themselves, others, objects, and issues (Petty & Cacioppo, 1986, in Anderson & Bushman, 2002). It is important to obtain knowledge about attitudes amongst fixated individuals, because attitudes lead to certain behaviour – amongst which aggression. For instance, Anderson and Bushman (2002) found that people who hold positive attitudes towards engaging in violence are prepared for aggression. Moreover, positive attitudes regarding violence towards specific groups of people may even increase aggression towards those people.

Attitudes are of particular importance when it comes to identification with certain groups: people tend to have positive attitudes towards members of their ingroup and negative attitudes towards members of their outgroup (e.g. Aviram, 2006; Brown & Wade, 1987; Ratliff & Nosek, 2011). After all, people are motivated to view their ingroup as more favourable than the outgroup, in an effort to maintain a positive self-concept (e.g. Hogg, 2013; Turner, 1975; Turner, Brown, & Tajfel, 1979). It is expected that this is the case for the fixated individuals (i.e. the petitioners) as well, because they stubbornly perceive themselves as being correct (James et al., 2010). They can even experience frustration and anger when they do not receive the recognition or the support that they feel they deserve and are vulnerable to any (supposed) ingratitude or slight from others (Mullen et al., 2009). The petitioners thus hold a strident opinion (Meloy et al, 2014), and their high level of commitment is why it is believed that they form harsh attitudes towards anyone who is unsupportive in regard to their quest or towards those who are endangering it. On the other hand, it is expected that fixated individuals feel a strong connection with those who do share views about their quest, due to their strident opinion and strong need for support. This strong identification with their ingroup could in turn lead to an increase of outgroup hatred taking place (Aviram, 2006). Based on this information, it is expected that fixated individuals will hold harsh attitudes towards anyone who they perceive to be endangering their quest (hypothesis 1).

Aggression and hostile cognition. The following explanation that will be discussed is based on the willingness to cause harm towards other individuals. After all, a willingness to cause harm accelerates the risk of violence. In order for violence to occur, one must thus be willing to cause harm. Willingness to cause harm could be motivated by a number of factors. First, it is believed that a willingness to cause harm may occur as a result of outgroup hatred. As stated before, it is possible that fixated individuals cannot identify with anyone who are endangering their quest due to their strident opinions and need for support (Meloy et al,

2014). This in turn could increase the chances of outgroup hatred taking place (Aviram, 2006). Second, certain situations could lead to frustration and anger when fixated individuals do not receive the acknowledgement they think they deserve (Mullen et al., 2009), or when someone is simply obstructing their highly wanted objective in any way (Anderson & Bushman, 2002). According to Anderson and Bushman (2002), these feelings could increase the chances on aggression taking place: anger could for instance justify aggressive retaliation and it allows an individual to maintain an aggressive intention over time. Moreover, a study of Dill and Anderson (1995) found that participants who experienced frustration produced more hostile aggression than participants who did not experience frustration at all. Therefore, it is expected that fixated individuals are more willing to cause harm to people who they believe to be endangering their quest (hypothesis 2a).

Another explanation could lie in the role of hostile cognition amongst individuals. The hostile cognition bias leads to perceiving neutral information as hostile. It could also include the tendency to interpret ambiguous actions by others as reflecting aggression and hostility towards oneself (Tremblay & Belchevski, 2004). In a study of Wall, Twenge, Gitter, and Baumeister (2009), researchers found that this hostile cognition could lead to aggression. It is believed that people who perceive more hostility are more aggressive (Orobio de Castro, Veerman, Koops, Bosch, & Monshouwer, 2002). Researchers also found a causal relationship between social exclusion and hostile cognition: excluded individuals experienced higher levels of hostile cognition. It is believed that this could be the case for fixated individuals as well, because fixation often leads to alienated relationships with friends and family, undermined social networks, and isolation (Mullen et al., 2009). Based on this information, it is expected that fixated individuals show higher hostile cognition (hypothesis 2b).

Moral disengagement. The third possible explanation is based on the morality of the fixated individual. Moral disengagement is a process of convincing oneself that ethical standards are solely applied in a particular context, where one may distinguish moral reactions from misconduct by disabling the mechanism of self-condemnation (Bandura, 1991; Tsai, Wang, & Lo, 2014). In a recent study, it has been found that participants who carefully planned their assignment perceived themselves as less responsible for a decision and judged the bad consequences of their behaviour as less negative, compared to the participants who did not think about their assignment (Damen, van Baaren, Brass, Aarts, & Dijksterhuis, 2015). Self-condemnation could thus reduce when individuals are actively thinking about (planning) certain actions, because the latter reduces the personal sense of causation (agency). Moreover, careful planning could lead to an increase in action automaticity, which is also related to the

reduction in agency (Damen et al., 2015). It is thus expected that individuals who spend a great amount of time thinking about an object are prone to making morally questionable decisions. Moreover, moral disengagement is closely associated with rule transgressions such as violence (Page & Scalora, 2004), and it has also been found that individuals with high levels of moral disengagement tend to engage in acts of aggression (e.g. Caprara, Fida, Vecchione, Tramontano, & Barbaranelli, 2009; Hyde, Shaw, & Moilanen, 2010; Paciello, Fida, Tramontano, Lupinetti, & Caprara, 2008; Pelton, Gound, Forehand, & Brody, 2004). This information demonstrates the importance of the understanding of moral disengagement in regards to the relationship between fixation and violence.

Based on the information above, it is expected that moral disengagement can occur when an individual becomes fixated. Therefore, those fixated individuals could be at risk for being violent, without consciously having decided to act violently. The fixated mind may thus be prepared for action, which may occur as soon as an opportunity arises to approach the objective. A way around this problematic situation would be to eliminate all opportunities. This would not succeed, however, because the chance to encounter opportunities does not solely depend on environmental circumstances. It also depends on the individual, which can be ascribed to the principle of selective attention. This principle explains that people are skilled in detecting what is of importance to them (Moray, 1959). Moreover, it has been found that individuals who choose to fixate on a singular target will encounter a broad range of opportunities to approach that target (Corner & Gill, 2015). It is therefore believed that fixated individuals may encounter a wide range of opportunities to achieve their highly desired objective, including those of a morally questionable nature (hypothesis 3). In addition to the hypotheses, the self-efficacy amongst participants was analysed as well. In a study of Wieber, Odenthal, & Gollwitzer (2009), it has been found that high self-efficacy could positively affect one's motivation and commitment to achieving a goal, and it sparked an interest to see whether this could play a role with fixated individuals as well.

This study

It has been chosen to focus on one category of fixated individuals: the petitioners. These individuals have a highly desired objective or a strong opinion regarding something they believe in, for instance the reduction of air pollution. It has been chosen to do this because of the limited timeframe of the experiment, and because it is believed that it would be less complicated to cause fixation on a quest than on another individual. The presumed participant group played a role in this as well: it would be difficult to turn healthy, ordinary people into

desperate relationship seekers or chaotic individuals. The petitioners would probably be the most achievable state of mind for the participants. Based on the information displayed in the theoretical framework, the following hypotheses were formulated:

H1: Fixated participants will show harsher attitudes towards the person who endangers their quest, in comparison to participants in the control group.

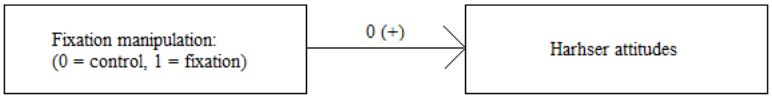

Figure 1. Conceptual model of hypothesis 1

H2a: Fixated participants will show a greater willingness to cause harm to the person who endangers their quest, in comparison to participants in the control group.
H2b: Fixated participants will show greater hostile cognition considering the person endangers their quest, in comparison to participants in the control group.

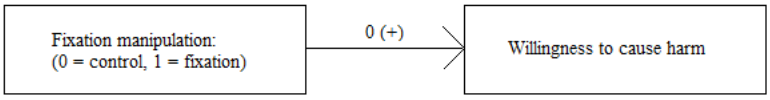

Figure 2. Conceptual model of hypothesis 2a

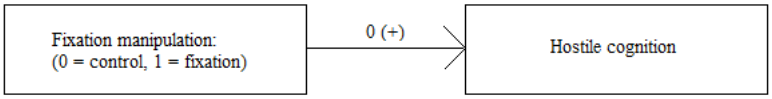

Figure 3. Conceptual model of hypothesis 2b

H3: Fixated participants will perceive more (morally questionable) opportunities to counter the problem and to work on their quest, in comparison to participants in the control group.

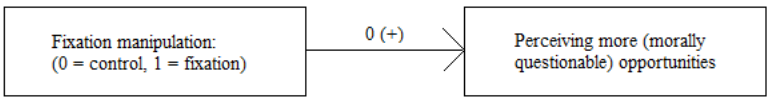

Figure 4. Conceptual model of hypothesis 3

Methods

Participants and Design

The participants were recruited for a study on the occupied mind, which happened via personal networks such as Facebook and WhatsApp. In total, 50 participants joined the experiment; they received a compensation of five euros for their efforts. Two of the participants in the fixation group were disregarded because they had not done any of their tasks apart from the questionnaire. The remaining participants all stated to have sufficiently understood the tasks, to have done the tasks in a serious manner, and to not have used any source of information for the tasks other than their own knowledge: there was no need to disregard any other participants. Thus, a total of 48 participants were used for the analyses: there were 23 participants in the fixation group, and 25 participants in the control group. Of those participants, eight were male and 40 were female. The participants were mostly of Dutch nationality (95.8%), partly of German nationality (2.1%), and partly of another nationality (2.1%). They had a minimum age of 19 years old and the oldest participant had an age of 70 (M = 27.72; SD = 11.15). The participants were also asked about their highest achieved level of education, which led to the following division: master at a university (27.1%), bachelor at a university (37.5%), higher professional education (18.8%), secondary vocational education (10.4 %), and high school (6.3 %).

The design of this study was experimental, where the participants were randomly assigned to two groups (‘fixation’ vs. ‘control’). Each participant had to perform five tasks during the course of one week: the last task was a questionnaire that was equal to both groups. The study had multiple dependent variables: harsh attitude forming, the willingness to cause harm, hostile cognition, and the perception of morally questionable opportunities. Unfortunately, due to technical difficulties during the data collection it has not been possible to perform analyses on the variable ‘hostile cognition’.

Procedure

After the participants had been recruited, they received their first e-mail on the first day of the week of the experiment. This e-mail contained general information about the study and their first task, and also included the informed consent (see Figure 4, Appendix A). It has been made clear that the participants would give their consent to participating in the study as soon as they started performing the first task. Information about the true goal of the research was given at the end of the experiment.

Manipulations. Whereas the participants in the fixation group received tasks considering air pollution, the participants in the control group received random filler tasks. The participants in the fixation group received those particular tasks, in order to attempt to let them become fixated on the quest to counter air pollution. Fixation in this study was operationalized through several items which measured the amount of time spent regarding the quest, as well as the level of personal importance regarding the quest. The e-mails, which had been send to the participants at 9 AM every day of the week, would thus differ per group considering the general information about the study and the tasks. For example, the participants in the fixation group were asked to list causes for air pollution on the first day, whereas the participants in the control group were asked to list causes for a burn-out. The tasks can be found in Appendix B. Lastly, the participant groups received an even or an odd numerical ID, which they had to fill in during the questionnaire. This way, a clear distinction could be made during the analyses.

The questionnaire. On the fifth day of the week, the participants had to fill in the questionnaire which included several measures. These measures can be found in the next paragraph and in Appendix C. After the questionnaire, the participants were given an opportunity to debrief. Here, the goal of the research has been made clear. However, it is estimated that approximately five participants did not see this text due to technical difficulties[2].

Dependent variables. The dependent variables 'harsh attitude forming' and 'willingness to cause harm' were measured with three constructs: attitudes, willingness to cause harm towards an individual, and willingness to cause harm towards an organization. In total, three items of the first construct were recoded. The last two constructs served to explore whether the presumed target could cause differences in the willingness to cause harm. Apart from the constructs, the variable 'willingness to cause harm' was measured through four semi-closed items as well, which measured the participants' willingness to punish a fictional character (e.g. "*After implementing the licenses, Jan Dijkstra is still driving around without a license. How should he be fined?*"). The participants could use a slider to decide on the amount of money for a fine. The third dependent variable ('perceiving morally questionable opportunities') was measured through an open question where participants could provide five answers to their own desire. Lastly, there was a construct with items about identification. This

[2] Their results were not saved on the first try, which means that they probably did not see the text which stated that they should click on an arrow to finish the questionnaire. One participant explicitly stated to never have seen the text.

construct served to explore attitude-forming more in depth. All items can be found in Appendix C. The closed questions in the questionnaire were measured through a seven-point Likert scale ([1] strongly disagree – [7] strongly agree).

Demographics. Lastly, the demographics of the participants were measured. This happened through five items that asked for the participants' age, gender, nationality, highest achieved level of education, and current living situation. The latter was asked in order to explore whether there could be any differences between the groups. For instance, it could explore whether participants who lived in the city were more tolerant towards truck drivers than participants who lived in a small village. The participants could choose between "*countryside*", "*village*", or "*city*". The item about age was the only open question in this section.

Manipulation checks. One construct was used to measure whether there was a significant difference in the level of fixation between the participant groups. This construct consisted of eight items (α = .70), for example: "*I feel strongly about stopping air pollution*", "*I would feel frustrated when someone does not acknowledge air pollution*", and "*I have gathered information about air pollution last week*". A principal component analysis with varimax rotation on the eight items of this construct indicated three components, which explained a total of 66.8 percent of the variance. As can be seen in Table 1 (Appendix D), a clear distinction has been found between items which focus on personal importance (all loadings > .68) and those which focus on time-related issues (all loadings > .41).

Performances. The constructs task performance and questionnaire comprehension measured whether the participants performed the tasks and questionnaire in a way that their data could be used for further analyses (i.e. whether they performed enough tasks and whether they understood them and the questionnaire). These constructs were created in order to avoid any biases during the analyses. An example of an item from these constructs would be: "*I understood the questions I was asked"* or "*How many of the tasks did you perform?*".

Self-efficacy. One explorative construct is the construct of self-efficacy, which aimed to find out whether there was a difference in the experienced feelings of ableness to counteract air pollution between the two groups. The items in this construct were "*I feel able to set up a plan for countering air pollution*", "*I feel able to take measures against air pollution*", and "*I believe that air pollution can be* countered". A principal component analysis with varimax rotation on the items of this construct indicated only one component (all loadings >.68), and therefore only one scale was created for the analyses: 'Self -Efficacy' (α = .64).

Results

Demographics and correlations

First, a Chi-square test has been conducted to see whether participants were well randomized across the two conditions. No significant differences between groups were found in terms of gender: X^2 (1, N = 48) = 2.11, p = .15, nationality: X^2 (2, N = 48) = 2.78, p = .25, education: X^2 (4, N = 48) = 3.22, p = .52, and living situation: X^2 (2, N = 48) = 1.16, p = .56.

Next, an independent samples t-test has been conducted in order to examine whether participants were equally distributed over the two conditions regarding their age. No differences have been found between the control group (M = 26.92, SD = 8.81), and the fixation group (M = 27.35, SD = 12.64); t(46) = -.137, p = .43.

In order to find out whether there were any remarkable relations between the construct, it was examined how the constructs were interrelated through a Pearson's correlation test in SPSS (Table 2, Appendix E). The results showed a positive correlation between the constructs identification and attitudes, which means that participants who scored high on attitudes, also scored high on identification. This indicates that harsher attitudes coexisted with lower feelings of identification. Moreover, attitudes correlated negatively with willingness to cause harm towards an individual and willingness to cause harm towards an organization, which indicates that participants with less harsh attitudes were less willing to cause harm. Willingness to cause harm towards an individual and willingness to cause harm towards an organization also correlated positively with each other.

Manipulation check

An independent samples t-test has been conducted in order to examine whether there were significant differences in the level of fixation between the fixation group and the control group. As can be seen in Table 3, five significant differences have been found. First, it has been found that the fixation group (M = 4.09, SD = 0.52) spend more time thinking about air pollution than the control group (M = 3.00, SD = 0.65); t(46) = -6.41, p = .00. Next, it has been found that the fixation group (M = 2.17, SD = 1.70) spend more hours being concerned with air pollution than the control group (M = 1.10, SD = 0.89); (t(46) = -2.60, p = .01), and another significant difference showed that the fixation group (M = 3.52, SD = 1.59) gathered more information than the control group (M = 2.20, SD = 1.68); t(46) = -2.89, p = .01. Lastly, it has been found that the fixation group (M = 4.04, SD = 1.55) conversed more about air pollution than the control group (M = 2.36, SD = 1.71); t(46) = -3.57, p = .00), and that the

fixation group (*M* = 5.43, *SD* = 0.84) experienced more frustration by lack of acknowledgement for air pollution than the control group (*M* = 4.68, *SD* = 1.31); *t*(46) = -2.34, *p* = .02.

As expected, no significant difference has been found for the knowledge level between the fixation group (*M* = 2.83, *SD* = 0.39) and the control group (*M* = 2.80, *SD* = 0.82); t(1, 46) = -.14, *p* = .89. This means that it has not been found that the participants in the fixation group had more knowledge about air pollution when they participated in the experiment compared to the participants in the control group, which would mean that their knowledge level could not have influenced their decision making. Unfortunately, non-significant results have been found on two other items, meaning there was no found difference in the level of strong feelings about the quest between the fixation group (*M* = 5.04, *SD* = 1.02) and the control group (*M* = 4.76, *SD* = 1.09); t(46) = -.93, *p* = .36, nor was there a found difference in the level of personal importance between the fixation group (*M* = 4.57, *SD* = 1.31) and the control group (*M* = 3.96, *SD* = 1.40); t(46) = -1.54, *p* = .13.

Table 3. *Results of the manipulation check through an independent samples t-test*

	M	***SD***	**t**	***p (sig.)***
1. Knowledge level	2.81	0.64	-0.14	.89
2. Average level of spending time thinking about air pollution	3.52	0.80	-6.41	.00
3. How many hours concerned with air pollution	1.66	1.46	-2.60	.01
4. Gathering information	2.83	1.75	-2.89	.01
5. Conversing about air pollution	3.17	1.83	-3.57	.00
6. Frustration by lack of acknowledgement	5.04	1.17	-2.34	.02
7. Strong feelings about quest	4.90	1.06	-0.93	.36
8. Personal importance of quest	4.25	1.38	-1.54	.13

Hypotheses testing

Harsh attitude forming. To test the first hypothesis, the control group was compared to the fixation group on the construct regarding attitudes. It was expected that participants in the fixation group held harsher attitudes towards the fictional character from the questionnaire, because this character endangered their quest. An independent samples t-test on the construct of attitudes showed no significant difference between scores of the fixation group (*M* = 4.05, *SD* = 0.71) and the control group (*M* = 3.88, *SD* = 0.87); *t*(46) = -0.73, *p* = .47. The level of identification with the fictional character amongst participants was explored as well, because it was expected that this could influence attitude forming. An independent samples t-test on

the construct of identification also showed no significant difference between the fixation group (M = 3.30, SD = 0.75) and the control group (M = 3.08, SD = 0.87); $t(46) = -0.93$, p = .36. Thus, unexpectedly, it was not found that participants in the fixation group showed harsher attitudes than participants in the control group, meaning that hypothesis 1 cannot be supported. Moreover, it has also not been found that participants in the fixation group felt less identified with the fictional character than the participants in the control group.

Willingness to cause harm. To test whether fixated participants would show greater willingness to cause harm to the person who endangers their quest in comparison to participants in the control group (hypothesis 2a), it was examined through an independent samples t-test whether there were significant differences between answers on the four semi-closed items about punishing a fictional character from the fixation group and the control group. Against expectations, no statistically significant differences have been found between the fixation group (M = 59.48 SD = 18.70) and the control group (M = 54.52, SD = 22.34) for the item regarding licenses for truck drivers; t(46) = -0.83, p = .41). Moreover, no differences were found between the fixation group (M = 307.65, SD = 143.51) and the control group (M = 282.76, SD = 128.76) for the item regarding a fine as a punishment for those who choose to ignore the licenses; t(46) = -0.63, p = .53. Lastly, no statistically significant differences have been found between the fixation group (M = 5.43, SD = 3.82) and the control group (M = 4.36, SD = 2.78) for the item regarding the allowed amount of driving hours through the city; t(46) = -1.12, p = .27, nor was there a found difference between the fixation group (M = 235.78, SD = 115.65) and the control group (M = 240.48, SD = 124.59) for the item regarding a fine as a punishment for those who choose to exceed the allowed amount of driving hours; t(46) = 0.16, p = .89).

Next, two independent samples t-tests have been conducted on the constructs which measured either the willingness to cause harm towards an individual or towards an organization. First, it was examined if there were differences on the construct willingness to cause harm towards an individual: the test did not show a significant difference between the fixation group (M = 2.51, SD = 0.61) and the control group (M = 2.29, SD = 0.69); t(46) = -1.15, p = .26. Second, the construct willingness to cause harm towards an organization was examined, which also led to no significant differences between the fixation group (M = 2.92, SD = 0.52) and the control group (M = 2.70, SD = 1.06); t(35.73) = -0.91, p = .38). These results indicate that it was not found that the participants in the fixation group showed more willingness to cause harm towards an individual or organization than participants in the control group, which means that hypothesis 2a cannot be supported.

Morally questionable opportunities. Multiple analyses have been conducted in order to find out whether participants in the fixation group perceived more morally questionable opportunities to counter air pollution than participants in the control group. First, it was examined whether the fixated participants perceived a larger number of opportunities in general through an independent samples t-test. This test showed no statistically significant differences between the fixation group (M = 3.74, SD = 1.48) and the control group (M = 4.20, SD = 1.04); $t(46) = 1.25$, $p = .20$. Next, the answers were analysed via the program Atlas.ti, which made it possible to divide answers into certain themes through coding them. Multiple themes have been found: aircraft reduction, use of alternative fuels, awareness, industry (e.g. change factory policies), governmental influence, home adjustments, money (taxes or fines), product awareness, public transport, car reduction, meat reduction (both consuming and producing), and the remaining opportunities (which could not fit in any other theme).

The themes did not seem to contain any morally questionable opportunities. Therefore, it could not be examined whether participants in the fixation group perceived more morally questionable opportunities than participants in the control group. However, in order to explore whether there were differences in the amount of opportunities per theme between the fixation group and the control group, an additional test has been conducted. A Chi-square test was conducted to determine whether the amount of opportunities differed between the fixation group and the control group per theme. As can be seen in Table 4 on the next page, significant results were found for the themes awareness (χ^2 (3) = 10.19, $p = .02$), industry (χ^2 (1) = 3.95, $p = .05$), money (χ^2 (3) = 12.25, $p = .01$), product awareness (χ^2 (2) = 8.15, $p = .02$), and remains (χ^2 (2) = 6.78, $p = .03$).

The results indicate that there are significant differences between the fixation group and the control group in the perceived amount of opportunities in certain themes, but these results do not give any information regarding to the morality of the participants. Based on these results, hypothesis 3 cannot be supported.

Table 4. *Results of the Chi-square test considering perceived opportunities*

	χ^2	*df*	*p (sig.)*	N (fixation group)	N (control group)
1. Alternative fuels	2.80	2	.30	10	12
2. Awareness	10.19	3	.02	9	4
3. Governmental influence	1.12	2	.57	3	1
4. Home adjustments	2.41	3	.49	12	14
5. Industry	3.95	1	.05	2	8
6. Less aircrafts	0.02	1	.90	4	4
7. Money related issues	12.25	3	.01	2	17
8. Product awareness	8.15	2	.02	14	3
9. Public transport	2.03	1	.15	13	9
10. Reduction of cars	1.03	2	.60	17	14
11. Reduction of meat (consumption and production)	1.35	2	.51	4	8
12. Remaining issues	6.78	2	.03	4	15

The influence of living situations and self-efficacy

A one-way ANOVA was conducted to compare results of all scales based on the participants' living situation: countryside, village, and city. In total, 40 people lived in the city, seven people lived in a village, and 1 person lived on the countryside. As can be seen in Table 5, the test showed no significant differences. This indicates that it was not found that a living situation influenced any decisions made by the participants. The descriptive statistics can be found in table 6 in Appendix F.

Table 5. *Results of the one-way ANOVA considering living situations*

	F	*p (sig.)*
1. Attitudes	0.48	.63
2. Identification	0.11	.89
3. Harming an individual	0.28	.76
4. Harming an organization	1.56	.22

An explorative independent samples t-test has been conducted in order to find out whether there was a significant difference in feelings of self-efficacy between the fixation group (M = 4.68, SD = 0.83) and the control group (M = 4.27, SD = 1.24). Unfortunately, no significant results have been found: $t(46) = -1.35$, $p = .18$.

Exploratory analyses

It has been decided to perform a number of exploratory analyses in order to try to explain the insignificant results considering the hypotheses. First, a principal component analysis with varimax rotation was executed for all items in order to find out whether there were underlying factors amongst the constructs attitudes, identification, willingness to cause harm towards an individual, and willingness to cause harm towards an organization[3]. This analysis indicated six components, which explained a total of 69.4% of the variance. As can be seen in Table 7 (Appendix G), the initial constructs did not continue to exist. The first component consisted of items regarding a participant's willingness to cause harm, where the division between an individual and an organization did not last; items from both constructs were found in one component. However, the first component consisted of items that were believed to be less invasive than others considering the level of aggression. An example of an item would be "*If I could verbally harm Jan, I would*" or "*I think that being (verbally) aggressive against Truckers will be useful*". The focus here lies on verbal harm and the usefulness of conducting harm, either towards an individual or an organization (all loadings > .67). Based on these findings, the scale 'Harm and its usefulness' was created (α = .80). The other component regarding the willingness to cause harm consisted out of the items "*If I could physically harm Jan, I would*" and "*I think that it would be acceptable to use violence against Jan*" (all loadings > .45). Out of these items, the scale 'Violence and physical harm' was created (α = .62).

The remaining items that could indirectly increase a willingness to cause harm are the items of anger and frustration (e.g. "*I am frustrated with Truckers*" and "*I feel angry with Jan*"). These items formed one component (all loadings > .61) and based on the findings the following scale was created: 'Anger and Frustration' (α = .83).

The constructs attitudes and identification resulted in three components. The first component focused on the identification with the fictional character Jan (e.g. "*I can identify with Jan*" and "*I think Jan and I are similar to each other*"). Remarkably, the item "*If Jan or other truck drivers do not follow the new rules, they deserve a fine*" was included in this component as well (all loadings > .51). However, it was decided to explore this item separately, because of the large differences in its content compared to the items about identification. The first scale was created: 'Identification' (α = .63). The second scale consisted out of five items which all focused on general attitudes (all loadings > .33). An

[3] A direct Oblimin rotation has been performed as well and it showed no big differences compared to the Varimax rotation.

example of an item in this scale would be "*I share Jan's opinion*" or "*The government should be mild during this phase, so people can adjust to the new rules*". The scale 'General attitudes' was created (α = .67). The third scale focused on empathy and recognition (all loadings >.69), meaning that empathy towards an individual was strongly related with the feelings of recognition towards that individual. The scale 'Empathy' was created (α = .75).

Correlations between new scales

In order to find any remarkable relations between the new scales, it was examined how the scales were interrelated through a Pearson's correlation test in SPSS (Table 8, Appendix H). The item "*If Jan or other truck drivers do not follow the new rules, they deserve a fine*" was examined separately, because it had been decided to exclude this item from the scales. As expected, the scales considering a willingness to cause harm correlated negatively with the scale 'Empathy'. This means that participants who did not recognize themselves in others and did not have empathetic feelings towards those others were more inclined to cause harm than participants who did. Moreover, 'Anger and frustration' correlated with 'General attitudes' and 'Self-Efficacy', which means that participants who experienced more anger and frustration held harsher attitudes than participants who experienced less of those feelings. It also indicates that participants with high feelings of anger and frustration experienced high feelings of self-efficacy. 'Anger and frustration' also correlated with the item about deserving punishment, which means that participants with high feelings of anger and frustration were more inclined to state that people deserve a fine when they do not follow the rules. The scale 'General attitudes' correlated positively with 'Empathy' and Identification', which means that participants that held harsher attitudes towards others experienced less empathetic feelings or feelings of identification towards those others.

Further exploration of the hypotheses

Harsh attitude forming. In order to further explore the first hypothesis, an independent samples t-test has been performed on the new scales within this concept. An independent samples t-test on the scale 'General attitudes' showed no significant difference between scores in the fixation group (M = 3.59, SD = 0.78) and the control group (M = 3.51, SD = 0.94); $t(46) = -0.33$, $p = .74$. Moreover, the test on the scale 'Empathy' did not show a significant difference between scores in the fixation group (M = 5.00, SD = 0.85) and the control group (M = 4.84, SD = 1.04); $t(46) = -0.58$, $p = .56$. Lastly, the test on the scale 'Identification' did not show a significant difference between scores in the fixation group (M

= 2.89, *SD* = 1.00) and the control group (*M* = 2.48, *SD* = 1.19); *t*(46) = -1.29, *p* = .20. Again, it was not found that participants in the fixation group showed harsher attitudes than participants in the control group.

Willingness to cause harm. In order to further explore the second hypothesis, an independent samples t-test has been conducted on the new scales which differed in the severeness of possible harm. First, it was examined if there were differences on the scale 'Harm and its usefulness': the test did not show a significant difference between the fixation group (*M* = 1.75, *SD* = 0.76) and the control group (*M* = 1.75, *SD* = 0.78); t(46) = -0.02, *p* = .99. Second, the scale 'Violence and physical harm' was examined, which also did not lead to significant differences between the fixation group (*M* = 1.30, *SD* = 0.60) and the control group (*M* = 1.32, *SD* = 0.68); t(46) = 0.09, *p* = .93. Moreover, the scale 'Anger and frustration' was examined: no significant difference has been found between the fixation group (*M* = 4.55, *SD* = 0.88) and the control group (*M* = 3.97, *SD* = 1.51); t(39.07) = -1.62, *p* = .11. These results indicate that it was not found that the participants in the fixation group showed more willingness to cause any form of harm towards an individual or organization than participants in the control group, nor that they experienced more anger and frustration.

Discussion

The current study aimed to find out what exactly causes fixation to lead to an increased risk of violence within an individual. A total of 50 people participated in a week-long experiment in which they performed several tasks. The goal was to make one group of randomly assigned participants become fixated on a quest, where the other group had to remain neutral, in order to find out how the relationship between fixation and violence works. In the next section, the expectations as well as the outcomes of this study will be discussed.

Harsh attitude forming. It was expected that participants in the fixation group would show harsher attitudes towards the person they believe to endanger their quest, in comparison to participants in the control group (hypothesis 1). Contrary to this expectation, no such results have been found. It was not found that participants in the fixation group showed any differences in attitudes towards the presumed outgroup, nor in identification for that matter.

A possible explanation for these results lies in the fact that the manipulation only partly succeeded. It was not found that the participants in the fixation group found the quest to be more of personal importance, as opposed to participants in the control group. Although significant differences were found between the fixation group and the control group

considering other aspects of fixation (e.g. spending time thinking or conversing about the quest), it is believed that this can be explained by the fact that the participants in the fixation group were given certain tasks which automatically led them to be occupied with the quest. The participants in the fixation group may thus have been occupied with the concept of air pollution, but this does not mean that they were personally committed to it. Therefore, it may have been the case that the participants in the fixation group did not experience a strong distinction between an ingroup and an outgroup, because they quite possibly lacked the characteristics of a fixated individual which are significant in regards to identification and attitude forming: vulnerability to ingratitude and slight, a strident opinion, and feelings of entitlement for support (Mullen et al., 2009 & Meloy et al., 2014).

Another explanation for these results is based on the way that the fictional character has been displayed. Participants were ordered to imagine that the Dutch government was taking measures against air pollution, and that one citizen did not agree with those measurements (for which he gave arguments). It could have been the case that the participants did not see that citizen as a cause for air pollution, but simply as an ordinary working man who is just trying to do his job. This could explain why the participants in this study generally did not hold very harsh attitudes[4]. However, it does not explain why those same participants agreed that rule offenders such as the fictional character should be punished with a fine, and that they viewed his personal problems to be insignificant compared to air pollution. The latter could be explained by the fact that people can hold multiple attitudes: people can possess multiple cognitive representations of attitudes on something that is important to more than one groups with which they identify (Wood, 2000). For example, people can identify as being a college student, but also as being Dutch, which are in essence two very different concepts. In some situations, one group identity could be more desirable than the other, which may lead to adopting different attitudes (Kelman 1958). It may have been the case that the participants identified with the fictional character as he was an ordinary Dutch labourer who faces recognizable everyday problems, which could have led them to be not too harsh on him. On the other hand, the same participants may have identified themselves with a different group: one that values counteracting air pollution and the compliance of rules and the justice system, which could have led them to their other opinions.

Aggression. Second, it was expected that participants in the fixation group would show a greater willingness to cause harm considering the person who they believe to endanger their

[4] fixation group (M = 4.43, SD = 0.80), control group (M = 4.46, SD = 0.94)

quest, in comparison to participants in the control group. Again, no such results have been found. It was not found that participants showed differences in a willingness to punish or harm a fictional character in any way, nor was it found that participants in the fixation group experienced more anger and frustration towards fictional characters and institutions than participants in the control group.

The first possible explanation for these results also lies in the fact that the participants in the fixation group were not truly fixated. Moreover, one key aspect of fixation was missing: the angry emotional undertone (Meloy et al., 2014). It was not found that the participant groups differed in feelings of frustration and anger towards fictional characters or institutions which are endangering the quest. The lack of these feelings, which could increase displays of aggression when present (Anderson & Bushman, 2002; Dill & Anderson, 1995), could explain why the participants in both groups were not willing to cause harm towards the fictional characters or institutions.

However, there was a significant difference between the participant groups regarding to feelings of frustration caused by lack of acknowledgement for the existence of air pollution. This could be explained by the fact that the participants in the fixation group were occupied with air pollution for a week, as opposed to the participants in the control group, which could possibly have made them more aware of air pollution and more inclined to be willing to stop it during the time of the experiment. The frustration amongst the participants in the fixation group could be explained by the fact that the individuals who do not acknowledge air pollution can be seen as responsible for blocking a goal. If someone does not acknowledge air pollution, they will not do anything to counter it and could even make it worse. It could thus have been the case that the participants in the fixation group experienced more frustration, because frustration can be seen as a result from the blockage of goal attainment (Anderson & Bushman, 2002).

A second possible explanation for the lack of willingness to cause harm could lie in the fact that the subject pool consisted of ordinary people who are presumably well-adjusted to social values and norms, which could explain why they would not engage in any kind of antisocial behaviour, including violence (Bacon et al., 2018). Their personality could have played a role in this as well: in a study of Jensen-Campbell, Knack, Waldrip, and Campbell (2007), it has been found that Conscientiousness moderated the relation between anger and aggression, and that Agreeableness was positively related with anger when Conscientiousness levels were low. Another study found that individuals who score low on Conscientiousness may translate anger into aggression (Vîrg et al., 2014). Moreover, extraverted individuals may

be less likely to experience anger when confronted with negative feedback and may be less likely to aggress, whereas neurotic individuals can easily become frustrated (Jensen-Campbell et al., 2007). Thus, it may have been the case that the participants for this experiment did not possess the personality traits which are related with anger and aggression (e.g. low Conscientiousness and high Neuroticism).

Moreover, almost all participants (40 out of 48) were female. The overall willingness to cause any kind of harm was low, and the gender of the participants could also explain this. It has been found that men in general tend to show more (direct) aggression than women (e.g., Archer & Coyne, 2005; Eagly & Steffen, 1986; Feingold, 1994; Moffitt, Caspi, Rutter, & Silva, 2001). Moreover, a study of Buss and Perry (1992) found that men committed more physical as well as verbal harm than women. These findings could explain the facts that the overall willingness to cause harm was low.

Moral disengagement. In order gain a more elaborate understanding of the relationship between fixation and violence, this study attempted to find differences between the participation groups in terms of moral disengagement. It was expected that participants in the fixation group would perceive more morally questionable opportunities to counter the problem and to work on their quest, in comparison to participants in the control group. This expectation, like the others, was not met.

Firstly, it could have been the case that moral disengagement did not take place due to the lack of some aspects of fixation: it is unlikely that the participants' feelings of agency were reduced when they did not spend a great amount of time actively thinking about the object (Damen et al., 2015). Although there was a significant difference between the fixation group and the control group considering spending time regarding the quest, the amount of time remained quite low (see Table 2). It could thus have been the case that the participants were occupied with the tasks for some time, but this does not mean that their mechanism of self-condemnation has been disabled, which is a key aspect of moral disengagement (Bandura, 1991; Tsai et al., 2014).

Another explanation lies in other causes of moral disengagement. Assuming that moral disengagement could not have taken place due to the lack of fixation, there should have been other factors which could have led to it. In a study of Alexandra (2019), it was expected that certain social worldviews (social cynicism and fate control) are associated with moral disengagement. These worldviews can arise from cultural environments, personality traits, and life experiences (Leung & Bond, 2004; Chen, Fok, Bond, & Matsumoto, 2006). Social worldviews are of importance as they can be helpful predictors of cognition and behaviour,

because they hold individual assessments of the social context constraining one's behavioural choices (Alexandra, 2019). Alexandra (2019) has indeed found that social cynicism and fate control worldviews were positively related to moral disengagement, which means that participants would have to hold "a combination of a negative view of human nature, a biased view against some social groups, a mistrust of social institutions, and a disregard of ethical means for achieving an end" (Leung & Bond, 2004, p.166), and a view that important events and outcomes are predetermined by external forces such as fate in order to become morally disengaged (Leung & Bond, 2004). It could thus have been the case that the participants in this experiment did not hold the social worldviews that are positively related to moral disengagement, which could explain the fact that no morally questionable results have been found.

Limitations

As can be established from the information above, the most significant limitation of this study is the fact that the manipulation did not fully succeed. The lack of aspects of fixation amongst the participants ensured that no significant differences could be found between the participant groups. The timeframe of the experiment could have played a role in this: although most parts of the manipulation did succeed (i.e. regarding time spending on the quest), it is questionable that all parts of fixation could arise in one week. When looking at case examples from other research, it becomes clear that most individuals who do eventually become fixated experience a lengthy process of thoughts and actions before they could actually be labelled as 'fixated' and form a possible threat (e.g. Mullen et al., 2009; Meloy et al., 2012; Meloy, Habermeyer, & Guldimann, 2015): this process could take up weeks or even months. Moreover, most of the key aspects of fixation are increasing over time: an increasing perseverance with the object, an increasingly strident opinion, and an increasingly negative characterization of the object of fixation (Meloy et al., 2012). It could have been the case that this was hard to achieve for the participants in the given time, for example because of other personal activities (most participants were occupied with their studies or work).

A different limitation of this study lies in its external validity: due to the fact that most participants were female, the results of this study are not generalisable to a bigger sample. This study also differs from a lot of other researches, in which the case studies (or samples) were for a great majority about males (e.g. James et al., 2010; Meloy et al., 2014; Meloy et al., 2015; Mullen et al., 2009; NTAC, 2015). Moreover, the gender of the participants could have played an important role in the outcome of the insignificant results: as stated before, it

has been found that women are less prone to commit harm than men (Buss and Perry, 1992). This means that the results on this topic could be very different in a study with more men, as opposed to what has been found in this particular study.

The last limitation that will be discussed concerns the display of the fictional character in the questionnaire. It is believed that the design of the character could have played an important role in the forming of attitudes towards it. The character was displayed as an everyday citizen who gave fairly reasonable arguments for his opinions, which may have been the cause for the found results: the design seemed to have appealed to the participants' social skills and could possibly have led to a social desirability bias to be empathetic towards the character. The social desirability bias could have played a role in the levels of aggression as well: the standard deviations on the relevant constructs were low, which could be explained by the fact that most people could find it difficult to admit to be willing to harm someone, because that is generally not accepted by society. The fact that most participants were female could also have been important: Riggio, Tucker, and Coffaro (1989) found that females scored higher than males on basic skills that comprise emotional empathy.

Future Research and Practical Implications

Despite the fact that no significant results have been found for the proposed hypotheses, this study has still provided some valuable insights for further research. It is important to gain a better understanding of the relationship between fixation as a warning behaviour and violence in order to be able to prevent violent encounters caused by fixated individuals. This understanding could namely help threat assessment centres to form their judgement about potentially dangerous individuals. To achieve this level of understanding, it is necessary to conduct more research. This research should rectify some of the limitations which occurred in the current study.

Although it has already become clear that it is possible to achieve a significant difference in the time aspect of fixation between participant groups in just one week, it is firstly recommended to expand the timespan of the experiment. This way, the participants are given a greater opportunity to become fixated on the quest. It is believed that it would be beneficial to create an experiment with a timespan of at least a month, in order to let the key aspects of fixation be able to develop. Because it has been found that items from the manipulation check regarding timespan and personal importance had some overlap, it is believed that the personal importance could increase over time. Moreover, the manipulation

should be reinforced through making some practical adjustments: the fictional character should be displayed more as an active endangerer of the quest in order to avoid any biases.

Second, it is recommended to look into other types of fixation as well, because it is believed that different cognitive processes play a role for different types. For instance, an individual who is desperately in love with their object of fixation experiences very different states of mind than an individual who claims to have a certain (royal) position or title (Mullen et al., 2009). Of course, it would be difficult to make a participant become in love with an object, which is why it is recommended to look at existing cases instead.

Next, it is recommended to examine social worldviews amongst participants or amongst existing cases of fixated individuals, in order to be able to research the occurrence of moral disengagement. Social worldviews can be discovered via the same way as Alexandra (2019) did: using a previously validated scale from Leung and Bond (2004) which measures items for scales such as 'social cynicism' and 'fate control'. As stated before, social worldviews play a significant role in moral disengagement, which could in turn lead to morally questionable decision making. Therefore, it is expected that the knowledge of social worldviews amongst fixated individuals can contribute to the understanding of the relationship between fixation and violence.

Lastly, it is recommended to examine personality traits amongst participants and amongst existing cases of fixated individuals, in another attempt to avoid the risk that Borum (2013) warns about: using mental illness as the absolute explanation for all thinking and behaviour of a subject. As stated before, an individual's personality traits can influence behaviour in numerous ways considering anger and aggression (e.g. Bacon et al., 2018; Vîrg et al., 2014; Jensen-Campbell et al., 2007), which makes it interesting to explore the personality of fixated individuals as well.

It is believed that if these recommendations were to be followed, a new light could be shed on the relation between fixation and violence. The key aspect of threats is that they are uncertain: nobody knows exactly what and how things will happen (Meloy et al., 2014). This makes threats difficult to assess, which is why it is important to obtain a better understanding of fixation as a warning behaviour, since those behaviours could expose (behavioural) patterns. The more knowledge one has about those patterns, the easier it becomes to predict what will happen next. For instance, threat assessment centres could shift their focus to individuals who are actually important if it would become clear that fixated individuals share certain personality traits and social worldviews. Moreover, a better understanding in this field can help to detect any early signs of fixation such as spending a lot of time on an object,

information gathering, and increasing strident opinions, which in turn could facilitate the threat assessment of individuals who are displaying such behaviour. As soon as a threat is correctly assessed, a plan can be made to mitigate that threat and to ensure safety.

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Appendices

Appendix A

Dear participant,

Thank you for participating in this study. Your participation will be spread out over one week (Monday – Friday). Every day you will perform one small task regarding [...] for which you will receive the instructions every morning at 9 AM. It is very important to complete all tasks, but you do not have to do them at 9 AM: you have the entire day.

By starting your first task, you consent to take part in the study and you agree to the following terms:

- Your participation is confidential. The data will be analysed and reported at group level only, without identification of individuals or institutions.
- Your participation is voluntary. You may terminate your participation at any time without explanation. You are free to skip any questions that you do not wish to answer.
- Findings may be published in peer-review journals and presented at relevant academic conferences. These findings will be anonymized and will not identify you.
- You have read and understood the information in this email that you received regarding the study.

Your first task is the following:

[...]

Figure 5.. First communication with participants including general information and informed consent. The tasks can be found in Appendix B

Appendix B

Tasks fixation group

- Day 1: “List what you think are main causes for air pollution. Do not use the internet or other sources of information, but rely on your own thoughts.”

- Day 2: “List what you think may be long term hazards of air pollution. Do not use the internet or other sources of information: rely on your own thoughts.”

- Day 3: “When you leave your house today (for work, study, etc.), please count the amount of trucks you see and write this number down.”

- Day 4: “Let’s say that a Dutch truck union is a major contributor to air pollution, how much percent of the national CO2 emissions do you imagine to be produced each month? Please estimate a number and write this down. Do not use the internet or other sources of information: rely on your own thoughts.”

- Day 5: Questionnaire

Tasks control group

- Day 1: “List what you think are main causes for a burn-out. Do not use the internet or other sources of information, but rely on your own thoughts.”

- Day 2: “List what you think may be long term hazard considering high national depts a country can have. Do not use the internet or other sources of information, but rely on your own thoughts.”

- Day 3: “Look at your (bed)room, how many decorative objects do you have in your possession? Decorative objects are objects that bring a sense of style and beauty to a room, such as vases and paintings.”

- Day 4: “Think about the differences between the various classes of society (upper, middle, lower). Please write down – for each category – the amount of luxury objects you believe they purchase in a month.”

- Day 5: Questionnaire

Appendix C

Attitudes.

- I feel empathy for Jan

- The personal problems of Jan are less important than reducing air pollution

- The government should be mild during this phase, so people can adjust to the new rules

- If Jan or other truck drivers do not follow the new rules, they deserve a fine

- I don't care for Jan's problems

Identification.

- I share Jan's opinion

- I think Jan is right

- I can identify with Jan

- I recognize myself in Jan

- I think Jan and I are similar to each other

Willingness to cause harm – the semi-closed items.

- Truck drivers will need to pay for an "air pollution tax" by getting a special license. In the past, such licenses were between €40 and €60. Now, how much should the government charge for such a license per month?

- After implementing the licenses, Jan Dijkstra is still driving around without a license. How should he be fined?

- Truck drivers will face a limit of allowed time to drive through the city per day. What should be the maximum amount of hours that they can drive through it?

- After implementing the new limit, Jan Dijkstra has exceeded the allowed hours of driving in the city. How should he be fined?

Willingness to cause harm towards an individual.

- I feel angry with Jan

- I am frustrated with Jan

- If I could verbally harm Jan, I would

- I think that being (verbally) aggressive against Jan will be useful

- If I could physically harm Jan, I would

- I think that it would be acceptable to use violence against Jan

Willingness to cause harm towards an organization.

- I feel angry with Truckers

- I am frustrated with Truckers

- If I could cause harm to Truckers, I would

- I think that being (verbally) aggressive against Truckers will be useful

- I think that it would be acceptable to use violence against Truckers

Hostile cognition.

- I find Jan hostile

- I find Jan unfriendly

- I find Jan angry

- I find Jan dislikeable

Self-Efficacy.

- I feel able to set up a plan for countering air pollution.

- I feel able to take measures against air pollution

- I believe that air pollution can be countered

Manipulation check.

- What is your level of knowledge (i.e. from resources like media or scientific studies) about air pollution? [very low … very high]

- How much time did you spend thinking about air pollution last week, compared to how much time you usually think about air pollution? [way less than usual … way more than usual]

- How many hours were you concerned with thinking about air pollution last week?

- I have gathered information about air pollution last week

- I talked about air pollution with my friends and/or family last week

- I would feel frustrated when someone does not acknowledge air pollution

- I feel strongly about stopping air pollution

- Stopping air pollution is of personal importance to me

Task performance

- How many of the tasks did you perform? [1 … 5]

- During the tasks of day 3 and 4, did you use any source of information (besides your own knowledge) regarding the topic? [yes / no]

- I understood the tasks

- I took my tasks seriously

- I spend a lot of time on my tasks

Questionnaire comprehension

- I understood the questions I was asked

- I filled in this questionnaire in a serious matter

Appendix D

Table 1. *Solutions from the principal component analysis with Varimax rotation on the manipulation items*

	Personal importance	**Spending time**	**Knowledge**
Knowledge level			.933
Thinking about air pollution		.866	
Hours concerned with air pollution		.407	
Information gathering		.650	
Conversing air pollution		.765	
Frustration lack of acknowledgement	.678		
Strong feelings	.890		
Personal importance	.845		

Appendix E

Table 2. *Outcomes of the Pearson's correlation tests and descriptive statistics of the constructs and the demographic variables presented in the questionnaire*

	M	**SD**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
1. Identification	3.19	.82	-	.58**	-.25	-.24	-.04	-.15	-.05	-.13	-.08	-.21	.01	.00	-.03
2. Attitudes	4.65	.89		-	-.36*	-.42**	-.21	.00	.07	-.21	.07	-.02	-.07	-.17	.06
3. Harming an individual	2.40	.66			-	.67**	.19	-.06	.25	.05	.01	-.18	-.07	-.07	-.02
4. Harming an organization	2.81	.85				-	.35*	-.16	.25	-.06	.00	-.06	.05	-.11	-.22
5. Self-Efficacy	4.47	1.07					-	-.16	.35*	.12	-.00	-.02	.23	.06	.11
6. Task performance	4.42	.47						-	-.09	.42**	.15	.13	-.10	-.29*	-.10
7. Manipulation check	3.54	.76							-	.15	.11	-.01	-.06	-.18	-.10
8. Questionnaire comprehension	6.15	.56								-	-.01	.27	.22	.13	-.10
9. Age	27.72	11.15									-	-.11	-.13	-.00	-.08
10. Gender	1.83	.38										-	.07	-.27	-.06
11. Education	4.69	1.17											-	.22	.05
12. Nationality	1.06	.32												-	.08
13. Living situation	2.81	.45													-

Note. $N = 48$, *p<0.05; **p<0.01

Appendix F

Table 6. *Means and standard deviation for the constructs per living situation*

	City	Village	Countryside
Attitudes (*M*)	3.97	4.03	3.2
Attitudes (*SD*)	0.83	0.57	-
Identification (*M*)	3.17	3.31	3
Identification (*SD*)	0.85	0.73	-
Harming an individual (*M*)	2.40	2.31	2.83
Harming an individual (*SD*)	0.64	0.84	-
Harming an organization (*M*)	2.72	3.31	3
Harming an organization (*SD*)	0.81	0.97	-

Note. Only one participant lived on the countryside

Appendix G

Table 7. *Solutions from the principal component analysis with Varimax rotatio*

	Harm and its usefulness	Violence and physical harm	Anger and frustration	General attitudes	Empathy	Identification
Verbal Harm (i)	.680					
Aggression is useful (i)	.750					
Harm (o)	.791					
Aggression is useful (o)	.800					
Violence is acceptable (o)	.671					
Physical harm (i)		.739				
Violence is acceptable (i)		.449				
Angry (i)			.610			
Frustrated (i)			.873			
Angry (o)			.791			
Frustrated (o)			.839			
Share opinion				.750		
Being right (i)				.798		
Less important (i)				.517		
Government mildness				.328		
Not caring for problems (i)				.396		
Recognition (i)					.693	
Empathy (i)					.761	
Identification (i)						.795
Similarity (i)						.780
Fine when transgress rules						.506

Note. "i" stands for individual and "o" stands for organization. The complete items can be found in Appendix C

Appendix H

Table 8. *Outcomes of the Pearson's correlation tests and descriptive statistics of the constructs and the demographic variables presented in the questionnaire*

	M	**SD**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
1. Harm and its usefulness	1.75	.76	-	.29*	.23	-.19	-.30*	.08	.07	-.19	.00	-.17	.08	-.28	-.08	-.02	-.24	-.12
2. Violence and physical harm	1.31	0.63		-	.11	-.14	-.33*	-.04	-.04	-.05	-.19	-.31*	-.12	-.18	-.25	-.10	.14	-.14
3. Anger and Frustration	4.25	1.27			-	-.41**	-.28	-.17	.38**	-.03	.44**	.19	-.13	.09	.16	-.11	-.06	-.40**
4. General attitudes	3.55	0.86				-	.45**	.35*	-.24	-.02	.01	-.26	-.09	-.03	-.04	-.16	-.00	.35*
5. Empathy	4.92	0.95					-	.29*	.12	-.05	.01	.09	-.05	-.04	.17	.12	.11	.24
6. Identification	2.68	1.11						-	-.04	-.18	.00	-.12	.05	-.28	-.02	.03	.00	.37**
7. Self-Efficacy	4.47	1.07							-	-.16	.35*	.12	-.01	-.02	.23	.06	.11	-.10
8. Task performance	4.42	.47								-	-.09	.42**	.15	.13	-.10	-.29*	-.10	-.03
9. Manipulation check	3.54	.76									-	.15	.08	-.01	-.06	-.18	-.10	-.06
10. Questionnaire comprehension	6.15	.56										-	-.02	.27	.22	.13	-.10	-.16
11. Age	27.72	11.15											-	-.09	-.16	-.01	-.08	.14
12. Gender	1.83	.38												-	.07	-.27	-.06	-.04
13. Education	4.69	1.17													-	.22	.05	-.32*
14. Nationality	1.06	.32														-	.08	-.27
15. Living situation	2.81	.45															-	-.08
16. Opinion regarding punishment (i.e. a fine)	2.79	1.09																-

Note. $N = 48$, *p<0.05; **p<0.01