Investigating Presence in (VR) Scenario Research: Does presence in a scenario influence willingness to participate in victim offender mediation as a function of crime severity?

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Abstract

Victim offender mediation is based on restorative justice. Restorative justice involves both the victim and the offender in the process. Victim offender mediation offers victims and offenders of crime the possibility to communicate with each other through mediated contact. The first aim of the study was to examine how the severity of the offense moderate the relation between presence within a scenario, fear and anger and the willingness to participate in victim offender mediation. The second aim of the study was to examine if presence felt within a scenario could be increased by using a Virtual Reality scenario compared to the often used written scenario in behavioural studies. A total of 196 participants were randomly assigned to either read a scenario (story) or experience the scenario through a Virtual Reality environment, both scenarios victimized the participant in a robbery. To investigate the effect of crime-severity on the relation between presence, fear and anger and the willingness to participate in victim offender mediation, the study used a 2 (written scenario vs virtual scenario) times 2 (high severity versus low severity) between subjects experimental research design. The study found no moderation effect of crime severity on the relation between presence, fear and anger and the willingness to participate in victim offender. The study does suggest that presence can be increased in scenario-research by using VR technology. Therefore suggesting that there are possibilities regarding the use of VR technology in – scenario based – victim offender mediation research. These results can be used to further improve scenario-based research, making it easier for researchers to gain access to larger sample sizes when participants are hard to reach or find.

Keywords: Victim offender mediation, willingness to participate in VOM, presence, Virtual reality scenario, robbery

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Victim offender mediation is an implementation of restorative justice. Restorative justice provides a different way of thinking about victimization and punishment in general. Restorative justice views crime as between, and directed by, individual people and thus actively involves the victim and offender in the process (Umbreit, 1998). The current structured system, called retributive justice, views the state as the primary victim and places the victims and offenders in a more passive role. The goal of restorative justice is to (a) empower those affected by the crime to make key decisions, (b) focus more on healing and making justice more transformative, and (c) reduce recidivism (Zehr, 2014). To achieve these goals, victims need to be more involved in the process and be satisfied with the outcome, offenders should understand how their actions affected the victim(s) and take responsibility for those actions, and both the victim and the offender should gain a sense of 'closure' so they can reintegrate back into the community (Zehr, 2014). By providing opportunities for dialogue, negotiation and problem solving between the victim and the offender, restorative justice can lead to a conflict resolution, closure for both parties involved and a greater sense of community safety (Umbreit, 1998).

The ideas of restorative justice are also implemented in the Netherlands. Perspectief Herstelbemiddeling (Perspective Restorative Mediation) is a Dutch organisation that offers both victims and offenders of crime the possibility to communicate with each other through mediated contact (Perspectief Herstelbemiddeling, 2017). This mediated contact, under the supervision of a professional mediator, is based on mutual respect between the victim and the offender and is on a voluntary basis. Perspectief Herstelbemiddeling implies that both the victim and the offender can contribute to their recovery through professionally mediated contact (Perspectief Herstelbemiddeling, 2017). For the victims, the mediated contact aims to

contribute to the emotional processing and coping of the incident. It is argued that victims feel more involved and more empowered with the criminal justice process after having participated in mediated contact (Zehr & Gohar, 2003). The aim of mediation is twofold, first and foremost the victim can inform the offender to what extent the crime impacted his or her life. Secondly, the victim can receive information from the offender to answers questions the victim might have about the crime (Zehr & Gohar, 2003). The victim can also be involved in the development of the restitution plan for the offender, which offers the victim influence in making the offender accountable for the crime (Umbreit, Coates, & Vos, 2004). Through mediated dialogue, the offender learns to what extent his or her actions impacted the life of the victim. The mediated contact helps the offender to take responsibility for his or her actions and to develop a fair and reasonable plan to make amends to the victim (Umbreit et al., 2004).

A growing body of research acknowledges the positive effects of victim offender mediation on levels of satisfaction among those who participate. A vast majority of studies reported satisfaction of victims and offenders about the mediation and its outcomes (Davis, Tichane, & Grayson, 1980; Coates & Gehm, 1985; Perry, Lajeunesse, & Woods, 1987; Marshall, 1990; Umbreit, 1991, 1993, 1994a, 1994b, 1998, 1999; Umbreit & Coates, 1993; Warner, 1992; Roberts, 1995; Carr, 1998; Roberts, 1998; Evje & Cushman, 2000). These effects were found across different types of offenders, types of victims, different levels of crime seriousness and different cultures. According to a meta-analysis of Umbeit and colleagues (2004), which stretched over three decades of research, overall satisfaction scores about mediation and resulted agreement typically lay between 80 to 90 percent.

However, around 40 to 60 percent of individuals that were offered the opportunity to participate in victim offender mediated refused this offer. Umbreit and colleagues (2004) explain that the satisfaction found in the literature might thus be caused by the self-selection

factor that overlays research in victim offender mediation. Meaning that, high levels of satisfaction might have something to do with simply being able to choose among justice options in general. Which indicates that the mediated contact itself not necessarily brings about the measured satisfaction levels (Umbreit et al., 2004). A recent study of Jonas- van Dijk, Zebel, Claessen and Nelen (2019) studied this self-selection bias by comparing reoffending rates of three different offender groups: offenders who participated in Victim offender mediation (VOM); offenders who were willing to participate, but whose counterpart declined VOM; and offenders unwilling to participate in VOM. The study concluded that both the willingness of the individual to take restorative steps and the mediated contact itself led to a lower risk of reoffending. Therefore, the study argues that being willing to participate, the self-selection factor Umbreit and colleagues (2004) describe, does not explain all of the effect VOM has. It suggests that part of the effect of VOM might be due to processes during the mediated contact itself. As described by Jonas- van Dijk and colleagues (2019), a limitation of their study is that it remains unclear what these processes are. They suggest that further research should use observational studies to examine what happens during mediation and try to understand what the effect of it is. Shapland and colleagues (2008), did such a study by (post-mediation) interviewing offenders and observing mediation sessions. They found that VOM is most effective when: the offender is actively involved; the offender wants to meet the victim; when the mediations makes the offender understand the consequences of the offense and when the mediations is experienced as useful by the offender. However, this observational study was limited in the number of mediation cases observed. The difficulty to observe high numbers of VOM cases can make it troublesome to truly understand the effects of VOM.

A opportunity to this limitation is using scenario-based research methods (see e.g.: Kippers, 2015; Cefalo 2015; Van Dijk, 2016). Scenario based research methods are often

used to gain insights in the field without having to find and address actual victims and offenders. Scenarios, also known as vignettes, are short written descriptions of a hypothetical situation. Scenarios are most commonly used to investigate behavioural decision making and behavioural intentions (Gelder et al., 2018). The scenario-based research method is very versatile, it has low costs and is easy to use, making it a widely used method for studying the decision making processes within social sciences (Collett & Childs, 2011). It enables researchers to study behaviour outside the scope of other data collecting methods. For example, when the research interest contains sensitive or unethical behaviours, has high costs or has infrequent occurrence in the real world (Collett & Childs, 2011).

It is common in scenario-based research methods that researchers first ask participants to imagine themselves in a described situation or to identify with certain people in the scenario described. Secondly, when the participants are immersed in the scenario, several questions are asked to investigate how the participants think that they would behave if they would find themselves in such a situation. The reliance on the ability of participants to imagine themselves in a hypothetical situation is seen as a major limitation of the scenario method (Gelder et al., 2018). In other words, the validity of the data collected through this method is influenced by the ability of the participants to imagine themselves in the hypothetical situation presented to them (Collett & Childs, 2011; Parkinson & Manstead, 1993). The ability and willingness of an individual participant to take a specific perspective within a scenario becomes an undesired variable that potentially influences the collected data.

Another limitation regarding the scenario method lies within the realism of the scenario described. Intense emotions and visceral responses influence and accompany behaviour in real life. Scenarios might not be able to accurately measure the behavior or behavioural intentions of participants when the scenario is unable to elicit the relevant emotional or visceral reactions in the participants (Ditto, Pizarro, Epstein, Jacobson, &

MacDonald, 2006; Gelder et al., 2018). Gelder and colleagues (2018) argue that written scenarios fail to elicit presence (i.e. the extent to which the participant is capable to take the perspective of a person in a certain scenario) and fail to trigger emotions because they include only a small amount of contextual information when compared to real-world situations. Written scenarios, that try to describe the context as detailed as possible, can only give limited information regarding non-verbal behaviors of others (e.g: facial expressions and body language). Therefore, these scenarios fail to convey potentially relevant contextual information that provide important cues in determining social responses of the participants (Gelder et al., 2018).

To investigate potential solutions to these limitations, the current study examines the use of immersive visual (video-based) scenarios compared to their traditional written counterpart(s), within the domain of victim offender mediation. The most prominent advantage of visual scenarios is the inclusion of more contextual information (Christian, Edwards, & Bradley, 2010). According to Christian, Edwards and Bradley (2010), video-based scenarios have a higher ecological validity than written scenarios due to the more accurate display of contextual information, giving the scenario a more realistic and real-world feel to the participant. Therefore, video-based scenarios are also capable to create more identification between the participant and the subject of the scenario, which increases the presence felt in the scenario by the participants (Christian et al., 2010). This study uses 360°-video techniques to make the video-based scenario as immersive as possible, since the presence felt by the participant in a video-based scenario is seen as a prerequisite to increase ecological validity (Christian et al., 2010).

This study investigates whether 360°-video-based scenarios are capable of increasing people's presence when compared to the traditional written scenarios, within the field of victim offender mediation. The scenarios used in this study regard a hypothetical situation in

which the participant is the victim of a robbery. According to theory, victim offender mediation is influenced by the severity of the crime (Zebel, Schreurs & Ufkes, 2017). The severity of the crime seem to influences the willingness of the victim to participate in victim offender mediation and seems to have influences on the emotional evaluation that victims report after the mediation (e.g.: Daly, 2004; 2006; Umbreit, 2002; Zebel, et al., 2017). To examine the effect of crime severity in this study, the robbery has two different versions: a scenario with high severity and a scenario with low severity. Both the high and low severity scenarios are translated to the traditional written scenarios and the 360°-video-based scenarios. Since the aim of this study is to examine whether 360° video-based scenarios are a more validated data collecting method compared to the traditional written scenarios, it is important that the written scenarios and the 360°-video-based scenarios are as identical to each other as possible (e.g. the same locations, same amount of bystanders present, same time of the day, etc.).

To investigate whether perspective taking has increased among participants in the video-based compared to the written scenario, participants are asked to what extent s/he felt the relevant emotional or visceral reactions and responses, such as feelings of fear and anger. This research will answer the following two research questions: *To what extent is the feeling of being present increased when a video-based scenario is used compared to a written scenario in the field of victim offender mediation?* Secondly*: how does the severity of the offense moderate the relation between presence, fear and anger and the willingness to participate in victim offender mediation?*

Presence

Present research suggest that presence can be experienced in a variety of day-to-day situations. For example, while watching a movie, playing a video game or reading a story (Hartmann et al., 2016). This indicates that there is no need for advanced technology to create a sense of subjective presence. However, presence is assumed to depend on features that the (virtual) environment offers, such as interaction effects and techniques, and the possibility that the medium has to increase realism (Regenbrecht & Schubert, 2002; Shubert & Crucius, 2002). This increase of presence, by rising the realism of the situation, has important features in behavioural studies. It leads to responses that more closely resemble actual responses in the real world (Van Gelder, Otte & Luciano, 2014). Which, as mentioned, means that the behavioural intentions that are provided by the participants have a higher ecological validity when they experience a greater sense of presence in the situation (Gelder et al., 2018). In this study, the realism is increased by using 360°-video based scenario. To investigate if presence can be increased by increasing the realism of the situation, the followings hypothesis is proposed:

H1: The participants in the visual scenario conditions have a greater presence within the scenario compared to the participants in the written scenario conditions.

The role of presence in eliciting fear and anger

One of the more important aspects of presence are the emotional and physiological reactions experienced by the participants. These reactions indicate whether the body and mind of the participant interpreted the virtual reality as a real-world experience. If so, behaviour and behavioural intentions of participants that respond to the virtual reality presented to them can be measured and validated by linking the responses to the appropriate emotional and physical responses seen in the 'real world' (Schuemie, van der Straaten, Krijn, & van der Mast, 2001).

A between-subject experiment that tried to treat subjects with acrophobia (fear of heights) showed an increase in reported anxiety when subjects were exposed to heights in a virtual reality environment (Rothbaum et al., 1995). The same effect remained with other phobias (Schuemie et al., 2001). Regenbrecht and colleagues (1998) also studied the correlation between presence and fear of heights. The experiment, which included only non-phobic subjects (N=37), showed a weak correlation between anxiety and presence ($r=0.251$, $p> 0.10$). However, the study did find that the amount of presence felt was a significant predictor for fear experienced within the sample. Schuemie and colleagues (2000) did a follow-up explorative study (N=10) with subjects that were diagnosed with acrophobia. This study did find a significant correlation between fear and presence felt, but no correlation between presence and reduction of acrophobia. Both studies used questionnaires to test their hypothesis. Another study that examined the relation between fear and experienced presence indicated that experienced presence in a virtual environment can induce the signs of fear people experience when they need to speak publicly, despite the subjects knowing they are speaking in front of a virtual audience (North, North, & Coble, 1998). These studies seem to indicate that emotions are mediated by the presence felt in the scenario. Therefore, the following hypothesis is proposed, which is divided into two sub-hypotheses:

H2a: The visual scenario conditions elicit more fear and anger than the written scenario conditions.

H2b: This effect is mediated by the amount of presence felt by the participant.

Willingness participation VOM (low vs high severe scenarios)

There has been a debate in the literature about the usefulness of severe crimes in VOM (e.g., Zebel, Schreurs &Ufkes, 2017; Dijk, Zebel, Claessen & Nelen, 2019; Larsen, 2014; Richards, 2009; Waltman-Spreha, 2013). It is often thought that victims of severe

crimes are less likely to participate in mediated contact, especially if the crime is committed recently.

There remains inconclusiveness in the effects between the severity of the crime and the willingness for victims to participate in VOM. Umbreit and colleagues (2004) indicates that when victims of severe and violent crimes participate in VOM, the levels of satisfaction after the mediation are exceptionally high. Therefore addressing that VOM can contribute to the victim and the offender in severe cases. However, Umbreit and colleagues (2002) state that the studies that suggest these effects are 'suggestive at best'. Thus explaining that there is a great need for further research which includes large samples before definite conclusions can be made. They strongly emphasize that mediated dialogue between victims and offenders in severe cases should be victim initiated and be supervised by an experienced and more advanced trained mediator. There is a greater chance that unintended negative consequences, such as revictimization of the victim, could occur if the mediation of severe cases is offender initiated. The fear of revictimization causes the victim to be less inclined to initiate, or take part in, mediated dialogue (Umbreit et al, 2002). This increases the difficulty to examine the outcomes of mediated dialogue between victims and offenders of severe crimes, on a large scale, since the mediation is always of voluntary nature.

In contrast, a recent study by Zebel and colleagues (2017) found that the offenses in VOM cases were on average more serious than the offenses in the population, when comparing the average seriousness of crimes to the seriousness of crimes in VOM cases in the Netherlands. Zebel and colleagues (2017) measured the seriousness of the crime by three aspects, (a) the incarnation duration of the offender, (b) the perceived wrongfulness of the victim and (c) the perceived harmfulness of the victim. Therefore, concluding that victims are not discouraged to participate in VOM when they are victimized by a serious/severe crime. Zebel and colleagues (2017) also found empirical evidence that the willingness to participate

in VOM increased over time in severe cases and that the willingness decreased over time when the cases were less severe. They state that when a victim of a severe or violent crime is asked to participate within a short time-period, the fear of revictimization and concerns of personal safety could outweigh the perceived benefits of the victim to participate in VOM. However, after a longer time-period, the victim might feel less threatened and remains with questions about the crime, leading to a higher perceived benefit to participate in VOM. A victim of a less severe or violent crime may have less barriers to initiate VOM shortly after the crime took place, but could view the crime as too distant in time or too trivial if VOM is initiated after a longer time-period. More debate regarding this topic comes from findings in the literature which contradict the 'suggested effect' Umbreit (2002) speaks of. Daly (2004; 2006), who also evaluated the effects of VOM with victims of severe crimes, indicated that the evaluations of victims of severe cases were less positively; these victims showed less signs of emotional recovery and had a more negative attitude towards the offender when compared to victims of less severe cases. In addition, Pemberton (2012) argued that experiencing a severe crime increases the desire for vengeance and decreases the desire to speak with the offender through mediated contact, especially when the crime was committed recently.

The above-mentioned literature indicates that the severity of the crime and the time between the crime and the proposed mediation can influence the willingness of a victim to participate in VOM. This current study expects that feeling present in a severe or violent crime will *decrease* the willingness of the victim to participate in VOM, if the victim is asked to participate directly after experiencing the crime. The effect is expected to be the opposite when the victim feels present in a less severe or violent crime and is asked to participate directly after experiencing the crime; *increasing* the willingness of the victim to participate. These expectations are in line with the results found by Zebel and colleagues (2017).

Furthermore, this study hypothesizes that the severity of the crime moderates the positive relation between presence, fear and anger and the willingness of the victim to participate. The moderating effect is expected to either be positive or negative depending on whether the crime experienced by the victim was of high or low severity. To study this effect, the following hypothesis is proposed, which is divided into two sub-hypotheses:

> *H3a: There is a positive relation between presence-, fear- and anger felt within the scenario and the willingness to participate in victim offender mediation.*
>
> *H3b: The severity of the offense moderates the positive effect of presence-, fear- and anger felt within the scenario on the willingness to participate; the effect is expected to be less positive (or negative) when the offense is of high severity.*

Conceptual model

Figure 1 shows the conceptual model in which the hypotheses of this study are reflected.

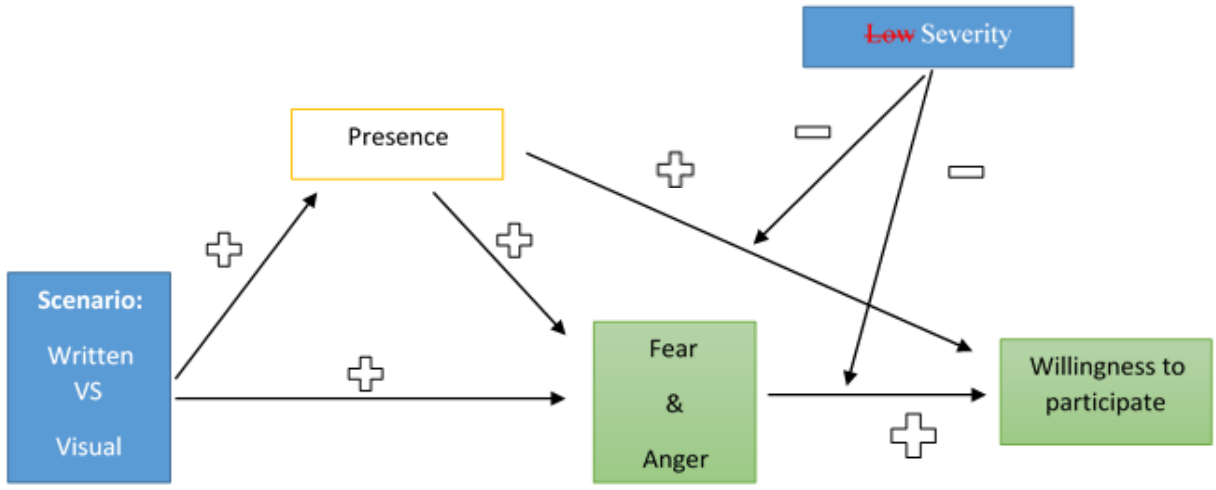

Figure 1: Conceptual Model

Method

Participants

In total 196 people (95 men, 89 women, 12 unknown) participated in the study. The average participant was 27 years of age (ranging from 18 to 67 years old). The nationalities

of the participates were: Dutch (N=129), German (N=31) and Other (N=24) (missing N=12) . The participants needed to be at least eighteen years old and had to agree with the informed consent form, which was the only selection criterium to enter the study. Not all the questionnaires were filled in completely. Therefore, not all participants are included in the entirety of the research. Only participants that filled in the data for the specific subject are taking into account when calculating the data and conducting the analyses. Therefore, some analysis have a higher missing N then others.

The participants in the control, written scenario condition, were recruited using convenience - and snowball sampling. Firstly, the participants who were in close proximity to the researcher were recruited. Secondly, these participants were asked if they knew more people who were willing to participate that met the age criteria of the study. Thirdly, by sharing an anonymous link on social media participants could participate in the study via that link.

Since the experimental, visual scenario condition, could not be conducted via online-survey, the researcher needed to be physically present in the same room with the participants in the experiment to conduct the research. Therefore, the participants in the experimental, visual scenario condition, were recruited by asking random bystanders (face-2-face) if he/she would be willing to participate in the study. The researcher asked randomly selected students of the University of Twente. If the participant was willing to participate in the study, the researcher and participant went to an enclosed room where the visual scenario condition of the research was conducted.

Overview and Design

Research design

The study has a 2 (written scenario vs visual scenario) times 2 (high severity versus

low severity) between subjects experimental research design. Figure 2 illustrates the design of this study.

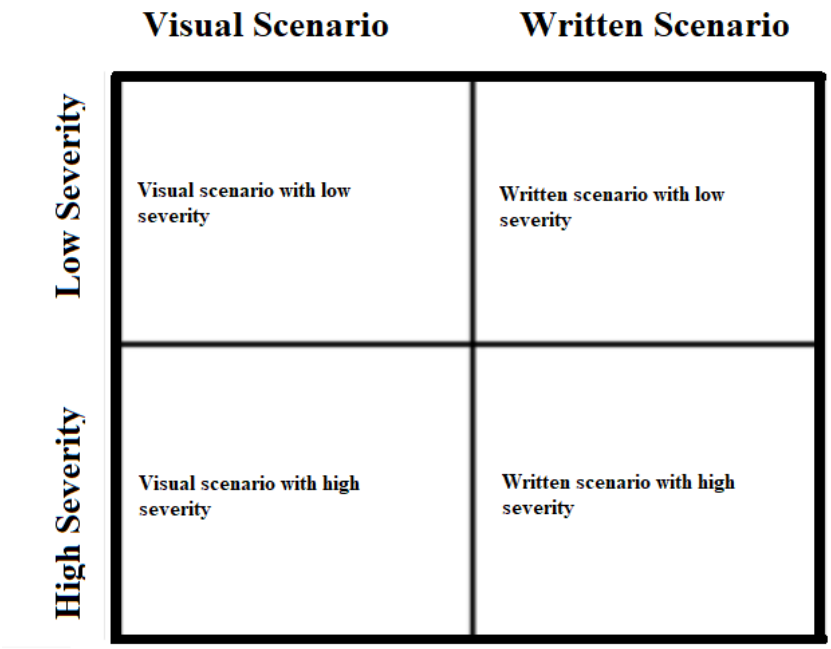

Figure 2: Research Design

All scenario conditions displayed the participant as a victim of a robbery. The participants in the written-scenario condition could open their scenario via a link and fill in their questionnaires online. Making it possible for these participants to participate from their home. The participants that were asked by the researcher, and agreed to participate to the video-scenario, all went into the same rented enclosed room to conduct the visual scenario. The participants were given an informed consent form and were informed about the video-technique used in the study before participating in the visual-scenario condition. After the video-scenario was displayed, the participants immediately filled out the questionnaire. The questionnaire used for the visual scenario conditions differ from the written scenario condition. The visual scenario conditions asked some questions to measure whether the visual-scenario was conducted properly (did the participant see the offender, did the participant heard what the offender said, etc.). Furthermore, the visual scenario questionnaire

also measured the variable ‘simulation sickness’. Simulation sickness can only occur when a person is in a VR-environment, this variables was therefore excluded in the written scenario conditions of the study.

The four conditions (high vs low severity & written vs visual scenario) are similar in the event and the crime itself. The victim is robbed while withdrawing cash from an ATM machine. The differences between the scenarios are the following: (A) the toon of voice of the offender: in the high severity (HS) scenario the robber uses threatening (body) languages and threatens to kill the victim if s/he does not give him the money, in the low severity (LS) scenario the robber uses no languages. (B) violence used: in the HS scenario the robber punches and grabs the victim and hits the victim with his gun, in the LS scenario the robber only pushes the victim to the ground so he can grasp for the money. (C) And by making the robbery seem either planned (high severity), by having the offender stare and wait for the victim, or more like a ‘drift’ (low severity) where the offender walks straight up towards the victim.

Procedure and Manipulation

Written-scenario condition

The participants were sent a link in which they could open the scenario and the questionnaire. The scenario was manipulated in the severity of the robbery, meaning that they either received a high-severe or a low-severe scenario. In the high-severe condition, the emphasize of the text directed the participants attention more towards the aggression of the offender, his threating tone, wording, the presence of a gun and body languages in comparison to the low-severe condition. In the low-severe condition there was no verbal contact with the offender, the offender did not use as much aggression and did not had a gun. The scenarios were directly followed by the questionnaire. The written scenarios can be found in attachment 1.

Video-scenario condition

Every participant was randomly assigned to either the low-severe or high-severe video-scenario. Once the participant agreed to participate in the study, an informed consent form was given. In which the participants were also informed that the virtual environment in which they were going to be placed, displayed a hypothetical robbery. After the participants signed the informed consent, a brief instruction about the 360°-video technique used in the study were given. The participant can ask questions about the video techniques used to the researcher if they have any. Then s/he is placed in the virtual environment in which the scenario is displayed (see figure 3 and 4 for examples on how the offender was portrayed in each severity condition). Directly after the scenario is finished, the participant is asked to fill out the questionnaire.

Figure 3: Screenshot High Severity Condition

Figure 4: Screenshot Low Severity Condition

Questionnaire

A different questionnaire was used for the different scenario-conditions in the study (written vs video) (see 2.2 research design). All questionnaires measured the presence felt in the scenario, the fear and anger of the participants and how severe the participant experienced the scenario. After these variables were measured, the participants were given a brief instruction which informed them about Victim Offender Mediation and its options. After which the questionnaire continued and asked the participants to what degree they would be willing to participate in VOM themselves, if they were victimized and would be given the option. The following sections explains in depth how the questionnaire was used to measure the variables.

Dependent Measures

The following variables were measured in this study: 'Presence felt in the scenario', 'Fear' and 'Anger', 'Severity' and 'The Willingness to Participate in VOM'. First, this

section explains how these variables are measured in the questionnaire used in the study, Secondly, the researcher tested if the different severity conditions were manipulated in the desired way: the severity is higher in the high severity conditions and lower in the low severity conditions. Thirdly, the research design of the study is explained.

Measuring presence

The most commonly used method to measure presence are questionnaires. These questionnaires measure the subjective rating of presence felt by the subjects in the scenario. Since the subjective nature of these observations can be biased in more than one way, the measured responses could be less reliable (Schuemie et al., 2001). Therefore, to make the measurements more reliable, multiple questions are used in this study to measure the same construct.

An often-used questionnaire to measure presence in a VR environment is the Igroup Presence Questionnaire (IPQ) (Schubert, Friedmann and Regenbrecht 2001). This questionnaire, consisting of 14 items, is based on three aspects of presence (a) Spatial Presence; the sense of being physically present in the VR environment, (b) Involvement; measuring the attention devoted to the VR environment, (c) Experienced Realism; measuring the subjective experience of realism in the VR environment. The IPQ is a well-established questionnaire which has been tested and improved throughout the years to measure presence in research and has seen use by pioneers in the field (alfa = .85) (e.g.: Gelder et al., (2018)). To measure presence in this study, a rephrased and altered version of the IPQ was used. The questionnaire was rephrased to fit all conditions in the study. This was necessary because the IPQ is originally used to measure presence only in a virtual environment (read visual scenario), not within a written-scenario. To give an example of such a rephrased question; The IPQ has a question formulated the following: '*How aware were you of the real world surrounding while navigating in the virtual world? (i.e. sounds, room temperature, other*

people, etc.)?' Since this questions does not fit a written scenario, the question was altered to this: '*While experiencing the scenario, I was less conscious of my true surroundings (example: sounds, room temperature)'*

To add more theoretical body to the questionnaire, two items of the questionnaire developed by Usoh and colleagues (2000) were also rephrased and used. This questionnaire is based on multiple questions which all are variations of three major themes: (a) the subjective sense experienced by the subject of 'being there', (b) the extent to which the virtual environment becomes *more* real or present than everyday reality, and (c) the 'locality', which measures to what extent the virtual environment is thought of as a 'place' that was 'visited' rather than just a set of images that were seen, or a video that was watched (Usoh et al., 2000). These aspects have overlapping elements with the IPQ, both are focused on the subjective experience the subject has while being in the virtual environment.

The same components of the IPQ were found in this study, presence was divided in three different scales based on a factor analysis: 1: Presence SP (Spatial Presence, 6 items) (α= .805), which indicates to what extent the participant had the feeling to be present in another location. 2: Presence Realism (Experienced Realism, 3 items) (α= .797), this score indicated to what extent the participant found the scenario realistic and 3: Presence Inv (Involvement, 2 items) (R= .288**), which measured the involvement of the participant in the scenario. The results of this factor analysis can be found in table 1.0.

Measuring fear and anger experienced in the scenario

The fear and anger of the participant is measured in the questionnaire by using 5 items. The items asks the participant how they would feel after the robbery. All items are asked in a 1 to 7 Likert scale format (1 = strongly disagree, 7= strongly agree), asking the participant to what extent they agree with feeling the following emotion after the robbery*: 'As*

a victim in this scenario, after the robbery I would feel…..' 'outraged', 'panic', 'frightened', 'anger' or 'fear'.

A factor analysis showed that 'panic', 'frightened' and 'fear' measured the same construct; fear (α= .799). 'Anger' and 'outraged' measured, according to factor analysis, the construct; anger (R= .467**). The results of this factor analysis can be found in table 2.0.

Measuring the perceived severity of the crime

It is important to measure whether severity is adequately manipulated between the scenarios in the study. Therefore, 8 questions are asked that control this manipulation. Zebel and colleagues (2017) conceptualized the severity of crimes by three constructs; the 'perceived wrongfulness', the 'perceived harmfulness' and the 'incarnation time' of the offender. Since this study uses hypothetical crimes, the incarceration time of the offender is not included in the manipulation. However, the perceived harmfulness and perceived wrongfulness are taking into account to perform a manipulation check of the severity of the crime between the different conditions. Zebel and colleagues (2017) indicate that the perceived wrongfulness is the normative evaluation that the victim has of the offence, the perceived harmfulness is seen as the degree to which the victim feels that s/he is (materially or immaterially) harmed by the offence. All items are measured in a 1 to 7 Likert scale (1= strongly disagree and 7= strongly agree).

To illustrate how perceived harmfulness and perceived wrongfulness are measured in this study, some example questions are shown below:

Perceived wrongfulness: *'As the victim in this scenario, after the robbery I would think... - What the robber did was morally wrong'* and *'As the victim in this scenario, after the robbery I would think... - The robber deliberately harmed me'*.

Perceived harmfulness: *'As the victim in this scenario, after the robbery I would feel... - Emotionally damaged by the offense'* and *'As the victim in this scenario, after the robbery I would feel... - Physically damaged by the offense'.*

A factor analyse of perceived wrongfulness indicated that only 1 construct was measured (3 items in the scale, α= .419). A factor analyse of perceived harmfulness also indicated that 1 construct was measured (3 items in the scale, α = .537). The item: *'as the victim in this scenario, after the robbery I would feel … - financially damaged by the offense'* measured a different construct and was therefore removed from the perceived harmfulness scale.

The last item that measured severity in this study examined the participants own evaluation of the severity level of the offense: '*please score how severe you find the offense in general - The general severity of the offence was...'* on a 1 to 7 Likert scale (1= not severe at all and 7= Extremely severe).

Measuring the willingness to participate in VOM

The willingness to participate in VOM is measured using 13 items in the questionnaire. All items are measured on a 7-point Likert scale (1= strongly disagree and 7= strongly agree). The participants are informed about VOM and its implications for victims prior to answering these items. This information gives participants a general idea of VOM and its implementation for victims (see attachment 3). The information and the questionnaire are distributed to the participants directly after s/he experienced the scenario, making the time-period between the 'offence' and the evaluation of the participant whether s/he would be willing to participate in VOM as brief as possible.

The items measure the attitude of participant towards VOM in general (example: *'Please indicate to what extent you agree with the following statements about Victim*

Offender Mediation (VOM) - I think that VOM is pointless') and how likely the participant would participate in VOM, if the robbery that s/he hypothetically experienced in the scenario would happen to them in real life (example: *'When asked if I would be willing to participate in Victim Offender Mediation.... - I would not be willing to participate').*

The items regarding victim offender mediation where divided into three separate scales using reliability analyses and factor analyses: VOM participation (6 items , α= .876) VOM doubt (2 items, R= .468$^{**)}$ and VOM reason (2 items, R= .392$^{**)}$ The results of this factor analysis can be found in table 3.0. In total, 3 items were removed from analyses. These items were removed because they either lowered the reliability of the analyses and/or did not measure an intended construct. The first two items both measured to what extent the participant would not be unwilling to participate because they are either to fearful or to angry to see the offender: *'I would not be able to control myself, I am afraid I would attack the offender'* and *'I think I would be too fearful of the offender to participate in VOM'*. These items were removed since they decreased the reliability of the analyses. The other item that was removed measured if the participant only wanted to participate in VOM if the contact is face-to-face: *'I would only be willing to participate, if the contact is face-to-face'.* This item seems to stand alone in the analyses since it is the only item that measures if there would be a preference in communication channels. Since this item has no connection to other items in the scale, the item is removed.

Results

Descriptive statistics and correlations

Means, standard deviations, reliabilities and intercorrelations for all used variables are shown in Table 4.0.

Table 4.0. *Means, standard deviations, reliabilities and intercorrelations among variables*

Variables	**M**	**SD**	**α**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1. Presence SP	4.49	1.04	.805	--									
2. Presence Realism	5.00	1.13	.797	512**	---								
3. Presence Inv	4.60	1.12	-	.571**	.385**	---							
4. Fear	4.59	1.34	.799	.161*	.221**	.155*	---						
5. Anger	5.31	1.15	-	.114	.210**	.056	.207**	---					
6. Perceived wrongfulness	5.46	.95	.419	.145*	.206**	.122	.344**	.221**	---				
7. Perceived harmfulness	4.88	1.03	.537	-.017	.095	.076	.423**	.109	.280**	---			
8. VOM participation	4.86	1.32	.876	.054	.007	.143	.058	.157*	.003	-.015	---		
9. VOM reason	5.03	1.33	-	.021	.004	.078	.288**	.073	.126	.221**	.697**	---	
10. VOM doubt	3.50	1.47	-	-.083	-.066	-.081	-.273**	-.056	-.075	-.162*	.047	-.197**	---

Note. *p <.05, ** p <.01, α = before standardizing,

Table 4.0 shows some interesting statistics. It shows that the three variables to measure presence are significantly positively correlated with each other. Thus indicating that the realism of the scenario, the level of involvement the participate feels in the scenario and the feeling of being physically present in the scenario have a significant relationship. Fear elicit by the scenario was positively correlated with all of the presence scales. Indicating that the presence felt in the scenario has a relationship with eliciting fear. Anger was correlated with realism in the scenario, but was not associated with the spatial, feeling physically present in the scenario, and involvement in the scenario. Anger was significantly positively correlated with fear. Indicating that the scenarios did not elicit one singular emotional response, but influenced both emotions in the same direction. Presence SP, presence realism, fear and anger were significantly positively correlated with the perceived wrongfulness. Which suggest that feeling presence in the scenario and eliciting the emotional responses has a relationship with morally reprehensibility of the scenario. The perceived harmfulness, the degree to which the victim feels that s/he is (materially or immaterially) harmed by the offence, is positively correlated with fear and the perceived wrongfulness. The willingness to participate in victim offender mediation is positively correlated with anger. This partly rejects hypothesis 3a, since this indicates that there is no relation between presence and fear and the willingness to participate in victim offender mediation. The reasoning to participate in victim offender mediation is positively corelated with fear, perceived harmfulness and willingness to participate. Doubt to participate in victim offender mediation is negatively correlated to fear, perceived harmfulness and to reasoning to participate in victim offender mediation.

Randomisation check

To examine whether there was a difference between the groups in education completed, a chi-square analysis was conducted. The participants in the written scenario

condition had a significantly higher completed education (*m=3.25*, SD= .11) than the participants in the VR condition (*m=2.81, SD= .12)*. There were no educational differences between the different severity conditions. To calculate if there was also a significant difference in the age between the groups, a ANOVA was conducted. The participants in the written scenario condition were significantly older (*m = 31.83*, SD= 1.07) than the participants in the VR condition (*m =21.50, SD= 1.17) F*(1,182) = 42.74, *p* = <.001. There were no age differences between the different severity conditions. Because of these differences, age and educational levels are controlled for when conducting the analyses.

Manipulation of severity

In the study severity was manipulated so that participants in the high severity conditions were to expect to report a higher severity score than participants in the low severity conditions. To investigate if the manipulation of severity was successful, a manipulation check was conducted using 3 ANCOVA's, measuring the effects of the manipulations of severity and scenario on the dependent variables; perceived harmfulness, perceived wrongfulness and the general severity score.

Perceived harmfulness

There is a significant effect of severity on perceived harmfulness; *b*= 45.802, *F*(1,173)=33.03, *p*= <.001. η_p^2= .16. Low severity mean = 4.04, SD= 1.29, high severity mean = 5.03, SD= 1.15. Indicating that participants in the high severity group had significantly higher perceived harmfulness scores compared to the low severity group. The model shows that scenario also had a significant effect on the perceived harmfulness scores; *b*=10.29, *F*(1,173)= 7.42, *p*= .007. η_p^2= .041. The written scenario conditions have an overall higher mean then the VR conditions: written scenario *m*= 4.84, SD= 1.33; VR scenario m= 4.22, SD= 1.21. Which indicates that there is a significant higher perceived harmfulness score

in the written scenario condition, compared to the VR condition. There is no interaction effect between scenario and severity. None of the covariables had a significant effect on the perceived harmfulness.

Perceived wrongfulness

Severity had a moderate effect (p=<.010) on perceived wrongfulness; b= 3.01, $F(1,173)$= 3.392, p= .067. The low severity mean was higher than the high severity mean: low severity m= 5.97, SD= .93; high severity m= 5.72, SD= 1.04. Indicating that the intended manipulated effect, higher severity group has a higher perceived wrongfulness scores, is not supported in this test. Scenario had a significant effect on perceived wrongfulness; b= 17.878, $F(1,173)$= 20.166, p= <.001. The written scenario had a mean score of 5.62 on perceived wrongfulness and a SD of 1.13 and the VR scenario had a mean score of 6.11 on perceived wrongfulness and a SD of .73. Indicating that the VR scenario conditions had a significant higher perceived wrongfulness scores that the written scenario conditions. There is no interaction effect between scenario and severity. None of the covariables had a significant (p= <.005) effect on perceived wrongfulness.

General severity

No significant differences were found on the general severity score between the groups and the covariables.

This indicates that the study only partially succeeded in manipulating the severity as intended. The perceived harmfulness was properly manipulated. The perceived wrongfulness gave a unexpected reversed effect. Although the effect is not significant on a 95% confidence level (p=.067), the test shows that there is a lower score in the high severity group compared

to the low severity group. The manipulation of severity, and its weaknesses will be discussed in more detail in the discussion of this study.

Effects of scenario on presence

The researcher expected that the participants in the VR condition would report a higher presence felt compared to participants in the written condition (hypothesis 1). To examine if the expectation of the researcher came true, an ANCOVA was conducted to compare the presence between the written scenario and the VR scenario.

Presence Spatial

Presence SP was reported higher in the VR condition (m = 4.76, SD= .93) then in the written condition (m = 4.31, SD= 1.07). This differences was significant *b*= 8.649, *F*(1, 173)= 8.631, *p*= .004. There was no interaction effect between scenario and severity. None of the other covariables had a significant effects on presence SP. This indicates that, as expected, the participants felt a higher spatial presence in the VR condition compared to the written condition.

Presence Realism

Unexpectedly, no significant differences were found on the presence realism scores between the groups and the covariables.

Presence Involvement

Presence Inv scored significantly higher in the VR condition (*m*= 4.85, SD= 1.14) then in the written condition (*m*= 4.43, SD= 1.14); *b*= 5.549, *F*(1,173)= 4.302, *p*= .040. This ANCOVA indicates that the participants reported more involvement in the scenario in the VR conditions compared to the written condition. There was no interaction effect between scenario and severity. None of the other (co)variables had a significant effects on presence Inv.

These results are partly in agreement with hypothesis 1, giving indication that the VR condition leads to a higher sense of spatial presence and more involvement of the participant in the scenario. However, it does not indicate that the realism of the scenario increases, compared to the written counterpart. The means and standard deviations are illustrated in Table 5.0

Presence mediating the effect of scenario on fear and anger

According to classic methods paper of Baron & Kenny (1986), mediation is only possible when there is a significant total effect between X and Y (c path). The total effect of scenario on fear and the total effect of scenario on anger was calculated using the Process addon by Hayes, module 4, while controlling for the differences in age and education between the groups. Both tests indicated that there is no total effect of scenario on fear or anger, while controlling for the differences in age and education: scenario on fear; b= -.1989, t(6,175) = -.8704, p = .385, scenario on anger b= -.2410, t(6,175) = -1.2227, p = .223. Since presence cannot mediate the effect of scenario on fear or anger, hypothesis 2 is therefore rejected.

Analysing the willingness to participate in Victim Offender Mediation

When the participants are asked if they would be willing to participate in VOM, 72.8% indicate to somewhat agree, agree or strongly agree with participation, 15.8% somewhat disagreed, disagree or strongly disagree with participating and 11.4% indicated to be neutral.

An analysis of covariance (ANCOVA) was conducted to examine the effects of scenario and severity on the willingness of participants to participate in VOM, while controlling for differences in age and education between the groups.

VOM Participation

There were no significant effects of the manipulations : severity *b*= *.523, F*(1,173) = .296, *p*= .587, scenario *b*= *.519, F*(1,173) = .294, *p*= .588. There was also no interaction effect: *b*=1.103, *F*(1,173) = .625, *p*= .430. Which indicates that a high severity does not decreases the willingness to participate in VOM. Age did not have an effect on the willingness to participate in VOM: age *b*= .003, *F*(1,173) = .077, *p*=.781. None of the education levels scored a significant difference at the 95% significant level. However, participants that indicated to have a PhD or higher form of education had a marginally different score (*p*=<.010): *b*= -1.742, *F*(1,173) = 2.989, *p*= .086. Indicating that participants with a PhD or higher completed education scored marginally lower on the willingness to participate then the control dummy variable, people who indicated that high school was there highest completed educational level.

To examine if other factors contribute to the decision-making of the participants to be willing to participate in victim offender mediation, VOM doubt and VOM reason were also analysed as dependent measures. Two analysis of covariances were conducted to see if these variables were influenced by the difference in scenario conditions and/or the differences in the severity, when controlling for the differences in age and education.

VOM Reason

The different scenario and/or severity conditions did not influence the reasoning of the participant to participate in VOM: scenario *b*= *.091*, *F*(1,173) = .054, *p*= .817; severity *b*= 1.366, *F*(1.173) = .808, *p*= .370. There was no interaction effect: *b*= 1.915, *F*(1.173) = 1.133, *p*= .289. Age did not seem to effect the reasoning: *b*= .008, *F(*1.173)= .533, *p*= .466. However, the test indicates that participants that have a PhD or higher level of education does score significantly lower than participants with only a high school completed education: *b*= -3.243, *F*(1.173)= 18.272, *p* = .001. This indicates that participants with a PhD or higher level

of education seem to find less reason to participate in VOM than participants that completed only a high school education.

VOM Doubt

The scenario conditions did not have a significant effect on VOM doubt, scenario *b*= 3.658, *F*(1,173) = 1.797, *p*=.182; Severity also did not influence the amount of doubt the participant had to participate *b*= 5.110, *F*(1,173) = 2.511, *p*=.115. There was no interaction effect: *b*= *.048 F*(1,173) = .024, *p*= .878. Educational level did not influence the amount of doubt participants had. The age of the participant did have a significant positive effect on the amount of doubt a participant has when asked if they are willing to participate in VOM: *b*= .028, *F*(1,173) = 5.893, p= .016. Which indicates that the doubtfulness of the participant experienced in the study was effected by age.

The moderation effect of severity on the relationship between presence and victim offender mediation.

The moderation effect of severity was calculated using the PROCESS addon by Hayes, module 1. To calculate the moderation effect of severity on the relationship between presence and victim offender mediation, a total of 9 analyses were conducted. All three scales to measure presence (presence SP; presence Realism; presence Involvement) were used as independent variables in the analyses. The three scales measuring willingness to participate in victim offender mediation (VOM participation; VOM reason; VOM doubt) were used as dependent variables in the analyses. The interesting results found in the data will be discussed in this section.

VOM participation

There was a main effect of presence involvement on VOM participation *b*=.176, *t*(173)= 2.028, *p*= .044. This indicates that an increase of presence involvement increases

willingness of the participant to participate in victim offender mediation. Severity did not have an effect on VOM participation *b*= -.156, *t*(174)= -.793 *p*= .429. Severity also does not seem to moderate the positive significant relationship between presence inv and VOM participation *b*= -8.02, *t*(173)= -.131, *p*= .896.

VOM reason

The data indicates that the predictors: presence realism, severity and the covariables: educational level and age, had a moderate effect on VOM reason *F*(8,173)= 1.852, *p*= .071, R_2= .079. There is no main effect of presence realism on VOM reason: *b*= .022, *t*(173)= .253, *p*= .800. Furthermore, the data suggest that there is no effect of severity on VOM reason: *b*= .156, *t*(173)= .810, *p*= .419. However, there seems to be a moderate moderation effect: *b*= -.3088, *t*(173)= -1.81, *p*= .073. Addition of the interaction was a moderate change to the model: *F*(1, 173)= 3.26, *p*= .073, R^2 change =.017. See figure 5.

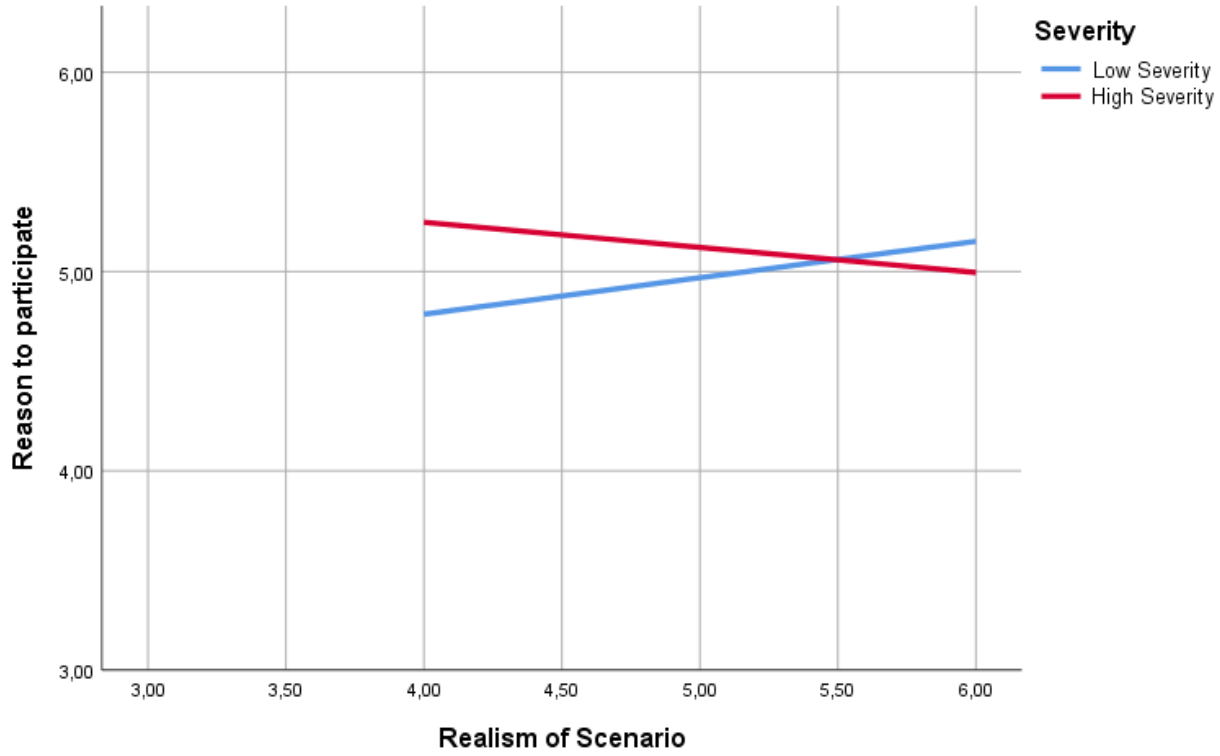

Figure 5: Moderation Effect of Severity on the Relationship between Realism and Reasoning to participate

The graph illustrates that when presence realism increases in the low severity group, VOM reason increases. The opposite is happening in the high severity group, when presence realism increases in the high severity group, VOM reason scores decrease. This means that in the higher severity group, participants score less positive to reasonings to participate in VOM as the perceived realism of the scenario increases, which is in line with the expectations of the study.

Educational levels does seem to have an significant impact in this analysis. There is a significant lower score of VOM reason in the PhD educated group, compared to the reverence group, high school completed education: b= -3.19, t(173)= -3.26, p= .001. All other education levels did not have an effect on VOM reason scores.

VOM doubt

The overall model indicates that VOM doubt does seem to be influenced by the predictors, presence SP, severity and the covariables: educational level and age, in the model, F(8, 173)= 2.245, p= .027, R^2 = .307. However, presence SP and severity are not a significant predictor in the model, presence SP: b= -.090, t(173)= -.847, p= .399; Severity: b= -.347, t(173)= -1.63, p= .105. There is also no interaction effect, b= -.227, t(173)= -1.069, p= .287. Age did have a moderate effect on VOM Doubt: b= .020, t(173)= 1.825, p= .070. Which indicates that for every 1 unite increase in age, the VOM doubt score increased by 0.201. Giving an indication that older participants were more doubtful in participating in victim offender mediation than younger participants.

When analysing what effect severity and presence realism have on VOM doubt, the overall model of process indicates that there is a significant effect, if the covariables: educational level and age, are taking into account : F(8, 173)= 2.359, p= .020, R^2 = .0983. Again, there seems to be no main effect of presence realism and of severity on VOM doubt: Presence realism, b= -.1200, t(173)= -1.260, p= .2093; severity, b= -.336, t(173)= -1.585, p=

.115. And no interaction effect: *b*= -.173, *t*(173)= -.920, *p*= .359. And again, age seems to have an significant effect on the VOM doubt score: *b*=.0226, *t*(173)= 2.083, *p*= .039.

The data gives the same impression when examining the effect of severity and presence involvement on VOM doubt, again there seems to be an overall effect of the model of process if all covariables are taken into account, *F*(8, 173)= 2.030, *p*= .046, R^2 = .0858. Again there is no main effect of presence involvement or severity on VOM doubt: Presence involvement, *b*= -.0329, *t*(173)= -.347, *p*= .729; severity, *b*= -.3317 *t*(173)= -1.549, *p*= .123. And no interaction effect: *b*= -..0609, *t*(173)= .3162, *p*= .752. And again, age seems to have an significant effect on the VOM doubt score: *b*=.0229, *t*(173)= 2.065, *p*= .040.
These analyses indicate that VOM doubt is mostly effected by the age of the participant, where the older participants are more doubtful to participate in victim offender mediation.

These results are in agreement with hypothesis 3. A main effect was found of presence involvement on participation in victim offender mediation. Meaning that feeling involved in the scenario, increased the willingness of the participant to participate in victim offender mediation, which is in line with hypothesis 3a. There was also a moderate moderation effect found of severity on the relationship between realism and reasoning to participate, which is in agreement with hypothesis 3b; that severity moderates the effect presence has on willingness to participate. The effect was, as expected, that the high severity decreased the positive relation between presence involvement and reasoning to participate in victim offender mediation. However, the moderation effect was not significant on a 95% confidence level (*p*= .073) and the effect was only found on the reasoning for participants to participate, not the actual willingness of the participant to participate.

The moderation effect of severity on the relationship between fear and victim offender mediation.

To calculate the moderation effect of severity on the relationship between fear and victim offender mediation, a total of 3 analyses were conducted. Fear was always the independent variable. The three scales measuring willingness to participate in victim offender mediation (VOM participation; VOM reason; VOM doubt) were used as dependent variables in the analyses. The interesting results found in the data will be discussed in this section.

VOM reason

When all predictors are taking into account in the model, the overall model of the moderation effect of severity on the relationship of fear and VOM reason shows a significant effect: $F(8,173)= 2.952$, $p= .004$, $R^2 =.1201$. The main effect of fear on VOM reason is also significant, $b=.2483$, $t(183)= 3.392$, $p= <.001$. Indicating that more fear leads to more reasoning to participate in victim offender mediation. There is no significant main effect of severity on VOM reason and there was also no significant interaction effect. Education did have a significant effect on the VOM reason score, participants with a PhD or higher completed education scored significantly lower on the scale compared to the participants that completed high school as there highest form of education, $b= -2.455$, $t(173)= -2.500$, $p= .013$. Age did not have a significant effect on the VOM reason scores.

VOM doubt

There is a significant effect found in the overall model, including all predictors, of the moderation effect of severity on the relationship of fear and VOM doubt: $F(8,173)= 3.334$, $p= .001$, $R^2 = .1336$. Fear has a main effect on VOM doubt, $b= -.251$, $t(173)= -3.10$, $p= .002$. Indicating that for every 1 unite increase in fear there is a -0.251 decrease in VOM doubt score. There is no significant main effect of severity on VOM doubt and there was also no significant interaction effect. Age remained a significant predictor of VOM doubt scores, indicating that a higher age leads to more doubt in participating in this study, $b= .021$, $t(173)= 1.993$, $p= .048$.

These results are partly in agreement with hypothesis 3. A main effect was found of fear on VOM reason and on VOM doubt. Meaning that more fear leads to more positive view on reasoning to participate in victim offender mediation and that more fear leads to less doubt in participating in VOM mediation, which is in agreement with hypothesis 3a. However, no moderation effect was found of severity on the relationship between fear and victim offender mediation. Which rejects hypothesis 3b.

The moderation effect of severity on the relationship between anger and victim offender mediation.

To calculate the moderation effect of severity on the relationship between anger and victim offender mediation, a total of 3 analyses were conducted. The three scales measuring willingness to participate in victim offender mediation (VOM participation; VOM reason; VOM doubt) were used as dependent variables in the analyses, anger was used as the independent variable. The interesting results found in the data will be discussed in this section.

VOM participation

The main effect of anger on VOM participation is significant, b= .1817, t(173)= 2.041, p= .043. This indicates that in this study more anger leads to a higher participation in victim offender mediation. There is no significant main effect of severity on VOM participation and there was also no significant interaction effect. Again, educational level does seem to influence participation in victim offender mediation. The participants that had completed a PhD of higher education scored significantly lower on participation than the participants that completed only a high school educational level, b=-1.982, t(173)= -1.991, p= .048.

VOM reason

The overall model of the moderation effect of severity on the relationship of anger and VOM reason shows a moderate effect: $F(8,173)= 1.91$, $p= .061$. There is no main effect of anger or severity on VOM reason. There is also no interaction effect. As seen before, educational levels did have a significant effect. The direction of the effect is the same as described before; the participant with the highest completed educational level scored significantly lower than the participants that completed only a high school educational level on VOM reason, $b= -3.397$, $t(173)= -3.449$, $p= <.001$.

VOM doubt

The overall model of the moderation effect of severity on the relationship of anger and VOM doubt shows a significant effect when all predictors are taken into account: $F(8,173)= 2.543$, $p= .012$, $R^2 = .105$. This indicates that 10,52% of variance in the VOM doubt scores are explained by the IV's; anger, severity and the covariables; age and the dummy coded educational levels. There is a moderate main effect of anger on VOM doubt: $b= -.1870$, $t(173)= -1.933$, $p= .055$. Meaning that an increase in anger leads to decrease in VOM doubt. There is also a moderate effect of severity on VOM doubt: $b= -.4204$, $t(173)=-1.954$, $p=.052$. Meaning that a higher severity leads to a decrease in VOM doubt scores. There is no interaction effect found in the analysis. The covariables age and education both had effect on the VOM doubt scores, age had a positive significant effect $b= .0233$, $t(173)= 2.159$, $p= .032$. Indicating that participants with a higher age scored significantly higher on the VOM doubt scale. The participant with the highest completed educational level, PhD or higher, scored moderately higher on VOM Doubt, then the participants that completed a high school education as their highest education $b= 1.960$, $t(173)= 1.812$, $p= .071$.

These results are partly in agreement with hypothesis 3. A main effect was found of anger on VOM participation and a moderate main effect was found of anger on VOM doubt. This indicates that in this study more anger leads to a higher participation in victim offender

mediation and that more anger leads to a decrease in doubt to participate in victim offender mediation. This is in agreement with hypothesis 3a. No moderation effect was found of severity on the relationship between anger and victim offender mediation, which rejects hypothesis 3b.

Discussion

The first aim of the study was to examine how the severity of the offense moderate the relation between presence within a scenario, fear and anger and the willingness to participate in victim offender mediation. The expectation was that a severe crime would negatively moderate the positive relation between presence within a scenario, fear and anger and the willingness to participate in victim offender mediation, which is in line with the findings of Zebel and colleagues (2017). The second aim of the study was to examine if presence felt within a scenario could be increased by using a Virtual Reality scenario compared to the often used written scenario in behavioural studies. This study found no significant moderation effect of severity on the relation between presence within a scenario, fear and anger and willingness to participate in victim offender mediation. Furthermore, the current study also found no moderation effect of severity on the relation between fear and anger and the reasoning or doubtfulness of participants to participate in victim offender mediation. However, there was a moderate moderation effect found of severity on the relationship between realism and reasoning to participate. As expected, the high severity decreased the positive relation between presence involvement and reasoning to participate in victim offender mediation. Even though this result seems promising, the effect was not significant on a 95% confidence level and the effect was only found on the reasoning for participants to participate, not the actual willingness of the participant to participate. The findings therefore indicate that there was no evidences found in this study to validate the expectations of the study, namely; that a severe crime would negatively moderate the positive relation between

presence within a scenario, fear and anger and the willingness to participate in victim offender mediation. The results of this study add insight in the contradicting literature which remains in discussion whether (victim initiated) victim offender mediation is useful for victims that have been victimized by a severe crime. The results of the current study indicate that severity did not influence the willingness to participate and therefore state that, in this specific study, the severity of the crime had did not impact the willingness of the participant to participate in victim offender mediation.

The second aim of the study was to examine if presence felt within a scenario could be increased by using a Virtual Reality scenario compared to the often used written scenario. This current study showed that participants reported a higher spatial presence felt when imagining themselves as a crime victim in the VR scenario compared to the written scenario. This indicates that the feeling of 'being in a different place' is significantly stronger when a participant senses the contextual details of the scenario by using VR technology. There was no difference found in the realism of the scenario between the VR scenario and the written scenario. Since the researcher did not have access to high-end VR technology, the realism of the scenario could possibly be increased by having a higher budget or more accessibility to high-end VR technology. The participant might also have certain expectations about the VR technology, which could influence how realistic they view the scenario. More information about this limitation will be discussed further in the 'limitations' section. The VR scenario also increased the involvement of the participant in the scenario. This effect was expected since the participant in the VR scenario has the freedom to look around while experiencing the scenario while the participant in the written scenario only reads the story and tries to imagine him/herself in the scenario. The overall increase in presence and involvement felt by the VR scenario compared to the written scenario supports the idea that VR scenarios could be a protentional viable and valid data collecting method for studying differences in

behavioural decision making and intension of participating in victim offender mediation. This result is promising, since it is hard to reach large numbers of 'real' victims and offenders to study. Using hypothetical victims through use of VR technology might help researcher to understand more about victim offender mediation.

The study also investigated whether the scenario's had the ability to elicit the relevant emotional or visceral reactions or responses of the imagined environment. The theory suggested that the scenario should be able to elicit these reactions and responses when the participant feels truly present in the imagined environment of the scenario (Schuemie, van der Straaten, Krijn, & van der Mast, 2001). Christian, Edwards and Bradley (2010), suggested that a VR scenario has a greater 'real-world-feel' since it enhances the contextual details of the scenario, making the overall experience more realistic. Therefore, in theory, by increasing the realism of the scenario the presence felt within the scenario would also be increased. Schuemie and colleagues (2001) mention their doubts when it comes to measuring emotional responses through presence. They argue that one of the major problems in using presence for emotional responses and phobia treatment is the lack of empiric evidence found in the literature. Although there is evidence that there is a relation between presence and emotional responses, such as fear and anger, the nature of the relation has not fully been addressed (Rothbaum et al., 1995; North, North, & Coble, 1998). It remains unclear if the relation measured is causal. In other words, does high presence causes stronger emotional responses in the virtual environment, or is it the other way around? To examine this relation, a 'true' randomized design is required. Since this research does not only focus on this specific relation, another study should be conducted to argue that there is a causal or correlational effect.

To test if feeling present in the scenario was able to elicit the relevant emotional responses, this current study hypothesised that the feelings of anger and fear would be

mediated by the presence felt in the scenario. However, there was no such mediation effect found in this study. The different scenario's in this study had no effect on the feeling of fear or anger participants felt after experiencing the crime, making it impossible for presence to mediate this non-existing effect. It is unclear why this effect was not found in this study. A reason could be that the lack of realism in the VR scenario led to a unrealistic experience which failed to elicit the emotional or visceral reactions and responses. This lack of realism could perhaps be increased by using better – high end- VR technology.

The manipulation of severity did not had the expected effect in the study. Severity was manipulated in the experiment through a) toon of voice of the offender, b) the violence used by the offender and c) by making the robbery seem either planned (high severity) or more like a 'drift' (low severity). Severity was measured by the perceived harmfulness, the perceived wrongfulness and a general score of the severity by the participant. The perceived harmfulness, which indicates to what extent the participant felt physically, emotionally and financially hurt by the offense, scored higher in the high severity compared to the low severity, which was as intended and expected. However, perceived harmfulness scored higher in the written scenario than in the VR scenario. This effect was unexpected, and shows that the scenario conditions were not as identical as intended. The unintended differences between the written and VR scenario conditions is a limitation of the study and therefore will be further addressed in the limitation section. The lower perceived harmfulness in the VR conditions could perhaps be caused by the increase of details and contextual information in the VR scenario, which could have had an effect on the perceived harmfulness. However, to truly understand why the effect occurred, more research is required.

The perceived wrongfulness had the exact opposite effect of the perceived harmfulness, in the current study; its scored, marginally, higher in the low severity than in the high severity and it scored higher in the VR scenario compared to the written scenario. The

perceived wrongfulness scores the morally reprehensibility of the offense and the evaluation of the participant that the offender 'choose to deliberately – specifically – harm you', giving a more personalized and less objective view on the offense compared to the perceived harmfulness. Warr (1989) and Zebel and colleagues (2017) describes that one dimension of the perceived severity can be influenced more than the other. Perhaps the increase in contextual information in the VR scenario made the offense 'more personal' and therefore increased the morally based perspective of the severity of the crime more than the objective evaluation of the amount of harm inflicted upon the victim.

The unexpected differences found in the severity conditions are puzzling. It is possible that the presence of the gun could explain this result. Since the perceived wrongfulness was partly based on the offender 'choosing to specifically harm you', the presence of a gun could indicate that the offender planned the crime in advance, driving on the expectation that the offender would only take his gun out on the street when he plans on using it, but this does not indicate that the offender specifically choose the victim. It indicates that the offender choose to commit the crime and does not indicate that the offender choose to -specifically- harm you (the victim). In the low severity condition however, the offense is based on a 'drift' of the offender. The offender sees a opportunities, and takes it. It was expected that this would decrease the perceived wrongfulness, since the offense is not planned nor does it give an indication that the offender chooses the victim. This is however not supported in the study. Perhaps the participants felt that, because the opportunities was taken when - specifically - they were using the ATM, the offender targeted them deliberately and specifically. Which could be an explanation of the result. However, more research is required to test these assumption.

An interesting find of the study was that age was the best at predicting doubtfulness to participate in victim offender mediation of the participants in the sample. There seems to

be a positive effect, where an increase in age of the participant leads to more doubtfulness to participate in victim offender mediation. When compared to the real world, this would imply that younger victims would be less doubtful, and therefore be more willing to participate in victim offender mediation, compared to older victims. This effect might have a connection with the fear that revictimization can occur when you agree to participate in the mediated contact (Zebel et al., 2017). Younger participants might not fully see the effects of revictimization, because they might either overestimate their ability to not be revictimized, or perhaps by sheer negligence or ignorance of the threat. However, to understand the full relationship between age and the willingness of the participant to participate in victim offender mediation, more research is required.

The study suggested that the educational level of the participant was the strongest predictor of reasoning to participate in victim offender mediation in the study. The direction of the effect indicates that people with the highest completed educational level (PhD or higher) had a more negative view on reasoning to participate in victim offender medication, when compared to people that completed a high school educational level. Since there is no effect of educational level on the actual willingness to participate in victim offender medication, the effect cannot be explained by highly educated participants just having a general more negative view on victim offender mediation when compared to a person who has completed only a high school education. Perhaps this effect occurred because people that are highly educated might have their own specific reasoning to be willing to participate in victim offender mediation. The survey in the current study gave the participants fixed reasons to participate and scored how much the participate valued those reasonings to participate. Perhaps highly educated participants had a different reason to participate in victim offender mediation, some of which might not have been in the survey, when compared to people that only completed a high school education. Which could explain the effect found in the current

study. However, to fully understand the relation between educational levels of a participant and their reasoning to participate in victim offender mediation, more research is required. This research should give the participant the freedom to give their own reasoning to participate in victim offender mediation, without giving them pre-set reasons and ask them to validate those pre-set reasons.

Limitations

The data collecting methods used in this study made it possible for the researcher to reach his desired amount of participant. However, the usages of convenience- and snowball-sampling could have influence the study, making the results of the study less applicable on the general population, decreasing the external validity of the study.

Using convenience sampling could bias the collected data. Some groups were over-represented in the study, which explains why there were differences in educational level and age between the different scenario's groups. The participants of the VR scenario group were reached in a different way than the participants of the written scenario group. The VR scenario group were strictly students of the University of Twente, who were willing to participate in a VR-experiment when they were asked 'face2face' by the researcher. The fact that all these participants were students and the possible self-selecting bias of the participant in agreeing to participate in the study, when asked by the researcher in the sampling method used, makes it possible that this group has certain characteristics that made them differ from the written scenario group.

The participants in the written scenario were more randomized; they were mostly approached via a link online and social media. Therefore they had less personal contact with the researcher, they were also more initial differences in age and educational level among participants in this group, giving an indication that this group was more randomized then the VR-condition group. Even though, the researcher controlled for the differences in educational

level and age in the analysis, there could be other differences between the groups where the researcher was unaware off and therefore did not controlled for these differences.

It is also possible that the participants who volunteered to participate in the VR-experiment had certain expectations of the VR-technology itself. These expectations were not measured in the study. Even though these expectations could have potentially influence the data. Perhaps it could explain why the VR scenario was not deemed more realistic then the written scenario, as was expected by the study. It is possible that the expectations of the VR-experiment were high, meaning that participates were 'let down' by the realness of the experiment, which could have impacted the data.

As briefly mentioned before, the VR-technology used was not the best technology currently available, which could have had an impact on realism in the scenario. There were also other factors in the VR-technology that could have impacted the results. One of which is the text that was added in the scenario. The researcher did a short pilot test among family and co-workers when the creation of the scenario was finished. It became clear during this pilot test that the participants needed more information about the scenario, to understand what was happening to them. Most participants in the pilot test simple looked straight ahead and therefore missed - did not experience- the robbery taken place, since the robber comes from the back of the participants in the scenario. This was made so the victim hears the offender come running or walking towards them, and then turns around. However, it became clear in the pilot test that the participants needed more guidance to actually experience the robbery. Therefore, the team who made the technology and the application added the text in screen: "Look Right" with a big arrow to the right (see figure 6 for the added text). The researcher did another pilot test after this change. Which led to the conclusion that the added text worked, almost all participants turned towards the offender and therefore actually experienced the scenario. So the change had its desired effect. However, the realism of the

scenario could have been negatively impacted by the added floating text in the screen of the participant.

Figure 6: Screenshot of Added Text in the VR Scenario

As briefly mentioned before, another limitation of the study were the differences between the written and VR scenario conditions. The results indicated that both the low- and high-severity written condition differ compared to the low- and high-severity VR condition. This is a limitation to the validity of the study. Since it is unclear to what extent, and/or what exactly made, the conditions differ from each other. These differences between the conditions make it difficult to argue strong conclusions, since the measured effect might be caused by- or influenced by- the initial differences between the different scenarios.

Future research

The recommendation would be to anyone willing to use or re-do certain aspects of the study to firstly; change the sampling method so that the groups are truly randomized. This should lead to a more randomized experiment, where the results are validated by the manipulations in the study and could not have been influenced by initial differences between

the groups. This increases the external validity of the study and its results. Secondly, if financially possible, the researcher recommends to use the highest-end VR technology available in the study. This should give the highest amount of realism and therefore could increase presence felt in the scenario (Regenbrecht & Schubert, 2002; Shubert & Crucius, 2002). Thirdly, the researcher recommends to take the expectations of the participants in the VR scenario into account when analysing the data. By doing so, the researcher can measure these expectations and see if participants with a high expectation about the VR technology scored differently than those with a lower or more neutral expectation. Fourthly, when using VR technology to create a scenario, a recommendation could be to make sure that the participant is facing the desired direction when the scenario starts, or that the VR technology turns on its own towards the desired location. This increases the chance that the participants sees – experiences - the scenario as desired. Lastly, it is advices to have at least one pilot-test when comparing written scenarios to VR scenarios. It is very hard – or even impossible- to make the scenarios 100 percent corresponding, however it is also very important to make the scenarios as similar as possible. Pilot-testing after making the scenarios could give the researcher an idea where the scenarios differ from each other, therefore making it possible to iron out these differences as much as possible before the actual data collection begins.

Conclusion

The study shows that there are possibilities regarding the use of VR technology in – scenario based – victim offender mediation research. Even though the results of this study should be treated which caution, the increase in spatial presence felt by the participant and the increase in involvement in the scenario suggests that VR scenarios have the capability to increase the accessibility of (hypothetically) victims and therefore make it easier to gain larger samples to study victim decision making. As stated by Umbreit (2002), one of the

hardest challenges in studying victim offender mediation is having a large sample size to conduct the research. This study carefully suggests that VR technology could be used to tackle this challenge and therefore hopefully increase the amount of empirical evidence in the field.

One of the main questions this study tried to answer was: does severity moderate the relation between presence felt within a scenario, fear and anger and the willingness to participate in victim offender mediation. This study did not find empirical evidence to support that the relation between presence and fear and anger and willingness to participate in victim offender mediation is moderated by the severity of the crime.

Nevertheless, when the realism of the scenario increased in the high severity scenarios, the reasoning to participate decreased. When the realism of the scenario increased in the low severity scenarios, the reasoning to participate increased. This found effect suggest that the relation between realism of the scenario and reasoning to participate is moderated by the severity of the crime. However as mentioned before, there was no direct empirical evidence found to support that severity moderates the relation between presence and the willingness to participate in victim offender mediation.

It remains unclear when a less positive view on the reasons to participate eventually translates to be – completely – unwilling to participate in victim offender mediation. To fully understand how crime severity influences the relation between presence and reasoning to participate and eventually willingness to participate, more research on the subject is required.

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Table 1.0

Factor Analysis of Presence

	Factor loading		
Item	**1**	**2**	**3**
Presence	**Presence SP**	**Presence Realism**	**Presence Inv**
8. While experiencing the scenario, I remained aware of my true surroundings	.867	.245	-.258
6. While experiencing the scenario, I was less conscious of my true surroundings (example: sounds, room temperature)	.734	-0.38	.200
9. I was completely immersed in the scenario	.610	3.45	.094
5. I had the feeling that I truly experienced what happend in the scenario	.506	-.383	.014
4. I felt more engaged in the scenario rather than I was experiencing something from the outside	.479	-.158	.304
3. I feel like I have experienced a robbery	.424	-.234	.289
10. I think that the robbery in the scenario was realistic, when compared to a real robbery	-.127	-.926	-.160
7. I thought the scenario presented was realistic	.066	-.787	-.045
11. I thought that the scenario was very vivid	.039	-.752	.142
2. The scenario gave me the feeling that I was present on another location	-0.69	.159	.941
1. d the feeling that I was present in the scenario	.268	-.379	.399
α	.805	.797	-
R			.288**

Table 2.0

Factor Analysis of Emotional Responses

	Factor loading	
Item	**1**	**2**
Emotional responses	**Fear**	**Anger**
15. As a victim in this scenario, after the robbery I would feel frightened of the offender	.831	-.367
13. As a victim in this scenario, after the robbery I would feel fear for the offender	.822	-.316
16. As a victim in this scenario, after the robbery I would feel panic	.772	-.026
14. As a victim in this scenario, after the robbery I would feel anger towards the offender	.274	.824
17. As a victim in this scenario, after the robbery I would feel outraged by the offender	.534	.673
α	.799	
R		.467**

Table 3.0

Item	1	2	3
Victim Offender Mediation	**Participation**	**Doubt**	**Reason**
30. I would be willing to participate in VOM	.839	.021	-.193
31. I would like to know more about the motives and background of the offender	.817	-.160	-.089
27. I would like to receive answers from the offender on my questions	.816	-.148	-.139
38. I would not be willing to participate	.813	.038	-.151
28. I would feel the need to tell the offender what the consequences of his actions has been	.682	-.098	.082
35. I would not hesitate and immediately say: Yes	.669	447	-.335
26. Think that VOM is pointless	.560	.130	523
36. I would first consult with my family and friends before answering	-.080	.858	-.029
37. I would look for more information about VOM before making a decision	-.123	.796	-.013
33. I think that the offense is not severe enough to participate in VOM	.472	.138	.726
α	.876	-	-
R		.468**	.392**

Table 5.0

Effect of Scenario on Presence

Presence_Spatial

Scenario	Severity	Mean	Std. Deviation
Written Scenario	Low Severity	4,40	1,05
	High Severity	4,22	1,09
	Total	4,31	1,07
VR scenario	Low Severity	4,80	,97
	High Severity	4,72	,90
	Total	4,76	,93
Total	Low Severity	4,58	1,03
	High Severity	4,45	1,03
	Total	4,51	1,03

Presence_Realism

Scenario	Severity	Mean	Std. Deviation
Written Scenario	Low Severity	5,01	1,04
	High Severity	5,01	1,15
	Total	5,01	1,09
VR scenario	Low Severity	4,93	1,16
	High Severity	5,00	1,27
	Total	4,97	1,21
Total	Low Severity	4,97	1,09
	High Severity	5,00	1,20
	Total	4,99	1,15

Presence_Involvement

Scenario	Severity	Mean	Std. Deviation
Written Scenario	Low Severity	4,39	,93
	High Severity	4,46	1,30
	Total	4,43	1,14
VR scenario	Low Severity	4,68	1,33
	High Severity	5,01	,92
	Total	4,85	1,14
Total	Low Severity	4,52	1,14
	High Severity	4,71	1,17
	Total	4,62	1,16

*All means are estimated with age and education as covariables in the analyses

Attachments 1: Written scenarios

Written Scenario:

Please read the followings scenario regarding a robbery. Try to imagine yourself in the story, like you are the one that experiences the robbery yourself.

LS scenario

Imagine that it is a Friday night and you want to withdraw some money from the ATM close to your home before you go to the bar-street. While you walk towards the ATM, you notice that it is a quiet night and no people are on the street. You take your money out of the ATM and while you try to fold it in your wallet you feel a slight push in your back, like if someone walks into you. You turn around and see a man grasping for the wallet with is still in your hands. He pushes you to the ground. As you sit on the ground the man gets a hold of your wallet and sprints away into the nearest ally. As the man runs away, you try your best to memories his appearance, but all you had seen was a male that wore a dark hoodie. You remain seated on ground in absolute shock of what just happened to you and you notice that your back hurts from falling on the concrete floor. You take you mobile phone out of your pocket and call the police.

HS scenario

Imagine that it is a Friday night and you want to withdraw some money from the ATM close to your home before you go to the bar-street. While you walk towards the ATM, you notice that it is a quiet night and no people are on the street. You take your money out of the ATM and while you try to fold it in your wallet you hear somebody stepping behind you. You hear a deep voice behind you say: **"Give me the money**". Shocked, you try to turn around and face the man who is standing directly behind you. As you turn around you feel a great pain in your back. It takes you no time to realize that the person behind you just punched you in your back. You now stand face to face to the man that is robbing you. You see him step forward, even closer to you. He now is standing only inches away from your face. As you try to create more space, by stepping backwards, you notice that the ATM machine is blocking any way out. The man pushes you hard into the ATM machine, you feel a burst of pain coming from you back. The man looks you straight in the eye and starts to scream at you: "**GIVE ME THE FUCKING MONEY"**. You can't get your hand, which is still holding your wallet, to move since he is so close to you. Therefore, you simply drop the wallet on the ground and nod to the man. He pushes you even more back into the ATM with his right hand, while he bends over and picks up the wallet with his left hand. Once he has a firm grip on the wallet, he starts to sprint away into the nearest ally. As the man runs away, you try your best to memories his appearance, but all you had seen was a male that wore a dark hoodie. You drop down on the ground in absolute shock of what just happened to you. You feel an enormous pain in your back. You take you mobile phone out of your pocket and call the police.

Attachments 2: Informed consent

Welcome to the research study!
This research study is interested in understanding how victims experience crime. Therefore, this research asks you to imagine being a (hypothetical) victim of a crime. Your participation in this research is voluntary. You have the right to withdraw at any point during the study, for any reason, and without having to explain your reasoning for doing so. Please be assured that your responses will be kept completely confidential. If you would like to contact the Principal Investigator in the study to discuss this research, please e-mail: j.r.koetsier@student.utwente.nl

The study should take you around 10 - 15 minutes to complete. If you are a student from the University of Twente you receive SONA-Points for your participation.

By clicking the button below, you acknowledge that your participation in the study is voluntary, you are at least 18 years of age, and that you are aware that you may choose to terminate your participation in the study at any time and for any reason.

Please note that this survey will be best displayed on a laptop or desktop computer. Some features may be less compatible for use on a mobile device.

Attachments 3: Information VOM

Soon after the offense, you went to the local police station and declared that you were robbed.

Imagine that two weeks after the robbery took place, you receive a letter from a company called ‘Perspective Restorative Mediation’. They would like to inform you that the offender that robbed you has been arrested and shows signs of remorse. The offender has asked if it is possible to initiate mediated contact with you. The offender wants to speak to you so he can apologize for the offense. This mediated contact is called ‘Victim-Offender-Mediation’ (VOM). This implies that you can talk, and therefore ask and answer questions, to the offender while a professional mediator is present. Mediation can help victims to deal with the offense and move on with their lives. The professionally trained mediator prepares and leads the mediations to ensure that everything goes smoothly. This mediation is completely confidential and can only be arranged on a voluntary basis, meaning that both parties (victim and offender) need to be willing to participate. The contact will be ‘face-to-face’, so you will be in the same room as the offender when you engage in the mediation.

Attachments 3: Questionnaire (written condition)

Master Thesis J.R. Koetsier (Qualtrics V1)

Start of Block: Informed Consent

Q1 Welcome to the research study!
This research study is interested in understanding how victims experience crime. Therefore, this research asks you to imagine being a (hypothetical) victim of a crime. Your participation in this research is voluntary. You have the right to withdraw at any point during the study, for any reason, and without having to explain your reasoning for doing so. Please be assured that your responses will be kept completely confidential. If you would like to contact the Principal Investigator in the study to discuss this research, please e-mail: j.r.koetsier@student.utwente.nl

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Please note that this survey will be best displayed on a laptop or desktop computer. Some features may be less compatible for use on a mobile device.

- ○ I have read and understood the above informed consent and agree with participation (1)
- ○ I do not consent, I do not wish to participate (2)

Page Break

End of Block: Informed Consent

Start of Block: Introduction Scenario

Q29 Please read the followings scenario regarding a robbery. Try to imagine yourself in the story, like you are the one that experiences the robbery yourself.

End of Block: Introduction Scenario

Start of Block: Scenario LSW

LSW It's a Friday afternoon and you want to withdraw 20 euro from the ATM close to your home. While you walk towards the ATM, you notice that it is quiet outside and there are no people on the street. It is a cold and grey day and it starts to darken.
You take your 20 euro out of the ATM and while you try to fold it in your wallet you hear footsteps running towards you. Before you can turn around you feel a slight push in your back, like if someone walks into you. You turn around and see a man grasping for the wallet that you placed on the ATM. He pushes you away from the ATM. The man gets a hold of your wallet and sprints away. As the man runs away, you try your best to memorize his appearance, but all you had seen was a male that wore a dark hoodie and something that covered up his face. For a couple of seconds, you are in complete shock. Once you realize what happened to you, you take your mobile phone out of your pocket and call the police.

End of Block: Scenario LSW

Start of Block: Scenario HSW

HSW Please read the followings scenario regarding a robbery. Try to imagine yourself in the story, like you are the one that experiences the robbery yourself.

It's a Friday afternoon and you want to withdraw 20 euro from the ATM close to your home. While you walk towards the ATM, you notice that it is quiet outside and there are no people on the street. It is a cold and grey day and it starts to darken.
You take your 20 euro out of the ATM and while you try to fold it in your wallet you hear footsteps running towards you. Before you can turn around you feel someone grabbing you from behind and pushing you towards the ATM. As you turn around you see a male with a hoody and a covered-up face pointing a gun at you. He shouts "Give me your fucking money! GIVE ME YOUR FUCKING MONEY, I'LL FUCKING KILL YOU!" You feel an enormous pain as the man hits you with his gun in your face. Once he sees that your wallet is laying on the ATM machine, he grabs the wallet and runs away. As the man runs away, you try your best to memorize his appearance, but all you had seen was a male that wore a dark hoodie and something that covered up his face. For a couple of seconds, you

are in complete shock. Once you feel blood dripping down your face you start to realize what just happened to you. You take your mobile phone out of your pocket and call the police.

End of Block: Scenario HSW

Start of Block: Presence

Presence Please answer the following statements regarding the scenario

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
I had the feeling that I was present in the scenario (1)	○	○	○	○	○	○	○
The scenario gave me the feeling that I was present on another location (2)	○	○	○	○	○	○	○
I feel like I have experienced a robbery (3)	○	○	○	○	○	○	○
I felt more engaged in the scenario rather than I was experiencing something from the outside (4)	○	○	○	○	○	○	○
I had the feeling that I truly experienced what happend in the scenario (5)	○	○	○	○	○	○	○
While experiencing the scenario, I was less conscious of my true surroundings (example: sounds, room temperature) (6)	○	○	○	○	○	○	○

I thought the scenario presented was realistic (7)	○	○	○	○	○	○	○
While experiencing the scenario, I remained aware of my true surroundings (8)	○	○	○	○	○	○	○
I was completely immersed in the scenario (9)	○	○	○	○	○	○	○
I think that the robbery in the scenario was realistic, when compared to a real robbery (10)	○	○	○	○	○	○	○
I thought that the scenario was very vivid (11)	○	○	○	○	○	○	○

End of Block: Presence

Start of Block: Fear & Anger

Fear and Anger

As a victim in this scenario, after the robbery I would feel....

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
Fear for the offender (1)	○	○	○	○	○	○	○
Anger towards the offender (2)	○	○	○	○	○	○	○
Frightened of the offender (3)	○	○	○	○	○	○	○
Panic (4)	○	○	○	○	○	○	○
Outraged by the offender (5)	○	○	○	○	○	○	○

End of Block: Fear & Anger

Start of Block: Severity

Perceived wrongfulne As the victim in this scenario, after the robbery I would think...

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
What the robber did was morally wrong (1)	○	○	○	○	○	○	○
The robbery was planned by the offender (2)	○	○	○	○	○	○	○
The robber deliberately harmed me (3)	○	○	○	○	○	○	○

Perceived harmfulnes As the victim in this scenario, after the robbery I would feel...

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
Emotionally damaged by the offense (1)	○	○	○	○	○	○	○
Physically damaged by the offense (2)	○	○	○	○	○	○	○
Financially damaged by the offense (3)	○	○	○	○	○	○	○
That the potential damage of the offence could have been much greater (4)	○	○	○	○	○	○	○

General Severity Please score how severe you find the offense in general

	Not severe at all (1)	. (2)	. (3)	. (4)	. (5)	. (6)	Extremely severe (7)
The general severity of the offence was... (1)	○	○	○	○	○	○	○

End of Block: Severity

Start of Block: VOM

VOM Soon after the offense, you went to the local police station and declared that you were robbed.
Imagine that two weeks after the robbery took place, you receive a letter from a company called ‘Perspective Restorative Mediation’. They would like to inform you that the offender that robbed you has been arrested and shows signs of remorse. The offender has asked if it is possible to initiate mediated contact with you. The offender wants to speak to you so he can apologize for the offense. This mediated contact is called ‘Victim-Offender-Mediation’ (VOM). This implies that you can talk, and therefore ask and answer questions, to the offender while a professional mediator is present. Mediation can help victims to deal with the offense and move on with there lives. The professionally trained mediator prepares and leads the mediations to ensure that everything goes smoothly. This mediation is completely confidential and can only be arranged on a voluntary basis, meaning that both parties (victim and offender) need to be willing to participate. The contact will be ‘face-to-face’, so you will be in the same room as the offender when you engage in the mediation.

27 Please indicate to what extent you agree with the following statements about Victim Offender Mediation (VOM)	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
I think that VOM is pointless (1)	○	○	○	○	○	○	○
I would like to receive answers from the offender on my questions (2)	○	○	○	○	○	○	○
I would feel the need to tell the offender what the consequences of his actions has been (3)	○	○	○	○	○	○	○
I would not be able to control myself, I am afraid that I would attack the offender (4)	○	○	○	○	○	○	○
I would be willing to participate in VOM (8)	○	○	○	○	○	○	○
I would like to know more about the motives and background of the offender (5)	○	○	○	○	○	○	○

I think I would be too fearful of the offender to participate in VOM (6)	○	○	○	○	○	○	○
I think that the offense is not severe enough to participate in VOM (7)	○	○	○	○	○	○	○

Q25 When asked if I would be willing to participate in Victim Offender Mediation....

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
I would only be willing to participate, if the contact is not face-to-face (1)	○	○	○	○	○	○	○
I would not hesitate and immediately say: Yes. (2)	○	○	○	○	○	○	○
I would first consult with my family and friends before answering (3)	○	○	○	○	○	○	○
I would look for more information about VOM before making a decision (4)	○	○	○	○	○	○	○
I would not be willing to participate (5)	○	○	○	○	○	○	○

End of Block: VOM

Start of Block: Demographic Data

Q4 At last, we would like to ask you some general questions

Q5 What is your age?

_____

Q6 What is your gender:

- Male (1)
- Female (2)

Q3 What is your country of birth

- Netherlands (1)
- German (2)
- Turkey (3)
- China (4)
- Other (5) _____

Q7 What is your highest complete education:

- Primary school (1)
- High school (2)
- Community college (MBO) (3)
- Bachelor degree (4)
- Master degree (5)
- Ph.D or other advanced graduate work (6)

Q25
The following questions regard property crimes. A property crime is an offense against a person's property or possession. Examples are theft, fraud and scams.

Q8 Have you ever been a direct victim of a property crime?

- Yes (1)
- No (2)

Q22 Do you personally know someone who was a direct victim of a property crime?

- Yes (1)
- No (2)

Q23 Have you ever committed a property crime yourself?

- Yes (1)
- No (2)

Q24 Do you personally know someone who committed a property crime?

- Yes (1)
- No (2)

End of Block: Demographic Data

Start of Block: Debriefing

Q21 Thank you for participating in this research. The paragraph below gives information about the research and the hypothesis.

This research is a scenario-based research. In scenario-based research, participants read or view a hypothetical scenario and answer questions on how they think they would react or behave if the scenario would happen to them. Traditionally, participants read a written story in which they try to envision themselves before answering the research questions. This study is interested if the scenario-method can be improved by increasing the presence felt by the participants in the scenario, providing higher validated results. Therefore, this study compares the traditional 'written' scenario-method to a newer 'Virtual Reality' scenario-method. The second point of interest of the study is the effect of the severity of the offense, and the above-mentioned differences in the scenario- method, on the willingness of participants to participate in 'Victim-Offender-Mediation'. To investigate this, every participant was randomly divided to one of four conditions: the 'Low Severity Written' condition, the 'High Severity Written' condition, the 'Low Severity VR' condition or the 'High Severity VR' condition. The differences in the willingness to participating in Victim Offender Mediation was analysed and compared across these conditions.

If you wish to receive more information regarding the study and/or its results, please feel free to contact the researcher: j.r.koetsier@student.utwente.nl

End of Block: Debriefing