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Bachelor Thesis

Investigating people's intention to use virtual reality in the context of victim-offender mediation using the UTAUT model

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Abstract

Background: Victim-Offender Mediation (VOM) is a known restorative justice solution around the world. However, not many victims are participating in this form of mediation. This is often due to insecurities towards the offender and lack of preparation for mediation. Here, Virtual Reality (VR) is expected to be a solution that could help to enhance participation. In clinical cases, VR has been shown to help clients to overcome their fear, get more comfortable and familiar with specific situations. Thus, the aim of the study was to investigate the factors that lead people to try VR in this context. Thereby, performance expectancy and social support were expected to be positively related and effort expectancy was expected to be negatively related to the behavioral intention to use the system. The variables were derived from the Unified Theory of Acceptance and Use of Technology (UTAUT) model. In addition, age and gender were expected to moderate this relationship.

Methods: A convenience sample of 97 people who participated in the online study about using VR in the context of VOM was taken. Participants imagined being a victim of a given scenario. Afterwards, they got information about the possibility to participate in VOM. Further, they got insights into a VR application that would get them acquainted with VOM. Questions asked were meant to measure the mentioned independent variables and the dependent variable.

Results: Analysis revealed that performance expectancy and social support were, as expected, positive predictors for the intention to use VR. Yet, fear, the indication to actually meet the researcher to try VR in VOM and the wish to participate in VOM were all positive predictors as well. Moreover, men who have more social support were found to be more inclined to use VR for VOM than women who have more social support.

Conclusion: Overall, this research was a first step towards the use of VR in the context of VOM and shows that people who think they would perform well with the application and people who imagine that significant others would think using the VR system is a good idea are more inclined to use such an intervention.

Throughout Europe, more and more crimes have been dealt with by restorative justice solutions. Compared to traditional, in-court- approaches, adding restorative justice solutions to the process, or using restorative justice approaches apart from legal proceedings show to be more successful (Latimer, Dowden, & Muise, 2005; Paul, 2015; Wemmers & Cyr, 2004). Instead of wishing that the perpetrator gets punished, many victims who learn about restorative justice change their goal towards one that focuses more on the offender and themselves (Paul & Schenck-Hamlin, 2017). Therefore, restorative justice can shift the goal of people towards interacting with the offender. Moreover, it tries to tackle the pent-up feelings of fear or anger of the involved parties and works on restoring them through the different programs (Larsen, 2014). The positive results of this are seen by the achievement of its goals of high satisfaction rates of participants and less recidivism in perpetrators (Latimer et al., 2005; Sherman, Strang, Mayo-Wilson, Woods, & Ariel, 2015). Wenzel, Okimoto, Feather, and Platow (2008) propose that the psychological value of restorative justice solutions should not be neglected. In this sense, victims who recognize a shared-identity with the offender during restorative justice programs want to restore the harm, values, and responsibility. Due to this, restorative justice solutions are important to help victims cope with the situation.

Besides Victim-Offender Conferences, where the social network of both parties can be present, Victim-Offender Mediation (VOM) is a common restorative justice practice (Laxminarayan, Pemberton, & Lens, 2013; Sherman et al., 2015). VOM often compromises an offender and a victim who can exchange thoughts, questions, and feelings in a secure environment, accompanied by a mediator (Hansen & Umbreit, 2018). Thereby, participation can result in a dialogue between the two parties and might even be a start towards a more positive relationship (Kuo, Longmire, & Cuvalier, 2010). Furthermore, this might lead to an enhanced healing process of the victim and more understanding of the criminal behavior on behalf of the perpetrator (Hansen & Umbreit, 2018; Laxminarayan et al., 2013; Morris, 2002).

VOM can have several positive effects on the victim. After mediation, participants often talk about the gained ability to move forward, about having higher self-esteem and victims are more positive about healing from the offense (Laxminarayan, et al. 2013; Paul & Schenck-Hamlin, 2017). Furthermore, victims are grateful for the opportunity to tell the offender how they have felt and to wake some remorse in their counterpart (Kuo et al., 2010; Paul, 2015; Wemmers & Cyr, 2004). Thus, victims have self-oriented and other-oriented goals to obtain

when participating in VOM. Mostly, the mediation is not just for themselves but for the feeling to contribute to the safety of society (Laxminarayan et al., 2013). Additionally, both parties can have more respect for legal procedures after participation. Other advantages of restorative justice solutions are the decrease in costs for handling the criminals because they often re-offend less than criminals who did not participate in VOM (Hansen & Umbreit, 2018). Yet, it should be noted that both parties have to give consent to participate in VOM because it is a voluntary option (Sherman et al., 2015). Giving people the opportunity to decide for themselves if they want to participate in mediation, may misguide the research as everyone participating may have a priori more positive attitudes towards VOM than people who decide against the meeting (Hansen & Umbreit, 2018). Therefore, it might lead to a self-selection bias (Jonas-van Dijk, Zebel, Claessen, & Nelen, 2019).

Besides many positive factors of VOM, the meeting can also have some downsides. Out of the reason that restorative justice is a vague term, it is interpreted differently in every country or organization (Choi & Gilbert, 2010; Daly, 2006). This leads to difficulties in the implementation of mediation. Many victims and offenders are bringing their own ideas of restorative justice into the process of VOM and those are often too high to be accomplished (Daly, 2006; Gerkin, 2009). Together with the idealistic picture of restorative justice, this might lead to misunderstandings and miscommunication as meeting the offender or talking about the offense might not always lead to the desired expectations (Choi & Severson, 2009; Choi, Bazemore, & Gilbert, 2012; Choi, Gilbert, & Green, 2013; Daly, 2006). Not receiving a sensitive apology from the offender, or not feeling ready to participate in mediation can be examples of undesired outcomes (Choi & Severson, 2009; Gerkin, 2009). To avoid such disappointment good preparation about what VOM is about is very important.

Even though training of the mediators and preparation of the participants is very important, it is often too simple executed or neglected. Gavin and MacVean (2018) argued that police officers are confident to apply the needed skills but that more training and application is needed. It is often noted that mediators are lacking sensitivity or are not victim- but offender-centered during the process (Choi, et al., 2012; Choi et al., 2013; Choi & Gilbert, 2010). In other words, they are compromising needs, rules or even feelings to achieve the goal of mediation. This can lead to harming the persons and re-victimization. Yet, victims and offenders need to be properly prepared for the encounter, which entails gaining knowledge about restorative justice

solutions and for offenders, to learn what a victim-centered apology is (Choi & Severson, 2009; Gerkin, 2009). Hence, mediators should be trained extensively to prepare participants properly.

In the Netherlands, VOM can be part of the criminal justice system but can also be done outside of legal proceedings. Hence, it is a complementary solution and not a substitution. Research has underlined the effectiveness of an addition to the traditional approaches (Sherman et al., 2015). Thereby, one is looking at the harm done between two parties and not the harm that has been done against the state (Larsen, 2014). Thus, not simply focusing on the public impact but shifting the focus towards the individual implications of a crime; a perspective that is not considered in traditional approaches. Moreover, everyone who is a victim or perpetrator of a crime is able to participate and it does not matter how serious the crime was and how much time has elapsed since the offending (Laxminarayan et al., 2013; Zebel, Schreurs, & Ufkes, 2017). Furthermore, victims and offenders are able to initiate the encounter. Besides overall high satisfaction rates of participants, just 40 to 60% of victims want to take part in VOM (Hansen & Umbreit, 2018; Verde, Berger, Yepes-Baldó, Ortiz, & Lovelle, 2014).

Possible reasons for the restricted participation rates can be found in many domains. On the one hand, victims might not see the need to engage with the perpetrator because the crime did not have a real impact on their life (Hansen & Umbreit, 2018; Laxminarayan et al., 2013). On the other hand, victims might suffer from major psychological harm and are not capable of taking part in VOM by the time being asked (Zebel et al., 2017). Therefore, victims should keep in mind that they are able and that they are offered the opportunity to participate at any time. Other reasons might be that victims do not know if VOM would help them in their healing process (Hansen & Umbreit, 2018). Furthermore, many victims might not have the required knowledge to understand why VOM could be useful for them (Paul & Schenck-Hamlin, 2017). Accounting for that, hearing about VOM through a police officer or getting prepared by the mediator alone, might not be enough in explaining to people how restorative justice solutions work while offering them the opportunity to participate.

Thereby, the use of technology, for example, Virtual Reality (VR) might be helpful. VR is known as a world that is set up by a computer (Pan & Hamilton, 2018). Users are able to experience the feeling of being part of this world and are able to dive into a new reality. This can be done through a head-mounted display (HMD) or other technological devices. Compared to non-immersive VR, HMD cuts the participant off from the real world. This has the advantage of

feeling more present in the scenario and experiencing VR as more realistic (Bohil, Alicea, & Biocca, 2011; van Gelder, de Vries, Demetriou, van Sintemaartensdijk, & Donker, 2019). However, the quality of the VR is of importance to establish those feelings. Furthermore, VR might include personal values and morals of the designer which can misrepresent a scenario and leads to a bias (Brey, 1999). An example of this would be a stereotypical scenario in which people act to the values and morals that the designer attributes them. This might work for persons with a similar mindset but not for others and it would distort the real world. Designers should try to avoid this from happening.

Research has shown that mimicry also plays a role in VR. As in reality, it can increase liking and trust between the participant and the computer agent (Verberne, Ham, Ponnada, & Midden, 2013). Thereby, mimicry has to last to some extent but should not be too intense and too exact. Even though this is difficult, results in clinical implementation have been positive about VR. More specifically, Lucas, Gratch, King, and Morency (2014) found out that clients were more comfortable talking about their feelings when using VR compared to talking to their therapist in person. Participants were told that the application was either computer-controlled or controlled by a human. When believing the VR application was automatic, clients were better able to express their feelings. Furthermore, they did not have the feeling that someone was present who would judge them. Thus, they were able to disclose more, be more honest and could establish rapport with the agent.

In addition, VR has already been effectively used in exposure therapy (VRET). In this setting, VRET was used for clients with phobic or anxiety symptoms to help them to overcome those in a therapeutic manner (Parsons & Rizzo, 2007). As anxiety symptoms towards the offender can also be found in crime victims, VR might also be useful to get them acquainted with VOM before having to see the offender in reality. To the researcher's knowledge, nobody has been examining this possibility before. Building on Parsons and Rizzo (2007), the usage of VR as the first exposure to VOM might take away fear or other doubts about the mediation and hence, result in greater uptake of VOM among victims.

Before using VR in the process of preparation for VOM, this study serves to investigate which factors predict crime victims' intentions to use virtual reality to get insights into the processes of victim-offender mediation. To do so, the Unified Theory of Acceptance and Use of Technology (UTAUT) which explains the factors that are needed to use new technology in a

specific domain, here VR in the domain of VOM, is used (Venkatesh, Morris, Davis, & Davis, 2003). This model is comprised of three direct determinants on intention, namely, performance expectancy, effort expectancy, and social influence. The fourth determinant facilitating conditions, which includes the degree that one believes that enough resources are given to make use of a system, is not applicable to this study because it focuses on behavior and not intention. Furthermore, age, gender, voluntariness of use and experience moderate the effects. However, voluntariness of use and experience are not included here because VOM is always voluntary and VR has never been applied to VOM before (Laxminarayan et al., 2013; Sherman et al., 2015).

Originally being developed for the acceptance of informational technology (IT) in the work field, research has shown that it can also be applicable to other domains, as for example, technology acceptance in university students or acceptance of mobile services (Curtis et al., 2009; Koivumäki, Ristola, Kesti, 2008; Verhoeven, Heerwegh, & De Wit, 2010). Despite the critic of Bagozzi (2007) that the UTAUT would be complex and chaotic, Shen, Ho, Ly, and Kuo (2018) found out that the model had a positive effect on students' intention to use VR.

Using the UTAUT in the current study, performance expectancy is defined as the degree to which one believes that VR would help one to gain more knowledge about the processes of VOM. Effort expectancy is the degree to which one thinks using VR would be doable. The third determinant social influence, here named social support is the degree to which one thinks people who influence one's behavior would use VR to prepare for VOM. According to Venkatesh et al. (2003), high performance expectancy, low effort expectancy and high social support result in the intention to use new technology. Thus, it is predicted that performance expectancy and social support are positive predictors and that effort expectancy is a negative predictor of crime victims' behavioral intention to use virtual reality to get insights into the processes of victim-offender mediation (H1).

Furthermore, Venkatesh and Morris (2000) demonstrated that gender differences exist regarding the use of new technology. Thereby, males are more inclined to use a new system when having high performance expectancy than females who have high performance expectancy. However, females were more influenced by social and process factors which means that they were more inclined to try new technology when having low effort expectancy and high social support (Venkatesh & Morris, 2000; Venkatesh, Morris, & Ackerman, 2000). Therefore, it is hypothesized that male crime victims who have higher performance expectancy are more willing

to use virtual reality to get insights into the processes of victim-offender mediation than female victims who have higher performance expectancy. That means a two-way interaction effect between performance expectancy and gender is expected (H2). Further, it is predicted that female crime victims who have lower effort expectancy/ more social support are more willing to use virtual reality to get insights into the processes of victim-offender mediation than male victims who have lower effort expectancy/ more social support. That means a two-way interaction effect between effort expectancy and gender, as well as between social support and gender is expected (H3).

In relation to age, research has shown that older people consider social and process factors as more important than younger ones. Younger people, however, placed more importance on instrumental factors (Morris & Venkatesh, 2000). It seems to be the case, that older people are often not used to technology in their everyday life, therefore, they are only willing to try systems when they are easy to use or when their social network is recommending the use of the technology. As younger people are often more exposed to technology, it is important for them to perform better with the technology than without it. Thus, it is predicted that older crime victims who have lower effort expectancy/ higher social support are more willing to use virtual reality to get insights into the processes of victim-offender mediation than younger victims who have a lower effort expectancy/ higher social support. That means a two-way interaction effect between effort expectancy and age, as well as between social support and age is expected (H4). Furthermore, it is predicted that younger crime victims who have higher performance expectancy are more willing to use virtual reality to get insights into the processes of victim-offender mediation than older victims who have higher performance expectancy. Thus, a two-way interaction effect between performance expectancy and age is expected (H5). The entire model can be seen in figure 1.

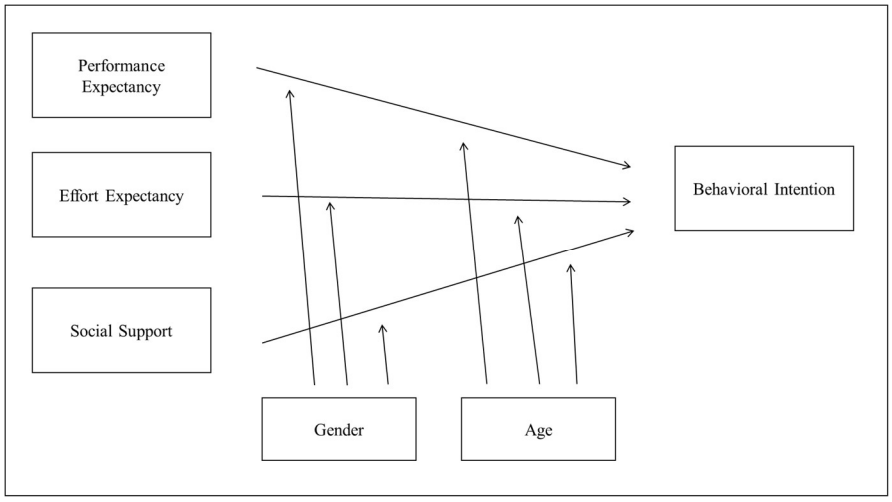

Figure 1. Figure to explain the proposed relationship of the three independent variables with behavioral intention. The relationship is supposed to be moderated by gender and age.

Method

Design

A correlational survey design was employed. The dependent variable was the intention to use the virtual reality system to get acquainted with victim-offender mediation. The independent variables were performance expectancy, effort expectancy, and social support.

Participants

A convenience sample of 141 undergraduate students from the University of Twente and persons of the researcher's social network was taken (Female M_{age}=21.24, SD_{age}=4.44; Male M_{age}=29.43, SD_{age}=13.82). However, 44 participants had to be excluded. 43 of them did not answer any of the survey items (questionnaire has just been opened) and 1 of the participants was suspected to lack the required English skills, due to the remarks made. Undergraduates could participate via the SONA system and would get credits for participating. Taking part was voluntary and respondents were able to withdraw at any time. Before entering the questionnaire, participants had to give their consent digitally. Thereby, they agreed to the study's purpose and the use of the data. Further, they indicated to have understood the given information. Ethical approval for the study was given by the Ethics Committee of Behavioural Management and Social sciences (BMS).

Materials

An online survey, including the informed consent (see Appendix A) was created via Qualtrics. This questionnaire was comprised of the following scales that included a total of 32 questions. The entire survey can be found in the Appendices.

Crime scenario. To get the participants acquainted with the situation, a written crime scenario was given to them. The participants had the task to read the story carefully and try to imagine themselves in this situation. Participants had to imagine themselves in the public library where they left their laptop unattended for a short amount of time. During this time period, their laptop got stolen. The story also included their feeling of being afraid that all their work and all their personal data is now gone. The original scenario can be found in Appendix B.

VR and VOM explanation. Participants also had to read a text which informed them that the offender had been caught but he had already sold the laptop. Furthermore, the text included the possibility to participate in VOM. The purpose and set-up of the mediation was shortly explained. From the given description, it was not made clear whether the offender wanted to take part in VOM or not. To get acquainted with VOM in the first place, participants were informed about the possibility of trying a VR application which could help them in making a decision and to resolve uncertainties about the processes of VOM (see Appendix C).

Anger and Fear after the crime. To control for anger and fear towards the offender after the crime, participants had to indicate their agreement to four items about anger towards the offender (for example: *"As a victim of the theft, I would feel enraged towards the offender"*) and four items about fear towards the offender (for example: *"As a victim of the theft, I would feel scared towards the offender"*). A seven-point Likert scale ranging from strongly disagree to strongly agree was administered to react to the scale (see Appendix D).

To construct the scales, two separate factor analyses showed that the items measured the predicted construct. An Eigenvalue higher than 1, namely with a value of 2.57 for anger and 2.75 for fear were found. The scree plot also suggested a one-factor construct. For anger, all the item loadings were above .62 and for fear, the items loadings were above .41. Those results suggested that the four items of anger and the four items of fear measure a unidimensional construct. To account for reliability, Lambda-2 (λ2) showed λ2=.81 for anger and λ2=.86. The values were considered as (very) good.

UTAUT items to measure the independent variables. To administer the independent

variables, participants had to answer the items of performance expectancy, effort expectancy, and social support, derived from the UTAUT (Venkatesh et al., 2003). The original items of Venkatesh et al. (2003) showed great reliability, namely internal consistency reliability (ICR) of .90 for performance expectancy, an ICR of .92 for effort expectancy and an ICR of .87 for social support. Validity is also shown to be acceptable with item loadings of .7 or higher for the specific constructs.

For this study, the UTAUT items had to be adapted to the current situation. Those questions were implemented on seven-point Likert scales, given in Appendix E. An example for the items of performance expectancy is: *"Using the system would make it easier to take part in VOM"*, for effort expectancy: *"I would find the VR application easy to use"* and for social support: *"As a victim of this theft, people who are important to me would think that I should use the system"*. Therefore, validity and reliability measures were done to ensure sound psychometric qualities of scales. Factor analysis showed that the four items predicted to measure performance expectancy indeed suggested a unidimensional construct. An Eigenvalue of 2.66, so higher than 1 was found and also the scree plot indicated a one-factor construct. The entire item loadings were above .68. Regarding the reliability of the scale, a Lambda-2 of $\lambda 2$=.83 was extracted. The value was considered as good.

An Eigenvalue higher than 1, namely of 2.82 could also be found for the four items of effort expectancy. The scree plot also showed a one-factor construct. All the items loadings were above .68. Thus, the result suggested a unidimensional construct as well. To account for the reliability of the scale, a Lambda-2 of $\lambda 2$=.86 was found. The value was considered to be excellent. Lastly, Pearson's r was computed for the two items of social support. A correlation between the two variables could be found (r=.76, n=97, p<.001). That result indicated a strong association between the two items. Overall, the conducted measures were in line with the results found by Venkatesh et al. (2003).

Dependent variable: behavioral intention. Four items were used to account for the behavioral intention to use the VR application to get acquainted with VOM as the dependent variable (see Appendix F). The items were implemented on seven-point Likert scales and three of them were derived from the UTAUT and one was self-created (Venkatesh et al., 2003). Venkatesh et al. (2003) found item loadings to be higher than .8 and the internal consistency reliability was .90. For the study, factor analysis also indicated an Eigenvalue higher than one,

namely of 3.04, which the scree plot supported as well. In regards to the item loadings, the three items of Venkatesh et al. (2003) were all above .83 and the self-constructed item was above .66. Therefore, the four items (for example: *"I intend to use VR to get acquainted with VOM")* are suggested to measure a unidimensional construct. Lambda-2 was used to account for the reliability of the items ($\lambda 2$=.89). The found value was regarded as excellent and thus, in line with Venkatesh et al. (2003).

Control questions. To check whether participants took the survey seriously or not, four separate control questions were used (see Appendix G). This was applied on a seven-point Likert scale.

Demographics and general questions. Participants had to indicate their gender, nationality, age and any remaining questions about the VR application (see Appendix H).

Procedure

After using the link that redirected participants to the Qualtrics page, they were asked to read the informed consent. Participants were informed about the purpose of the study and told that they could use the VR application afterwards. However, this was used as a deception to make the scenario more realistic. Through clicking on "proceed", participants agreed and were forwarded to the crime story. The participants had the task to read the story carefully and try to imagine themselves in this situation. After that, the respondents had to read the other text about the possibility to participate in VOM and try out VR to get acquainted with VOM.

The next step was to answer the items of anger and fear and the survey items that were derived from the UTAUT (performance expectancy, effort expectancy, social support and behavioral intention to use the VR application). Then, before control and demographic questions were asked, participants indicated whether they would like to actually participate in VOM together with the offender or not on a seven-point Likert scale. They could also indicate their interest in scheduling a meeting with the researcher to try the VR application by choosing to click on yes or no. Furthermore, participants were given the opportunity to indicate any remaining questions about the VR application. Lastly, participants were fully debriefed and thanked for their participation. Participants who completed the survey through SONA received their credits.

Results

Descriptives and correlations

Several steps were conducted to be able to answer the research question and to accept or reject the formulated hypotheses. First of all, Table 1 gives an overview of the scales that are measured. The correlations and descriptives can be found of the three independent variables, the dependent variable and the scales of fear and anger. All of the items were administered on a seven-point-Likert scale, where a value of 4 was considered to be neutral, below 4 as low and higher than 4 was considered to be high.

Regarding the mean of all the variables, no scale was below 4. Most of the scales, besides fear, were found to have a mean higher than 4. Overall, people scored high on the items. On the scale for fear, people scored neutral (M=4). Anger (M=5.35) is found to be the item with the highest score. Important are the significant, positive correlations between the independent variable performance expectancy and behavioral intention to use the VR application (r=.52, p<.001), the independent variable effort expectancy and behavioral intention to use the VR application (r=.27, p=.007) and the independent variable social support and behavioral intention to use the VR application (r=.42, p<.001). This is in line with the prediction that higher scores on the independent variables (meaning high performance expectancy, low effort expectancy, and more social support) indicate higher behavioral intention. In addition, the wish to schedule a meeting to try VR shows a significant, positive correlation with the intention to use VR (r=.39, p<.001), as well as, the wish to also meet the offender and participate in VOM (r=.45, p<.001). This shows that actual behavior follows a behavioral intention.

Table 1

Descriptives and Correlations of the three independent variables, the covariates and the dependent variable (n=97).

	M	*SD*	Range	Min	Max	1	2	3	4	5	6	7	8	9	10	%
1. PE	5.18	.98	4.75	2.00	6.75	1	**.455****	.164	.093	-.050	.160	**.201***	-.088	-.176	**.517****	
2. EE	5.13	.95	6.00	1.00	7.00		1	.009	-.012	-.007	.064	.129	.096	-.072	**.271****	
3. Social Support	4.54	1.18	5.00	2.00	7.00			1	.187	.056	.133	**.278****	-.172	.013	**.417****	
4. Anger	5.35	1.07	6.00	1.00	7.00				1	**- .201***	.099	.136	-.051	.150	.059	
5. Fear	4.00	1.37	5.50	1.00	6.50					1	-.111	-.150	**-.298****	.074	.115	
6. VR YES/NO											1	**.239***	.112	.171	**.393****	30/70
7. VOM	4.98	1.57	6.00	1.00	7.00							1	.131	.087	**.452****	
8. Gender F/M													1	**.416****	-.080	76/24
9. Age	23.19	8.43	40.00	16	56									1	.006	
10. BI	4.40	1.28	6.00	1.00	7.00										1	

Note. *p<.05; **p<.01. All variables were measured on a scale of 1 to 7. PE includes Performance Expectancy. EE includes Effort Expectancy. VR includes the wish to schedule a meeting with the researcher to try the application out. VOM includes the wish to actually meet the offender in a mediation. Gender F/M includes Gender Female/Male. BI includes Behavioral Intention towards using the VR application.

Otherwise, performance expectancy and effort expectancy were significant and positively correlated with each other (r=.46, p<.001), which indicates the similar characteristics of the two scales. Furthermore, performance expectancy correlates significant and positive with the wish to participate in VOM (r=.20, p=.049). This might be the case because people who believe to perform well in VR might also want to try mediation out in person. As well as performance expectancy, social support and the wish to participate in VOM show a significant and positive correlation (r=.29, p=.006) This might also result out of having a social support system that would like one to participate in mediation. In regards to feelings, anger and fear show a significant, negative correlation (r=-.20, p=.049). That was expected due to the incompatibility of the emotions that the two constructs measure. Fear also shows a significant, negative correlation with gender (r=-.30, p=.003). This was anticipated because males are often less fearful than women. Lastly, gender and age also show a significant, positive correlation (r=.42, p<.001) which was expected because older respondents were often found to be male and the younger participants were often females.

Hypotheses testing

For the first hypothesis, it was predicted that performance expectancy and social support are positive predictors and that effort expectancy is a negative predictor of crime victims' behavioral intention to use VR to get insights into the processes of VOM. For this hypothesis to be tested, univariate regression analysis with the independent variables performance expectancy, effort expectancy, and social support was conducted. To control for noise age, gender, fear, the wish to meet the researcher to try the application out (here: VR) and the wish to actually meet the offender by participating in mediation (here: VOM) were added to the analysis as well. Anger was not included as a covariate because it just correlated with fear and not with any of the independent variable or the dependent variable. The F-statistic indicates that a significant proportion of the variance is explained with all predictors in the model to account for behavioral intention as the dependent variable [F(8,88)=13.53, p<.001], with an adjusted R^2 of .74.

Analysis revealed a significant relationship between performance expectancy and behavioral intention (B=.49, SE=.11, p<.001) and between social support and behavioral intention (B=.24, SE=.08, p=.005) but not between effort expectancy and behavioral intention[1]

[1] no (significant) difference when deleting outliers

(*B*=.08 *SE*=.11 *p*=.483) (see Table 2). A significant relationship was also found between fear and behavioral intention[2] (*B*=.18, *SE*=.07, *p*=.015), between VR and behavioral intention (*B*=.69, *SE*=.21, *p*=.001), and between VOM and behavioral intention (*B*=.23, *SE*=.06, *p*=.001). This shows that respondents who expected to perform well in the VR application had a greater intention to try the application out. Furthermore, participants expecting to have people in their social support system that would want them to try the VR application out had a greater intention to do VR. However, people who thought that they would not need a lot of effort to do VR in this context showed no higher intention to try the application out. Regarding the other variables, people who experienced fear towards the offender after the crime, people who wished to schedule a meeting with the researcher and people who actually wanted to participate in VOM to meet the offender, were more inclined to try the VR application. The variables of age and gender did not have an effect on behavioral intention. Overall, a large part of the first hypothesis could be supported, despite that effort expectancy seems to not predict behavioral intention.

Table 2

Regression coefficients for performance expectancy, effort expectancy and social support and the fear, age, gender, VR and VOM as predictors of offender willingness to participate in VOM (n=97).

	B	*SE*	*Beta (β)*	*p*
Performance Expectancy	.49	.11	.37	.001
Effort Expectancy	.08	.11	.06	.483
Social Support	.24	.08	.23	.005
Fear	.18	.07	.19	.015
Age	.01	.01	.06	.466
Gender	-.14	.25	-.05	.579
VR	.69	.21	.25	.001
VOM	.23	.06	.28	.001

[2] When anger was included as a covariate, fear showed no significant relationship with the behavioural intention to try VR to get acquainted with VOM

As a second hypothesis, it was predicted that male crime victims who have higher performance expectancy are more willing to use virtual reality to get insights into the processes of victim-offender mediation than female victims who have higher performance expectancy. Thus, a two-way interaction effect between performance expectancy and gender was expected. To test this, moderator analyses with the help of PROCESS Procedure for SPSS version 3.3 by Hayes (2018) were conducted with performance expectancy as the independent variable, gender as the moderator and behavioral intention as the dependent variable. The variables fear, VR, VOM and age were included as covariates. A significant main effect of performance expectancy [$F(1,89)=.84$, $p<.001$], fear [$F(1,89)=.84$, $p=.013$], VR [$F(1,89)=.84$, $p=.002$] and VOM [$F(1,89)=.84$, $p=.001$] was revealed but not for age [$F(1,89)=.84$, $p=.450$] and gender [$F(1,89)=.84$, $p=.304$], with an adjusted R^2 of .01. Moderator analysis showed no significant interaction effect between performance expectancy and gender [$F(1,89)=.84$, $p=.363$], with an adjusted R^2 of .01. Thus, in contrast to the hypothesis, male participants who thought they would perform well using the system were not more inclined to try the application out than female participants who thought they would perform well in VR.

For the third hypothesis, two separate moderator analyses with the help of PROCESS Procedure for SPSS version 3.3 by Hayes (2018) were conducted. For the first part with effort expectancy as the independent variable and for the second part with social support as the independent variable. For both analyses, gender served as the moderator and behavioral intention as the dependent variable. The variables fear, VR, VOM and age were included as covariates. Here, it was anticipated that female crime victims who have lower effort expectancy/ more social support are more willing to use virtual reality to get insights into the processes of victim-offender mediation than male victims who have lower effort expectancy/ more social support. That means a two-way interaction effect between effort expectancy and gender, as well as between social support and gender was expected.

For the first part of the hypothesis, the main effect for effort expectancy [$F(1,89)=1.48$, $p=.012$], VR [$F(1,89)=1.48$, $p<.001$] and VOM [$F(1,89)=1.48$, $p=.001$] showed to be significant, however, no significant effect was found for age [$F(1,89)=1.48$, $p=.822$] and gender [$F(1,89)=1.48$, $p=.137$], with an adjusted R^2 of .00. The effect of fear was marginally significant [$F(1,89)=1.48$, $p=.059$]. The moderator analysis showed no significant interaction effect between effort expectancy and gender [$F(1,89)=1.48$, $p=.702$], with an adjusted R^2 of .00. For the second

moderator analysis, the main effect for social support [$F(1,89)=3.06$, $p=.002$], VR [$F(1,89)=3.06$, $p=.002$] and VOM [$F(1,89)=3.06$, $p=.001$] was significant but no effect could be found for age [$F(1,89)=3.06$, $p=.801$] and gender [$F(1,89)=3.85$, $p=.385$], with an adjusted R^2 of .02. Marginally significant effects were found for fear [$F(1,89)=3.06$, $p=.082$]. Further analysis showed a marginally significant interaction effect between social support and gender as a moderator [$F(1,89)=2.467$, $p=.084$], with an adjusted R^2 of .02. Figure 2 indicates that male participants with more social support are having a higher intention to use VR than females with more social support.

Therefore, against the expectation, female respondents who thought the VR application would be easy to learn did not have a higher intention to actually use the system than men who expected VR to be easy. For the second part of the hypothesis, against the prediction, males who thought their social support system would want them to use VR were more inclined to use it than female participants who expected their peers to think positively about VR.

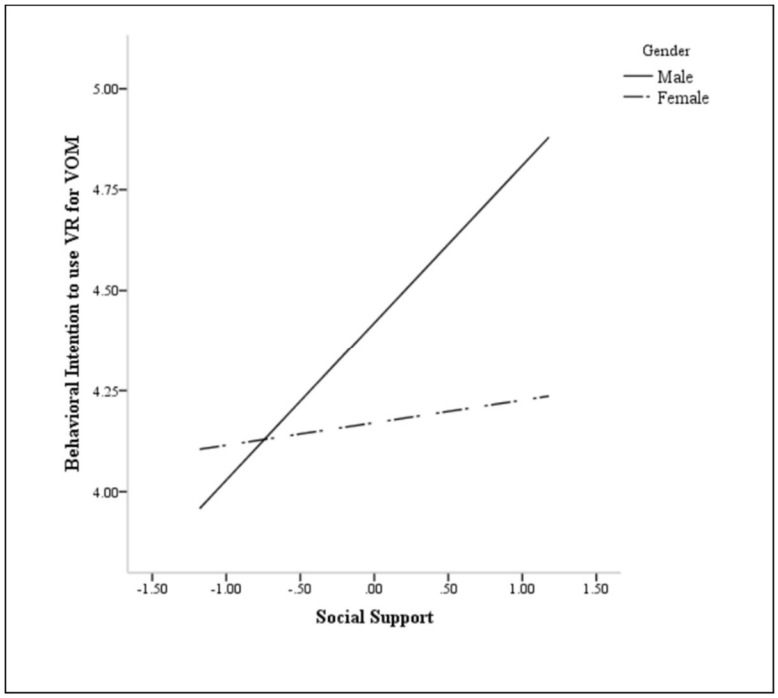

Figure 2. Male participants show stronger intention to use VR to get acquainted with VOM when having more social support than female participant who have more social support.

As fourth hypothesis, it was predicted that older crime victims who have lower effort expectancy/ higher social support are more willing to use virtual reality to get insights into the processes of victim-offender mediation than younger victims who have a lower effort expectancy/ higher social support. That means a two-way interaction effect between effort expectancy and age, as well as social support and age, was expected. Two separate moderator analyses were conducted with PROCESS Procedure for SPSS version 3.3 by Hayes (2018) For the first analysis, effort expectancy was employed as the independent variable and for the second analysis, social support was included. Age served as the moderator and fear, VR, VOM, and gender were included as covariates.

The first moderator analysis showed a significant main effect for effort expectancy [$F(1,89)=.60$, $p=.035$], VR [$F(1,89)=.60$, $p=.003$] and VOM [$F(1,89)=.60$, $p<.001$], yet the effect for gender [$F(1,89)=.60$, $p=.130$] and age [$F(1,89)=.60$, $p=.723$] showed no significance, with an adjusted R^2 of .00. A marginally significant effect was found for fear [$F(1,89)=.60$, $p=.055$]. Moreover, moderator analysis showed no significant interaction effect between effort expectancy and age [$F(1,89)=.60$, $p=.440$], with an adjusted R^2 of .00. The second part of the analysis with social support as independent variable and age as moderator showed a significant main effect for social support [$F(1,89)=2.13$, $p=.002$], VR [$F(1,89)=2.13$, $p=.001$] and VOM [$F(1,89)=2.13$, $p=.001$] but not for gender [$F(1,89)=2.13$, $p=.537$] and age [$F(1,89)=2.13$, $p=.765$], with an adjusted R^2 of .01. For fear, a marginally significant effect was found [$F(1,89)=2.13$, $p=.072$]. Moreover, further analysis showed no interaction effect between social support and age as the moderator [$F(1,89)=2.13$, $p=.148$], with an adjusted R^2 of .01. Thus, the results were not in line with the hypothesis because no difference between older people who think that using VR would be easy and younger people who think that they would not need much effort to use VR was revealed in the intention to use the VR application to get acquainted with VOM. Furthermore, this effect could also not be found when looking at people's expectations of their own support system. Older people with social support were not more inclined to use VR than younger people with social support.

Lastly, as fifth hypothesis, it was anticipated that younger crime victims who have higher performance expectancy are more willing to use virtual reality to get insights into the processes of victim-offender mediation than older victims who have higher performance expectancy. Thus, a two-way interaction effect between performance expectancy and age was expected. The

moderator analysis was conducted with PROCESS Procedure for SPSS version 3.3 by Hayes (2018) with performance expectancy employed as the independent variable, age as moderator and behavioral intention as the dependent variable. Fear, VR, VOM, and gender were included as covariates. A significant main effect could be revealed for performance expectancy [$F(1,89)=.28$, $p<.001$], fear [$F(1,89)=.28$, $p=.012$], VR [$F(1,89)=.28$, $p=.001$], VOM [$F(1,89)=.28$, $p<.001$] but not for gender [$F(1,89)=.28$, $p=.296$] and age [$F(1,89)=.28$, $p=.345$], with an adjusted R^2 of .00. Moderator analysis showed no significant interaction effect between performance expectancy and age [$F(1,89)=.345$, $p=.869$], with an adjusted R^2 of .00. In contrast to the hypothesis, younger respondents who expected to perform well in VR did not have a higher intention to try VR out than older people who thought that they would perform well[3].

Discussion

The purpose of the current study was to determine which factors of the Unified Theory of Acceptance and Use of Technology (UTAUT) predict crime victims' intention to use Virtual Reality (VR) to get acquainted with Victim-Offender Mediation (VOM) when considering to participate in VOM. As aforementioned, victims often are reluctant to participate in VOM and participation rates around the world are just between 40 and 60 % (Hansen & Umbreit, 2018). This is often the case because victims do not perceive the crime to be important enough or they suffer from psychological damage (Hansen & Umbreit, 2018; Laxminarayan et al., 2013; Zebel et al., 2017). Furthermore, informing victims about VOM and getting them prepared for the mediation is often done poorly (Choi, et al., 2012; Choi et al., 2013; Choi & Gilbert, 2010). Here, VR might be a solution to the problem because it can give a more lively and realistic explanation of VOM (Bohil et al., 2011). Moreover, it can give the victim more insights into the process and can show them what to expect and whether they could handle seeing the offender or not (van Gelder et al., 2019). Therefore, the study served to find out what victims would need to

[3] Exploratory analysis which accounted for the influence of the wish to schedule a meeting with the researcher and the wish to actually meet the offender in a mediation showed no significant results. The analysis showed that the two scales did not work as a mediator between performance and effort expectancy and social support as independent variables and the behavioral intention to use the VR application.

try a VR application that gets them acquainted with VOM.

Doing so, people were asked to fill in an online questionnaire that presented them with a crime story and gave a short description of VOM and of the VR application that would get them familiar with VOM. Afterwards, questions had to be answered about their perceived level of anger and fear towards the offender. Furthermore, items derived from the UTAUT model in regards to their own expectations about how they would perform doing VR, how much effort they would need doing VR, and what their social support network would think about the specific VR application regarding the VR system were presented (Venkatesh et al., 2003). Additionally, respondents indicated their intention to use the VR system. Participants' age and gender were supposed to moderate the effect of the UTAUT variables on behavioral intention.

Overall, the UTAUT model was shown to significantly predict the behavioral intention of crime victims to use VR to get accustomed to VOM (H1). However, effort expectancy seems to be a less important variable in this context. It is not known whether people actually understood what a VR application that is supposed to make one familiar with the processes of VOM would look like. Thus, they might have answered the survey items about effort expectancy based on their own ideas about such a system or even on experiences with common VR glasses. Three participants actually indicated that they struggled to understand the application and one stated, *"I think i havent really understood how the VR application works so it was difficult for me to answer the questions about how good i will work with that/learn this application.."*. Due to those responses, it might be the case that effort expectancy was either not important, too vague or too abstract to answer in the specific scenario.

Yet, it was found that fear of the victim towards the offender, the wish to schedule a meeting with the researcher to try VR, and the wish to actually participate in VOM and meet the offender had an effect on behavioral intention to try VR. In regards to fear towards the offender, participants who were more fearful might have wanted to try VR out first to experience if they would be able to meet the offender in person. This would be in line with research on exposure therapy. Being exposed to the situation in VR might help victims to overcome their fear and to increase their wish to participate in VOM (Parsons & Rizzo, 2007). Expected was the relationship between the wish to schedule a meeting with the researcher to try VR and behavioral intention to use VR because people who intend to use a system are often more inclined to act out the behavior. Wishing to actually participate in VOM and meet the offender was also expected to

have a relationship with behavioral intention as people probably do not want to try out the VR application if they are not interested in meeting the offender in reality.

Adding gender as a moderator to the aforementioned model showed no effect in regards to performance and effort expectancy (H2; H3). However, a marginally significant effect was found between social support and behavioral intention. Against the expectation, males and not females with more social support had a higher intention to try the VR application out. This result is not in line with Venkatesh and Morris (2000) who suggested that men are more willing to use new technology when having higher performance expectancy, while women are more motivated when having more social support or lower effort expectancy. The found relationship might be due to the fact that from the data set of 97 respondents, 74 were female and just 23 of the respondents indicated that they are male. Moreover, the group of males was probably more selective in the sense that people recruited from the researcher's network were mostly males. In addition, the male data set showed more diversity in age and this might be the reason in regards to the other items. Thereby, showing that the individual responses of males weigh more than the individual responses of females. Overall, it might be that other effects could have been found when the distribution of gender would have been more equally across participants. For example, for performance expectancy, the result also seems to be slightly in the expected direction and might have shown stronger results when having a more diverse sample.

Lastly, age was also added to the model as a predictor for the intention to use VR to understand the processes of VOM. Based on Morris and Venkatesh (2000), it was expected that, on the one hand, older crime victims are more inclined to use VR having lower effort expectancy and more social support in comparison to younger crime victims. On the other hand, younger victims were expected to intend to use VR when having higher performance expectancy. Unfortunately, this effect could not be seen in the analysis. A reasonable explanation might be a self-selection bias because participants were able to decide whether they want to take part or not. Thus, people might have participated because it was stated that they would get the opportunity to try VR. Even though respondents with relatively higher age were present, most of the participants were students and therefore, younger. Just six participants were older than 30 and nobody of age 30 to 50 participated. Furthermore, respondents were recruited from the researcher's own network. Hence, participants knew the researcher and might have wanted to take part to please and help the researcher.

Despite the limitations of the research, some assets need to be mentioned. First, the study design seemed to be accurate and the participant's understood what they were asked for. Even though three respondents indicated that they did not understand the VR application, thoroughly, most of the participants understood VR and were able to imagine themselves in the situation Overall, people mentioned that they took the research seriously and they further indicated to answer honestly.

Concerning the measured constructs, analyses showed that everything was measuring the construct it was intended to measure. Thereby, showing excellent reliability and validity and supporting existing research concerning the UTAUT model (Curtis et al., 2009; Koivumäki et al.,2008; Shen et al., 2018; Venkatesh et al., 2003; Verhoeven et al., 2010). It was possible to reveal that the model would also be applicable in the context of VR and crime. In addition, the constructs of fear and anger also showed excellent reliability and validity which was important when controlling for noise.

With this research, a first step has been done towards using VR in VOM. The results show that 30% of the participants would be inclined to use a VR application to get acquainted with VOM. Hence, a foundation has been laid to start working on the implementation of VR for VOM. However, more research would be needed to find out more about the factors that influence peoples' decision to use VR. As Verde and colleagues (2014) mentioned, a better understanding is needed about the factors that drive a victim to participate in VOM. Furthermore, also the victim's circumstances and feelings are notable when thinking about their intention to make use of VOM.

This can also be adapted to VR because more has to be found out to know what kind of people are eligible to try the VR application out to get acquainted with VOM. Out of the reason that victims need to be able to trust their mediator and learn from them, the role of the mediator is also important in VR (Choi et al., 2013; Choi & Gilbert, 2010). One respondent asked, *"What happens if you find you can control your emotions through the VR application but not so in the real scenario? (Or is that also prevented through VR?"*. Underlying the notion that it is important to have a neutral, third-person to rely on during VR and also during VOM. Thus, it might be useful to create a VR application in reference to examples from clinical VR set-ups. Here, clients were able to talk freely about their feelings because they felt safer (Lucas et al., 2014). This was due to the sensation of having nobody around to judge them. Transferring this to

the VR application in the setting of VOM, it might be a good idea to also prepare mediators to be part of VR. Moreover, they should use the application together with the victim, to get the victim acquainted with VOM in general but also with their own mediator.

Taken together, future research could make use of the same study design but should replicate the study with a more diverse sample. In the current research, indications about differences between women and men were observed but the sample was not suited for this kind of analysis. That should be controlled for in further research. Researchers should also try to find out whether age has actually no moderating effect on behavioral intention or whether the sample was just too homogenous. Hence, more diversity in gender and age could have given different results and this is to find out.

Moreover, the study design could also be subject to change. Thereby, it might be useful to change it from an online into a lab study. The current study made use of deception to probe the participants into answering more honest about their intention to use VR. However, they still were able to decide whether they would want to schedule a meeting after the online questionnaire. Future studies could make it a mandatory part of their research by letting participants do the survey in a lab and having a free room where they are told to do the VR. This could make the deception even more realistic and would avoid the attrition of respondents because 70% of participants of the current study indicated that they would not want to schedule a meeting with the researcher to try out the VR application. Moreover, the used description of VR might be better in a prototype video that explains the application in-depth. Through the implementation of the suggested additions, a more holistic approach to the application of VR in VOM can be made.

References

Bagozzi, R. P. (2007). The legacy of the technology acceptance model and a proposal for a paradigm shift. *Journal of the Association for Information Systems, 8*(4), 244-254.

Bohil, C. J., Alicea, B., & Biocca, F. A. (2011). Virtual reality in neuroscience research and therapy. *Nature Reviews Neuroscience, 12*(12), 752–762. doi: 10.1038/nrn3122

Brey, P. (1999). The ethics of representation and action in virtual reality. *Ethics and Information Technology, 1*(1), 5–14.

Choi, J. J., Bazemore, G., & Gilbert, M. J. (2012). Review of research on victims' experiences in restorative justice: Implications for youth justice. *Children and Youth Services Review, 34*, 35–42. doi: 10.1016/j.childyouth.2011.08.011

Choi, J. J., & Gilbert, M. J. (2010). "Joe everyday, people off the street": A qualitative study on mediators roles and skills in victim-offender mediation. *Contemporary Justice Review, 13*(2), 207–227.

Choi, J. J., Gilbert, M. J., & Green, D. L. (2013). Patterns of victim marginalization in victim-offender mediation: some lessons learned. *Crime, Law and Social Change, 59*, 113–132. doi: 10.1007/s10611-012-9382-1

Choi, J. J., & Severson, M. (2009). "What! What kind of apology is this?": The nature of apology in victim offender mediation. *Children and Youth Services Review, 31*, 813–820. doi: 10.1016/j.childyouth.2009.03.003

Curtis, L., Edwards, C., Fraser, K. L., Gudelsky, S., Holmquist, J., Thornton, K., & Sweetser, K. D. (2009). Adoption of social media for public relations by nonprofit organizations. *Public Relations Review, 36*, 90–92. doi: 10.1016/j.pubrev.2009.10.003

Daly, K. (2006). The limits of restorative justice. In D. Sullivan, & L. Tifft (Eds.), Handbook of restorative justice: A global perspective (pp. 134–145). New York: Routledge.

Gavin, P., & MacVean, A. (2018). Police perceptions of restorative justice: Findings from a small-scale study. *Conflict Resolution Quarterly, 36*(2),1-16. doi: 10.1002/crq.21235

Gerkin, P. M. (2009). Participation in victim-offender mediation: Lessons learned from observations. *Criminal Justice Review, 34*(2), 226–247. doi: 10.1177/0734016808325058

Hansen, T., & Umbreit, M. (2018). State of knowledge: Four decades of victim-offender mediation research and practice: The evidence. *Conflict Resolution Quarterly, 36,* 99-113. doi: 10.1002/crq.21234

Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis*. (2nd Ed.). New York: The Guilford Press.

Jonas-van Dijk, J., Zebel, S., Claessen, J., & Nelen, H. (2019). Victim–offender mediation and reduced reoffending: Gauging the self-selection bias. *Crime & Delinquency*. doi: 10.1177/0011128719854348

Koivumäki, T., Ristola, A., & Kesti, M. (2008). The perceptions towards mobile services: an empirical analysis of the role of use facilitators. *Personal and Ubiquitous Computing, 12*, 67–75. doi: 10.1007/s00779-006-0128-x

Kuo, S., Longmire, D., & Cuvalier, S.J. (2010). An empirical assessment of the process of restorative justice. *Journal of Criminal Justice, 38*, 318-328.

Larsen, J. J. (2014). *Restorative justice in the Australian criminal justice system*. Research and Public Policy Series 127. Canberra: Australian Institute of Criminology.

Latimer, J., Dowden, C., & Muise, D. (2005). The effectiveness of restorative justice practices: A meta-analysis. *The Prison Journal, 85*(2), 127-144. doi: 10.1177/0032885505276969

Laxminarayan, M., Pemberton, A., & Lens, K. (2013). Victim-offender encounters in the Netherlands. *Victims and Restorative Justice*.

Lucas, G. M., Gratch, J., King, A., & Morency, L.-P. (2014). It's only a computer: Virtual humans increase willingness to disclose. *Computers in Human Behavior, 37*, 94-100. doi: 10.1016/j.chb.2014.04.043

Morris, A. (2002). Critiquing the critics: A brief response to critics of restorative justice. *British Journal of Criminology, 42*, 596-615.

Morris, M. G., & Venkatesh, V. (2000). Age differences in technology adoption decisions: Implications for a changing workforce. *Personnel Psychology, 53*(2), 2000, pp. 375-403.

Pan, X. & Hamilton, A. F. de C. (2018). Why and how to use virtual reality to study human social interaction: The challenges of exploring a new research landscape. *British Journal of Psychology, 109,* 395-417. doi: 10.1111/bjop.12290

Parsons, T. D., & Rizzo, A. A. (2008). Affective outcomes of virtual reality exposure therapy for anxiety and specific phobias: A meta-analysis. *Journal of Behavior Therapy and Experimental Psychiatry*, *39*(3), 250-261.

Paul, G. D. (2015). But does it work?: The influence of presumed goal attainment effectiveness on willingness to use legalistic and restorative responses to offensive behavior. *Communication Studies, 67*(2), 239-258. doi: 10.1080/10510974.2015.1121157

Paul, G. D., & Schenck-Hamlin, W. J. (2017). Beliefs about victim-offender conferences: Factors influencing victim-offender engagement. *Conflict Resolution Quarterly, 35*(1), 47-72. doi:10.1002/crq.21190

Shen, C., Ho, J., Ly, P.T.M, & Kuo, T. (2018). Behavioural intentions of using virtual reality in learning: perspectives of acceptance of information technology and learning style. *Virtual Reality,* 1-12. doi: 10.1007/s10055-018-0348-1

Sherman, L. W., Strang, H., Mayo-Wilson, E., Woods, D. J., & Ariel, B. (2015). Are restorative justice conferences effective in reducing repeat offending? Findings from a campbell systematic review. *Journal of Quantitative Criminology, 31*, 1-24. doi: 10.1007/s10940-014-9222-9

van Gelder, J. L., de Vries, R. E., Demetriou, A., van Sintemaartensdijk, I., & Donker, T. (2019). The virtual reality scenario method: Moving from imagination to immersion in criminal decision-making research. *Journal of Research in Crime and Delinquency, 56*(3), 451-480. doi: 10.1177/0022427818819696

Verde, M. A. S., Berger, R., Yepes-Baldó, M., Ortiz, V. G., & Lovelle, I. (2014). Factors influencing participant's satisfaction in a victim-offender program. *Procedia-Social and Behavioral Sciences*, *159*, 1-5.

Venkatesh, V., & Morris, M. G. (2000). Why don't men ever stop to ask for directions? Gender, social influence, and their role in technology acceptance and usage behavior. *MIS Quarterly, 24*(1), 115-139.

Venkatesh, V., Morris, M. G., & Ackerman, P. L. (2000). A longitudinal field investigation of gender differences in individual technology adoption decision making processes. *Organizational Behavior and Human Decision Processes, 83*(1), 33-60.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly, 27*(3), 425-478.

Verberne, F. M., Ham, J., Ponnada, A., & Midden, C. J. (2013, April). Trusting digital chameleons: The effect of mimicry by a virtual social agent on user trust. In *International Conference on Persuasive Technology* (pp. 234-245). Springer, Berlin, Heidelberg.

Verhoeven, J. C., Heerwegh, D. & De Wit, K. (2010). Information and communication technologies in the life of university freshmen: An analysis of change. *Computers & Education, 55*(1), 53-66. doi: 10.1016/j.compedu.2009.12.002

Wemmers, J.-A., & Cyr, K. (2004). Victims' perspectives on restorative justice: How much involvement are victims looking for? *International Review of Victimology, 11*, 259-274.

Wenzel, M., Okimoto, T. G., Feather, N. T., & Platow, M. J. (2008). Retributive and restorative justice. *Law and Human Behavior, 32*(5), 375-389. doi: 10.1007/sl0979-007-9116-6

Zebel, S., Schreurs, W., & Ufkes, E. G. (2017). Crime seriousness and participation in restorative justice: The role of time elapsed since the offense. *Law and Human Behavior, 41*, 385-397. doi: 10.1037/lhb0000242

Appendix A

Informed Consent

Before you proceed in this questionnaire, please read the information below. The following study is about using virtual reality to get acquainted with victim-offender mediation. Therefore, you will be asked to read a scenario and to answer questions afterwards. Later on, you will be asked if you would like to schedule a meeting with me to try virtual reality to get to know of victim-offender mediation.

Please be aware that participation in this study is completely voluntary, and that you can stop taking part at any time. You may withdraw from this research at any point after submitting the survey. Under no circumstances will your real name or identifying information be included in the report of this research. Nobody, except the researcher and the research supervisor, will have access to this anonymized material in its entirety. Your data is treated confidentially and the research results are published anonymously. Your personal data will not be given to third parties without your expressed permission. If you have any question, you may contact Jula Bernhard (j.p.bernhard@student.utwente.nl).

If you have any complaints about this research, please direct them to the Secretary of the Ethics Commission of the faculty Behavioural, Management and Social Sciences at the University of Twente through ethicscommittee-bms@utwente.nl

If you click on proceed, you indicate that you have read and understood the informed consent and that you have been informed in a manner which is clear to you about the nature and method of the research. By proceeding you agree with participating in this study.

Appendix B

Crime Scenario

You are now asked to read a scenario about being a victim of a crime. Please read this scenario carefully, because you will be asked questions about it afterwards.

Imagine your wifi at home is not working but you still need to get some work done. Thus, you are at the public library. Everyone around you is as busy working as you. Today is a good day. You can see the sun shining outside and you intend to work for one or two more hours. You have a water bottle and your laptop on the desk. Before starting with the final piece of work, you want to use the bathroom. Therefore, you are leaving your things behind to go to the restroom which is just a few meters away.

Coming back and going to your table, you realize that your laptop is gone. You are very confused. You are looking everywhere and you are asking people around but still no laptop. You are beginning to panic; all your work is on this laptop. Nowhere else have you saved it. You try to calm yourself down. You cannot do anything about it. The staff recommends going to the police to report the incident. Arriving at the station, you tell the officers your dilemma. They listen carefully and give you some hope because the library has some cameras. After the talk, you are leaving the station still sad and angry at the person for taking your laptop. The day does not seem nice anymore and you are afraid that all your work and personal data are gone.

Appendix C

Explanation about VOM and VR to get acquainted with VOM

One week later, the police officer calls you to inform you that they have apprehended the offender. The officer tells you about the possibility of victim-offender mediation (VOM) because the offender has asked for VOM with you. He explains to you that VOM is a dialogue together with the thief and a mediator. You are asked if you would like to agree to mediation. The laptop, however, has already been sold. The officer explains that mediation can serve to arrange how the material damage can be compensated. Yet, the focus is on your feelings, and questions, and the possibility to listen to the offender. The police officer also points out to you that they have a virtual reality (VR) application to get a better and more lively understanding of victim-offender mediation. You are then asked if you would like to use the application.

The VR application is designed to get you acquainted with VOM. To use the VR application, you would wear a head-mounted device (VR glasses) to have the feeling that you are part of an actual mediation process. Through these glasses, you can see yourself sitting at a table with two other persons there with you; resembling the offender and the mediator. The procedure followed in the VR mediation scenario is based on how actual mediation sessions are organized. Utilizing this, you are able to practice VOM by asking the offender questions, expressing your feelings, letting the offender talk or just looking around and getting familiar with the situation. The given answers of the offender and mediator are based on thousands of VOM sessions in practice, stored in a database. Therefore, a pre-programmed answer is given which is coming from an actual participant of VOM.

The practice is confidential and therefore you can try out anything you would like to do. Overall, the tool is made available to you to take away your fears and doubts. For example, it can give you a feel for the secure environment created by VOM and also get you acquainted with the role of the mediator who is present to support the two parties.

Appendix D

Survey items: Fear and anger towards the offender

Please indicate to what extent you agree with the following statements.

"As a victim of the theft, I would feel..."

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
angry towards the offender	O	O	O	O	O	O	O
furious towards the offender	O	O	O	O	O	O	O
hostile towards the offender	O	O	O	O	O	O	O
enraged towards the offender	O	O	O	O	O	O	O

Please indicate to what extent you agree with the following statements.

"As a victim of the theft, I would feel..."

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
fearful towards the offender	O	O	O	O	O	O	O
scared towards the offender	O	O	O	O	O	O	O
nervous towards the offender	O	O	O	O	O	O	O
uneasy towards the offender	O	O	O	O	O	O	O

Appendix E

Survey items: Performance expectancy

You are now asked to answer the following questions about your attitude towards VR to get acquainted with VOM. When you are done with this, you are able to schedule a meeting with the researcher to try the VR application for VOM in person.

Please indicate to what extent you agree with the following statements.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I would find VR useful to get acquainted with VOM	○	○	○	○	○	○	○
Using the system would enable me to get acquainted with VOM	○	○	○	○	○	○	○
Using the system would make it easier to take part in VOM	○	○	○	○	○	○	○
If I use VR, I would increase my information about VOM	○	○	○	○	○	○	○

Survey items: Effort expectancy and social support

Please indicate to what extent you agree with the following statements.

"Based on the description, I expect ..."

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
my interaction with the VR application would be clear and understandable	○	○	○	○	○	○	○
it would be easy for me to become skillful at using the VR application	○	○	○	○	○	○	○
I would find the VR application easy to use	○	○	○	○	○	○	○
learning to operate the VR application is easy for me	○	○	○	○	○	○	○

Please indicate to what extent you agree with the following statements.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
As a victim of this theft, people whose opinion is important to me would think that I should use the system	○	○	○	○	○	○	○
As a victim of this theft, people who are important to me would think that I should use the system	○	○	○	○	○	○	○

Appendix F

Survey items: Behavioral intention and VOM

Please indicate to what extent you agree with the following statements.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I intend to use VR to get acquainted with VOM	○	○	○	○	○	○	○
I predict I would use VR to get acquainted with VOM	○	○	○	○	○	○	○
I plan to use VR to get acquainted with VOM	○	○	○	○	○	○	○
I would like to use VR after this session	○	○	○	○	○	○	○

Please indicate to what extent you agree with the following statement.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
As a victim of this theft, I think I would like to meet the actual offender in person and participate in VOM	○	○	○	○	○	○	○

Appendix G

Control questions and scheduling a meeting with researcher

Please indicate to which extent you agree with the following questions/ statements.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Did you read the scenarios carefully?	○	○	○	○	○	○	○
Have you taken your role seriously?	○	○	○	○	○	○	○
Did you answer the questions honestly?	○	○	○	○	○	○	○
I was able to imagine the incident based on the description of the scenarios	○	○	○	○	○	○	○

Would you like to schedule a meeting with the researcher to try VR?

- ○ Yes
- ○ No. Please indicate why

Appendix H

Demographics