

Investigating the efficacy of an adapted TAM2 to predict Data Quality in Crisis Negotiation

Data

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This study investigated if *data quality* of a written account about a crisis scenario could be predicted with the variables of the Technology Acceptance Model 2 (TAM2). The hypothesis was that the variables *perceived usefulness* and *use efficacy* positively and significantly predict *data quality*, with *job relevance*, *output quality* and *result demonstrability* positively and significantly predicting *perceived usefulness*. A survey was conducted in which *data quality* was measured by letting participants write 3 to 5 sentences about a crisis scenario that was presented in audio and written format, depicting a real crisis negotiation. All other variables were measured with an adapted TAM2 questionnaire. The results of the study showed that the adapted TAM2 had few significant effects. The only significant and positive effects were between *job relevance* and *perceived usefulness*, as well as *use efficacy* and *perceived usefulness*. This study's contribution to the literature lies in presenting evidence that the TAM2 is not versatile enough to be adapted into any context, as well as showing that low *data quality* might be a universal problem in data about crisis situations.

Keywords: crisis negotiation, police database, data quality, technology acceptance model

Investigating the efficacy of an adapted TAM2 Model to predict (Data) Quality in Crisis Negotiation Data

“The police are always there, for a safer Netherlands.” (About the Netherlands Police, n.d.). With this first line of the motto of the Dutch police, they make a promise to their citizens to protect them whenever possible and if necessary, with the use of force. Among the many services the police offer to the public, crisis negotiation is an attempt to find the most peaceful outcome to a situation, with the use of words rather than use of force (Giebels & Noelanders, 2004). To enable crisis negotiators in the Netherlands to fulfil their job with increasing effectiveness a Dutch crisis negotiation database (NDB-NL) is being developed, in which negotiators document the characteristics and course of events of incidents. Such law enforcement data is often of lacking quality (Burcher & Whelan, 2018), while the quality of documented data is of the highest importance for the database to be useful (O’Connor et al., 2022). Thus, this study will focus on factors that increase the *data quality* of crisis negotiation data based on variables from the Technology Acceptance Model 2 (TAM2). This model lends itself to this study since it proved useful in previous studies about police and new technology (e.g. Colvin & Goh, 2005). The purpose of this study is to increase the *data quality* of the NDB-NL by investigating which variables favour high *data quality*. This would help crisis negotiators solve conflicts better in the future, as increased *data quality* means that predictions and suggestions for courses of action based on the NDB-NL can be more reliable and valid. In the following sections, crisis negotiation will be introduced, the usefulness of databases such as the NDB-NL will be explained, as well as problems with law enforcement data such as those that are in the forthcoming NDB-NL. Lastly, the TAM2 and the current study will be explained in more detail.

Crisis Negotiations

Crisis situations in which negotiators are deployed include kidnappings and extortions, sieges, suicide attempts, prison riots, barricaded persons, and problems in the domestic sphere (Giebels & Noelanders, 2004). These situations can be varied, distinguished by factors such as the perpetrator's state, the relationship between the victim and the perpetrator or if there are any demands made.

To deal with crisis situations, negotiators often use a negotiation model such as the Behavioural Influence Stairway Model (BISM; Vecchi et al., 2019; Van Hasselt et al., 2008). This model entails four stages, starting with active listening, followed by empathy, rapport-trust, and lastly influence. These stages build upon each other and cannot be skipped, requiring negotiators to go through them in order. The stage of active listening acts as a way to gather information which is later used to influence the other person. The empathy stage occurs as a product of the active listening stage and entails trying to feel and see from the perspective of the other person. The rapport-trust stage focuses on building rapport and trust, getting in sync with the other person and gaining mutual affinity (Hogan, 2011). After going through the first three stages, the negotiator should now be able to influence the other person without force, but through suggestions of actions (Van Hasselt et al., 2008; Vecchi et al., 2019).

Even small deviations in the crisis situation might change how they should be approached. Building rapport, for example, can be challenging when facing subjects with high motivation to commit suicide by cop, which makes them more resistant to building rapport with negotiators (Mohandie & Meloy, 2010). Such details might make a difference in which approach works best in a specific situation or how to handle the stages of the BISM. Thus, finding empirical, data-driven solutions to all possible crisis situations could improve how well

negotiators can deal with them. Databases for crisis negotiations could offer this possibility in the future.

Usefulness of Databases

To be better prepared for crisis negotiations in the future, the Dutch police force is currently developing the NDB-NL. By examining previous examples of negotiation databases, it becomes clear why such databases are useful and how they might need to be improved to become even more useful. For example, both England and the USA already have databases of their own: the hostage and crisis negotiator deployment database in England, and the Hostage Barricade Database System (HOBAS) in the USA. They gather information about incidents and aid research pertaining to crisis negotiations and enable the classification of crisis situations, increasing the understanding of those situations' characteristics. They also shed light on common characteristics of subjects, situations and their outcomes (Grubb, 2020; Lipetsker, 2004).

While such databases can be useful, some are also flawed. HOBAS, for example, suffers from a self-select bias, where negotiators can choose themselves if they want to participate and which cases to report. It further suffers from convenience sampling: Not all crisis negotiators provide data for the database. Lastly, the questions in the database are phrased in an ambiguous way. Thus, HOBAS cannot be seen as representative of all crisis negotiations and cannot be used to inform effective actions (Lipetsker, 2004), which is the aim of the NDB-NL.

In the future, if the data within the NDB-NL is gathered without faulty methods, it might shed light on what practices work best in various situations, making crisis negotiations safer and more effective. This data-driven approach could be a way to empirically find ways to best serve the public but could also be a way for crisis negotiations to become more effective here in the Netherlands, thus leading to fewer casualties. For example, based on NDB-NL data, analysts

could suggest a specific course of action for a crisis situation at hand that has been shown to lead to the least casualties out of all of the options recorded.

To be effective, data-driven policing, such as making informed decisions about crisis scenarios based on data from the NDB-NL, heavily relies on reliable and valid information gathered to work (O'Connor et al., 2022). This can become a problem not only when the database is set up in a faulty way, as with HOBAS, but also when data entered is not consistently of high quality, as seen in many articles about police data. And faulty data could lead to faulty conclusions.

Problems with Data Quality

Research shows that the data provided by the police can often be of low quality in many regards. For example, it is often not representative. Roadside incidents and crashes are being underreported, and the frequency of these cases being reported is skewed by factors such as the severity of injury or involvement of a third party. Further, injured passengers are being underreported compared to injured drivers (Amoros et al., 2006; Khadka et al., 2022). Reporting biases such as these are a problem the NDB-NL is trying to avoid by making reports about deployments mandatory per case. However, that does not ensure high *data quality*.

In addition to reports not being representative, the *data quality* of police law enforcement documentation is often lacking, too. Data from reports can vary in length and information richness (Khadka et al., 2022), critical information is sometimes left out completely (Güss et al., 2020), and in other cases, data is not only missing but reports also contain overall wrong information (Burcher & Whelan, 2018). Data analysts of the Canadian police force also found the data they worked with to be unreliable or invalid (O'Connor et al., 2022). This affects how well data can be handled by them, since when data is not up to standards, data analysis becomes

difficult and can result in actions that can be faulty (O'Connor et al., 2022). To ensure input is valid and reliable, finding out what favours high *data quality* becomes an important task. If the police force and its crisis negotiation units know which factors favour high *data quality*, then measures could be taken to promote such factors. For example, in those writing crisis negotiation accounts the perception about the NDB-NL or the circumstances under which they use it could be altered. Subsequently, this would ensure that analysts can work with the data effectively, as insight from the NDB-NL would be more valid and reliable.

The Technology Acceptance Model 2

To investigate variables that could be linked to *data quality* of crisis negotiation documentation, the current study will use the Technology Acceptance Model 2 (TAM2). It is a model that has been widely used in police studies (Abbas & Policek, 2020; Colvin & Goh, 2005; Gültekin, 2011; Obasi, 2018) and has shown flexibility in being adapted, for example in the study by Lindsay et al. (2011).

The first version of the model, published by Davis (1985), focuses on the relationship between the variables *ease of use* and *perceived usefulness* of a technology and their influence on *attitude* towards the technology and its subsequent influence on *intention to use* a technology. Later the model was extended to include the variables *voluntariness*, *experience*, *subjective norm*, *image*, *job relevance*, *output quality*, and *result demonstrability*, to form the TAM2, with the added variables all influencing the *perceived usefulness* and explaining a large percentage of its variance (Venkatesh & Davis, 2000).

Especially the variables of *perceived usefulness* and *ease of use* have been found to be important predictors of technology acceptance in the police force. Colvin and Goh (2005), as well as Gültekin (2011), found that police acceptance of technology seems to be facilitated

mostly by *ease of use* and *perceived usefulness*. Abbas and Policek (2020) found that the use behaviour of police officers of new technology was in congruence with how useful officers thought the technology was. In some cases, even if technology was mandatory to use, officers refused to use the technology, showcasing how important it is for officers to think of something as useful. Older officers in the police force sometimes refused to use new technology because they could work with older alternatives better, indicating how important it is to feel ready and efficient at using a new technology. They also found that the problem with technology can be that older officers are sometimes unfamiliar with technology, making it more difficult to use it and cancelling out the benefits of the technology. This shows that the *use efficacy* of a technology plays a role in technology acceptance.

Perceived usefulness can further be explained, however. In the original TAM2 (Venkatesh & Davis, 2000), social and cognitive factors were added to explain the variance in *perceived usefulness*. Among the cognitive factors are *job relevance*, *output quality* and *result demonstrability*. To arrive at a decision of how useful a person regards a technology, they first compare their goals and the likely outcomes of using that technology, for example the quality of results it produces or how easy they are to explain. Thus, these variables determine the degree of *perceived usefulness* and explain a large part of its variance, up to 60%. (Venkatesh and Davis, 2000). These three variables were also found by Lindsay et al. (2011) to fit their adapted TAM model.

Many TAM studies have measured *intention to use* in the police (e.g. Gültekin, 2011), but have neglected the effective use of technology, a concept that is arguably just as important as the use itself (Burton-Jones & Grangé, 2013). With the above mentioned variables all being paramount for the intention to use technology, they might also have an effect on the quality of

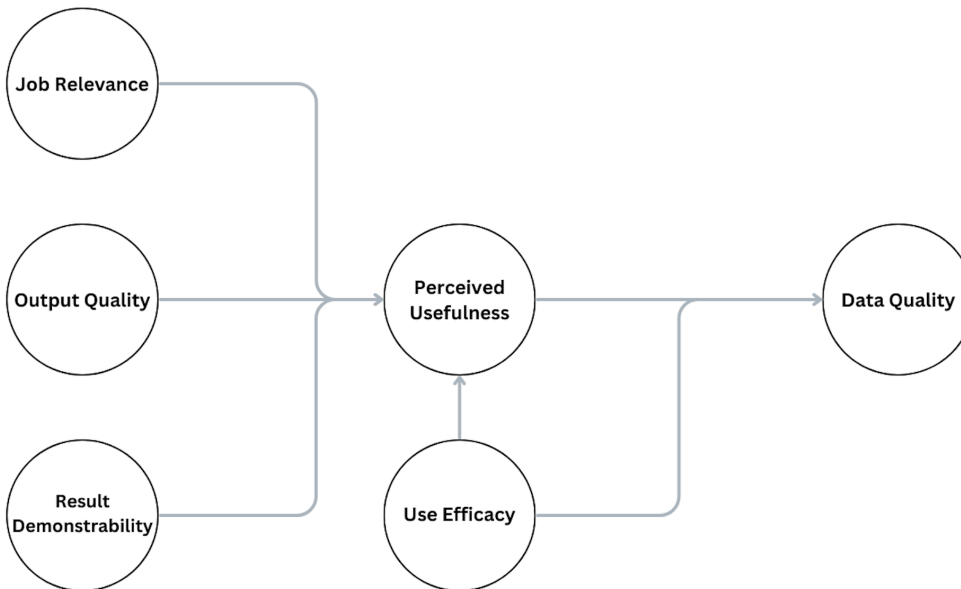
usage. Since the original TAM2 focuses on the effect of *intention of use* on *use behaviour* (Venkatesh & Davis, 2000), an adapted TAM2 might be extended to measure *effective use*, or in this case *data quality*. This concept is especially important for this study since *data quality* would enable the NDB-NL to be a better basis for decision-making in the future.

Current Study

The current study is examining the *data quality* of short crisis negotiation accounts written by a convenience sample of university students and acquaintances of the researchers. It replaces the usual TAM2 dependent variable *intention to use* with *data quality*. The TAM2 has been adapted successfully in studies on the police before (e.g. Lindsay et al., 2011), however, only the independent variables were changed. This study addresses a research gap by investigating if the dependent variable can be replaced by another within the same context, in this case from *intention to use* to *data quality*. This is done in an attempt to make the data of the crisis negotiation database NDB-NL more useful. The adapted TAM2 with all variables and expected effects can be found in Figure 1 below.

Figure 1

The Adapted TAM2.



Note: Arrows indicate the expected (positive and significant) effects of constructs.

The research question of this paper is: “To what extent can the adapted TAM2 explain differences in *data quality*?”.

The hypotheses based on the TAM2 and the research question above are:

H1. *Perceived usefulness* has a significant positive effect on *data quality*

H2 *Use efficacy* has a significant positive effect on *data quality*

H3 *Use efficacy* has a significant positive effect on *perceived usefulness*

H4 *Job relevance* has a significant positive effect on *perceived usefulness*

H5 *Output quality* has a significant positive effect on *perceived usefulness*

H6 *Result demonstrability* has a significant positive effect on *perceived usefulness*

Methods

Design

This study was a cross-sectional study using a survey to gather data. While the second half of the survey included a manipulation¹, it did not have an impact on the data gathered for this study. All constructs relevant to this study were measured before the manipulation occurred. The dependent variable investigated with this survey was *data quality*, which is assessed through analysis of an open question after a crisis conversation snippet. The independent variables were *perceived usefulness*, *use efficacy*, *job relevance*, *output quality* and *result demonstrability*, which were assessed through an adapted TAM2 questionnaire.

Participants

The sample for this study consisted of 96 participants and was gathered through convenience sampling. Participants were either students at the University of Twente's Faculty of Behavioural, Management and Social Sciences (BMS), students of other faculties or non-students. BMS faculty students participated in exchange for course credit and were gathered through the SONA system, which is an online portal for matching researchers looking for participants and students looking for studies to participate in. Participants outside of the BMS faculty were asked to participate through the researchers' networks.

Participants were excluded from the sample when they did not complete the questionnaire, gave impossible answers, such as indicating their age as 1000, or when receiving a lower *data quality* score than 1. Such a score would indicate that one of the researchers had deemed the response for the open question assessing *data quality* as an invalid attempt to answer the question beyond it being a low-quality answer (e.g. answering "It was a bit confusing", "Jdjd" or "I accidentally skipped the conversation and do not know how to go back.>"). Out of the 49 participants excluded, 41 were removed due to not filling out the whole questionnaire, two

¹ The manipulation served the goal of the collaborator's research. The intention was to raise awareness about the importance of *data quality* by mentioning the purpose of the data and the possible consequences of low *data quality*.

were removed due to invalid answers in the open question assessing *data quality*, one was removed due to not giving consent in the beginning of the survey and five were removed due to not giving consent a second time after the debrief.

After excluding participants based on the criteria mentioned above, 47 participants were left for analysis. The age of participants ranged from 18-39 with the mean age being 22.68 ($SD = 3.82$). Twenty-eight participants were female (59.57%), 18 were male (38.30%) and one participant was non-binary (2.13%). The sample was predominantly Dutch (24 participants, 51.10%) and German (18 participants, 38.30%), with only five participants (10.60%) indicating a different nationality, namely Irish, Peruvian, Polish, Russian and Namibian. The education level reached by participants was that of a high school diploma (e.g., HAVO, VWO, Abitur) for 34 participants (72.34%), with 10 participants indicating having achieved a bachelor's degree (21.28%) and 1 participant (2.13%) each indicating having achieved an associate's degree, a master's degree or choosing "other". When indicating how much participants knew about crisis negotiation prior to this study, 20 participants (42.55%) indicated knowing "a little", 19 (40.43%) indicated "none at all" and eight participants (17.02%) indicated "a moderate amount". The research was approved by the BMS' ethics committee and the data collection period spanned about nine weeks, from the 19th of March until the 20th of May. Participants gave informed consent twice, in the beginning of the study and in the end, after they were debriefed about a deception.

Materials

Participants were presented with a survey (see Appendix) created on Qualtrics XM (Qualtrics XM, 2024), a website that allows researchers to create questionnaires and later download the collected data. The questionnaire was created in collaboration with another student

working on their bachelor thesis for the purpose of sharing the efforts of data collection. Thus, the survey included parts that are important for their respective research with no direct impact on the measurements of this study. The questionnaire had an estimated length of 20 minutes. Once participants completed a block of questions or information texts and chose to go to the next page, they could not go back to the previous block. All questions were mandatory to fill out.

Informed consent and demographics

An informed consent form provided contact information of the researchers and gave a deceptive description of the study, leading participants to believe that the study tried to measure how well one can imagine themselves in the role of a crisis negotiator. Questions pertaining to demographics included asking participants about their age, gender, nationality, level of education and their knowledge about crisis negotiation followed after the consent.

Information texts

Participants were given a short introduction to crisis negotiation, explaining the goal of negotiations as well as how to achieve them. An introduction to influencing strategies was given, explaining being kind, being equal and being credible as strategies, which served only the research goal of the collaborator. Information was given about the NDB-NL, such as what it measures, when and by whom it is used, and what the data can be used for. Furthermore, a small text was presented to participants that asked them to imagine themselves as *Jamie*, an experienced crisis negotiator who chose their job because of their passion for solving conflicts without violence. The gender-neutral name “Jamie” was chosen to allow all participants to be able to relate to the character regardless of their gender. Participants were supposed to answer all questions from the point of view of this character.

Information on how to write a police report was taken from the Lewis University (n.d.) Writing Center and included information such as to be *clear, concise, complete* and *correct* with the information the author is describing, as well as to explain who was present and what, when, where, why and how things happened. This information was included to enable the researchers to quantify the level of *data quality* of each account by grading them on which criteria were satisfied.

Technology Acceptance Model 2 Questionnaire.

Colvin and Goh (2005) found that the original TAM had a better fit when modified specifically for the situation, creating an adapted model. As the study was carried out in the form of a survey, the independent variable of *ease of use* from the original TAM2 could not have been assessed properly, since the participants were not able to use the actual NDB-NL software. The variable was thus changed to *use efficacy*, entailing whether the participant would feel like they could use and write a crisis negotiation account in the software with ease. Furthermore, three variables from the TAM2 were added to the model that have been useful in explaining *perceived usefulness* in the original model, namely *job relevance, output quality* and *result demonstrability*.

Crisis scenario

The crisis scenario presented to the participants was downloaded from YouTube (WTAE-TV [WTAE-TV Pittsburgh], 2011) and was presented as an audio file as well as a written transcript generated with Descript (Descript, n.d.). The audio was 6 minutes long and presented a real conversation of a crisis negotiator with a suspect that had shot two officers previous to the conversation. The audio and transcript presented were only a snippet of the full conversation and left out the beginning of the conversation as well as the end. It showed the process of the subject trying to surrender and *Jamie* (the negotiator) trying to find a way to make

sure the subject could get medical help without putting others at risk. The subject was unable to surrender effectively because he was wounded and couldn't show his hands through the window to show the officers he is now unarmed. This conversation was chosen because it contains a sufficient amount of distinguishable actions and conversation topics for participants to fill out a meaningful account of what happened, while also being intense enough to simulate the feeling of stress a real crisis negotiator would feel.

Manipulation and Influencing Strategies

After writing the account about the crisis scenario, one of two text fields was shown at random. The first text informed the participants about what the data they put in before would be used for and what the impact of low *data quality* would be. Further, participants were informed about the role of the crisis negotiator in knowing what kind of influencing strategies were being used and what the impact would be of recognizing the wrong influencing strategy. The other text option participants could have been presented with reminded them that they had just experienced a tense situation and asked them to move on with the questionnaire.

Then, a reminder was shown, explaining what influencing strategies were and what differentiates them from one another. Participants were asked what influencing strategies *Jamie* had used in a closed questions (three options, with the ability to tick all three options; being kind, equal and credible). Then, three open questions were posed asking for each respective influencing strategy how participants thought it was used, telling people to leave the field blank if they thought this particular strategy was not used.

End Section

The end section of the survey included control questions about the crisis scenario. Another question asked how well participants were able to imagine themselves as *Jamie*, the

crisis negotiator. The last screen of the survey included a debrief, asked the participants for their permission to record the data and use it for analysis and thanked for them for their participation.

Measures

The items used for the adapted TAM2 questionnaire were inspired by questionnaires used by Venkatesh and Davis (2000), Ghani et al. (2019) and Schaaïj et al. (forthcoming). The items from Venkatesh and Davis (2000) had good reliability (ranging between 0.8 and 0.98) and validity and were used for the constructs of *perceived usefulness*, *ease of use* (adapted to *use efficacy*), *job relevance*, *output quality* and *result demonstrability*. Items used by Ghani et al. (2019) and Schaaïj et al. (forthcoming) were adapted for *perceived usefulness* and *ease of use* (adapted to *use efficacy*). The questionnaire by Ghani et al. (2019) had good reliability and validity. Information about reliability and validity was unknown about items used by Schaaïj et al. (forthcoming) as data collection was still in process. All items were adapted for the context of the usage of a crisis negotiation database. Further, all items were adapted for consistency and the convenience of participants to a 5 point Likert scale, as only the original items used by Venkatesh and Davis (2000) were set on a 7 point Likert scale. The used 5 point Likert scale ranges from “strongly disagree” to “strongly agree”, with 1 indicating strong disagreement and 5 indicating strong agreement. The questionnaire included two items that were worded negatively. Item scores from the same construct were added and a mean score for each construct was computed per participant that represents their score in the corresponding construct. Negatively worded items were reversed before the calculation of means. The reliability of the adapted TAM2 questionnaire was not acceptable across all constructs. Cronbach’s alpha for constructs with more than two items ranged from 0.49 to 0.77, while Pearson’s correlation coefficient

indicated moderate to high correlation for constructs with only two items, ranging from 0.34 to 0.56.

Perceived usefulness

Perceived usefulness was defined as “the degree to which an individual believes that using a particular system would enhance his or her job performance” (Davis, 1985, p. 26). This construct was measured with 8 items in the adapted TAM2, for example, “It is useful to keep track of crisis negotiation incidents in the database”. The construct of *perceived usefulness* had a Cronbach’s alpha score of 0.61. Thus, the internal reliability of this construct is not acceptable (Statistics Solutions, 2024a).

Use efficacy

For this study, the variable *use efficacy* was given the definition of “the degree to which an individual believes themselves capable of filling in the NDB-NL”. It was measured with 7 items, one of which was worded negatively, and included questions such as “I feel capable to fill in the database” and had a Cronbach’s alpha score of 0.77, making its internal reliability acceptable (Statistics Solutions, 2024a).

Job relevance

In the original paper presenting the TAM2, Venkatesh and Davis (2000) describe *job relevance* as “an individual’s perception regarding the degree to which the target system is applicable to his or her job” (p. 191). It was measured with 2 items and included questions such as “As a crisis negotiator, usage of the system is important”. As the number of items would not have been sufficient to calculate a meaningful Cronbach’s alpha score, Pearson’s correlation coefficient was calculated. The coefficient for this construct was 0.56, indicating a high degree of correlation (Statistics Solutions, 2024b).

Output quality

Venkatesh and Davis (2000) described *output quality* as a measure of how well a system performs a certain task. It was measured using 2 items, for example “The quality of information I get from the system is high”. For this construct, Pearson’s correlation coefficient was calculated. The correlation coefficient was 0.34, indicating a moderate degree of correlation (Statistics Solutions, 2024b).

Result demonstrability

In the original article describing the TAM2, Venkatesh and Davis (2000) assigned *result demonstrability* the definition previously mentioned by Moore and Benbasat (1991), which describes it as “the tangibility of the results of using the innovation” (p. 203). *Result demonstrability* was measured with 4 items, including one item that was worded negatively. It included items such as “I believe I could communicate to others the consequences of using the database”. This construct had a Cronbach’s alpha score of 0.49, which is not acceptable for internal reliability (Statistics Solutions, 2024a). A Cronbach’s alpha score of 0.58 could have been achieved by removing one item from the construct after analysis. The item was not removed, however, as it fit the construct and no reason beyond its removal improving the Cronbach’s alpha score was found.

Data quality

Data quality was measured by assessing a small account of a crisis situation from participants in which they report in 3-5 sentences on what happened. This question was rated by both researchers on a Likert scale from 1 to 5, ranging from “very poor quality” to “very high quality”. The score depended on how many of the 4 conditions from the Lewis University (n.d.) guide on how to write a police report the text satisfies, namely being *clear, concise, complete*

and *correct*. Texts which did not satisfy any conditions were scored with a 1, with every condition satisfied being awarded an additional point. If all conditions were met, the text was scored with 5 points. After both researchers rated each answer, the mean score of the two ratings was awarded to the participants' input. This number will represent the construct *data quality*. A high *data quality* score will indicate high-quality data that contains only correct information, is written concisely and in understandable language and is not missing vital information about the crisis situation. Wrong, left-out, or unclear information would endanger the validity of claims made based on statistics using this data. Thus, a *data quality* score of 4 would be the lowest acceptable score. Since conciseness is not vital for validity or reliability of the data, missing this point would be inconvenient, but not critical. With a score lower than 4, it is guaranteed that one of the vital constructs is violated, indicating poor *data quality*. Inter-rater reliability was assessed by measuring Cohen's kappa, which indicates how often two raters agreed on something and what the likelihood of this being random is, with values possibly ranging from -1 to 1.

Procedure

When opening the questionnaire, participants first saw the informed consent form. After accepting the conditions of the survey, they were asked questions about their demographic data. Following that, they received information on crisis negotiation, the NDB-NL, influencing strategies and finally, they were presented with the scenario which they were supposed to imagine themselves in. Afterwards, they were presented with information on how to write a police report and then the scenario was presented as a conversation snippet with the corresponding audio file. Thereafter, they were asked to write in 3-5 sentences about what they had witnessed. After that, approximately half of the participants were shown the manipulation about the importance of data, with the other half of participants receiving a reminder of what

they had just seen. Then, participants were presented with open questions about the influencing strategies, control questions and then a question asking how well they were able to imagine the scenario they had just witnessed. Lastly, the participants were debriefed and asked to consent to the researchers using their data for this study.

Data analysis

For the data analysis, the dataset from Qualtrics XM (2024) was imported into R Studio (RStudio Desktop - Posit, 2024). First, descriptive statistics were obtained. This included the participants' mean age, age span and standard deviation, as well as the gender and nationality distributions. Then, items 10 (*I expect obstacles while filling in the database*) and 23 (*I would have difficulty explaining why using the database may or may not be beneficial*), which were worded negatively, were reversed. All construct scores were computed and interrater reliability on the *data quality* question assessment was measured using Cohen's kappa. The mean, standard deviation and the range for the imagination question was computed. The internal consistency of the TAM2 questionnaire was checked using Cronbach's alpha for the constructs of *perceived usefulness*, *use efficacy* and *result demonstrability*. Pearson's correlation coefficient was used for the constructs of *job relevance* and *output quality*, as these constructs consisted of only two items. Lastly, assumption testing was conducted, and three linear models were tested, one model with *data quality* as the dependent variable, and *perceived usefulness* and *use efficacy* as the independent variables. The second model with *perceived usefulness* as the dependent variable and *use efficacy* as the independent variable and the third model having *perceived usefulness* as the dependent variable and *job relevance*, *output quality* and *result demonstrability* as independent variables. For all analyses regarding the constructs above, the cut-off for significant p-values was set to 0.05, with any value higher being regarded as insignificant.

Results

Adapted TAM2 statistics

The interrater reliability was assessed using Cohen's kappa and showed substantial agreement, $\kappa = .676$, $p < .001$. The mean score for the imagination question was 3.53 ($SD = 0.83$) and ranged from 2.00 to 5.00. Mean scores, standard deviations, Cronbach's alpha scores and Pearson's correlation coefficients can be found in Table 1 below.

Table 1

Construct score means, standard deviations and their internal consistency.

	Min	Max	Mean	SD	Cronbach's alpha	Pearson's correlation coefficient
Perceived Usefulness	3.25	4.63	3.97	0.36	0.61	
Use efficacy	2.29	4.43	3.42	0.56	0.77	
Job Relevance	3.00	5.00	4.18	0.62		0.56
Output Quality	2.00	5.00	3.26	0.68		0.34
Result Demonstrability	2.25	5.00	3.66	0.54	0.49	
Data Quality	1.00	5.00	3.44	0.96		

Data quality predictors

Assumption testing for the following linear regression models has been conducted and showed no signs of violating the assumptions of linearity, independence, equal variance and normality. A multiple regression analysis was conducted, using *data quality* as the dependent

variable and *perceived usefulness* and *use efficacy* as the independent variables. *Data Quality* was successfully predicted by this model but did not explain a high percentage of variance, $R^2 = 0.129$, $F(2, 44) = 3.252$, $p = .048$. However, neither *perceived usefulness* nor *use efficacy* were found to be a significant predictor of *data quality* ($\beta_{\text{perceived usefulness}} = 0.456$, $p = .251$; $\beta_{\text{use efficacy}} = 0.455$, $p = .081$).

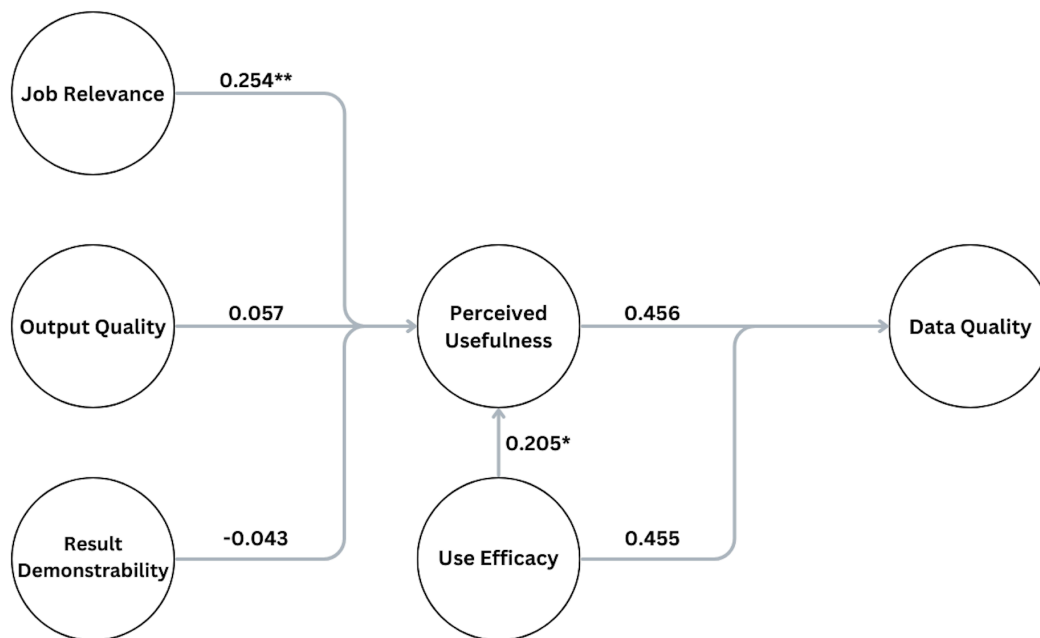
Perceived usefulness predictors

A linear regression model was conducted with *perceived usefulness* as the dependent variable and *use efficacy* as the independent variable. The model was able to predict *perceived usefulness*, $R^2 = .100$, $F(1, 45) = 5$, $p = .030$. *Use efficacy* was a significant predictor of *perceived usefulness* ($\beta_1 = 0.205$, $p = .030$).

The last multiple linear regression model was conducted using *perceived usefulness* as the dependent variable and *job relevance*, *output quality* and *outcome demonstrability* as the independent variables. The model was significant, $R^2 = 0.210$, $F(3, 43) = 3.799$, $p = .017$. Within the model, *job relevance* was significantly correlated with *perceived usefulness* ($\beta_{\text{job relevance}} = 0.254$, $p = .005$), while both *output quality* and *result demonstrability* were not able to significantly predict *perceived usefulness* ($\beta_{\text{output quality}} = 0.057$, $p = .452$; $\beta_{\text{result demonstrability}} = -0.043$, $p = .650$). The adapted TAM2 model with all effects and their significance can be found in Figure 2.

Figure 2

The adapted TAM2, including strength and significance of effects.



Note: Numbers above the arrows indicate the measured effect between constructs.

* $p < 0.05$

** $p < 0.05$

Discussion

The aim of this study was to investigate how well an adapted TAM2 model can explain differences in *data quality* to find ways to improve the data of the NDB-NL. Higher *data quality* of the NDB-NL would make predictions and recommendations for future courses of action more accurate. The variables of the original TAM2 were adapted to fit the aim of the study as well as the data collection method. *Data quality* was put as the new dependent variable instead of *intention to use* and *perceived ease of use* was substituted with *use efficacy*. This was done because *ease of use* would only be measurable if participants would have used the NDB-NL.

Other variables adopted from the original TAM2 were *perceived usefulness*, *use efficacy*, *job relevance*, *output quality* and *result demonstrability*.

Analysis showed that contrary to the predictions made, neither *perceived usefulness* nor *use efficacy* had a significant positive effect on *data quality*. Thus, hypotheses 1 and 2 have to be rejected. *Use efficacy* and *job relevance* had significant positive effects on *perceived usefulness*, confirming hypotheses 3 and 4, while *output quality* and *result demonstrability* did not have significant positive effects on *perceived usefulness*, leading to the rejection of hypotheses 5 and 6. Thus, overall, this adapted TAM2 model was not able to explain the differences in *data quality* between different participants. Further, the internal consistency of the adapted TAM2 was not sufficient overall.

These results of the adapted TAM2 are unexpected, as other adapted TAM and TAM2 models in the past have produced significant results in the field of policing (e.g. Lindsay et al., 2011). The fact that this study was not able to replicate a model that significantly predicts its dependent variable might be due to changing the model too much of the original TAM2. Lindsay et al. (2011) changed only the independent variables of the TAM and TAM2 in an attempt to better understand which variables predict the unaltered dependent variable *intention of use*. Meanwhile, the adapted TAM2 of this study changed not only one of the independent variables of the model but also the dependent variable. This was done to bridge a research gap and test the possibility of replacing the dependent variable of the original TAM2, as well as the applicability of the TAM2 for *data quality* prediction. Such an applicability would have enabled the police to use the model to find out what variables enable high *data quality* in law enforcement data, as well as possibly adapt the model further. For example, more variables could have been added to the model to further investigate which variables fit, either by using other available TAM2

variables, or by using a more exploratory approach. However, changing the dependent variable could have altered the model too much and might have included a variable that does not fully fit the other variables. In the original TAM2, the independent variables have an effect on an intention, which is the *intention to use*. This is different from the current adapted TAM2 dependent variable, as it measures the *use* of a technology, more specifically the effective use of a technology through *data quality*. Thus, the gap between the dependent variable of the original TAM2 and that of the adapted TAM2 might have been too big. Would the dependent variable of this adapted TAM2 also have measured an intention instead of an action, the outcome might have been different. In this case, the constructs of *perceived usefulness* and *ease of use* might have had a positive and significant effect on the dependent variable. On the other hand, this explanation does not account for the insignificant effects between *perceived usefulness* and *job relevance*, *output quality* and *result demonstrability*, variables which had not been altered and stayed true to the original TAM2.

Another finding that is not in line with previous literature, which might explain the insignificant effects between variables, is the low internal consistency of the questionnaire in the variables of *perceived usefulness* and *results demonstrability*, as well as the only moderate degree of correlation for the *output quality* items. With higher internal consistency and better correlations, a significant effect might have been found. The lower internal consistency might be explained by the fact that the adaptations of the items also deviated too far from the construct and measured something different. Another possibility is that the context in which items were answered are different from previous adaptations of the TAM2. In this questionnaire, participants answered questions from the point of view of a given character, while other questionnaires ask for the participant's personal preferences. This distortion might have obscured answers and thus

negatively affected the internal consistency of the questionnaire overall. With a more standard approach to framing the questions, the internal consistency of the questionnaire might have been more in line with previous research, showing good internal reliability across all constructs.

To this end, Abbas and Policek (2020) found in their study that the perception of a technology in terms of usefulness changed between online surveys and in actual use. With the use context seemingly changing participants' opinions, perhaps some variables like *perceived usefulness* could not have been assessed accurately in an online survey. The usefulness of the NDB-NL might have been misjudged by participants, especially because the real use context is not well known for participants, based on their mentioned familiarity with crisis negotiation.

Outcomes of this study on the topic of *data quality* were in line with previous literature. The average *data quality* indicates that in most cases, at least one of the scoring criteria, *completeness, correctness, conciseness* or *clearness*, were missing from the text, but often more. This result is in line with previous research showing that law enforcement documentation is often missing critical information (Güss et al., 2020), contains wrong information (Burcher & Whelan, 2018), or leaves out parts of information (Amoros et al., 2006; Khadka et al., 2022). Any one of those variables is important to the success of the NDB-NL and this study proves that attention must be paid to prevent these problems from distorting decision-making based on the entries of the NDB-NL.

Implications

This study shows that the TAM2, while versatile, is not adaptable to all contexts. Especially an adaption of the dependent variable should only be conducted with caution. Without further research, the Dutch crisis negotiation unit should not use variables of the TAM2 or its adapted version to try to influence the *data quality* of crisis negotiation data. Further, this study

shows that even if a crisis negotiation situation occurred just shortly before recording it, the data can be incomplete, contain wrong information or be written in an unclear way. This finding might indicate that the NDB-NL is not yet ready to provide data for predictions and suggestions of future actions, should this finding be replicated in a study containing crisis negotiators. The Dutch crisis negotiation unit should test their negotiators on the *data quality* they produce and should consider making writing the crisis negotiation data mandatory for more than one negotiator. This might solve *data quality* problems by cross-referencing data with other negotiators. This finding also shows that lower *data quality* might not be a problem specific to law enforcement but possibly a more universal problem.

Limitations and Strengths

Overall, the most significant limitation of this study's design lies in its sample selection. Due to convenience and unavailability of the desired sample of crisis negotiators, this study had to be conducted with university students and other people in the researcher's network. Conducting this study with the target group for which the outcomes of this study are the most important would have brought more clarity, as now there is the possibility that the outcomes of this study would not be replicated with a sample of crisis negotiators. Another weakness of this study was the formulation of the open question asking participants to give an account of the situation. The question was phrased "Please provide some context to the situation in a few sentences (3-5 sentences)" and might have sounded too unclear for participants to pick up on the fact that they needed to apply the writing principles from the Lewis University (n.d.) they were informed of earlier. A similar problem was found with HOBAS, where ambiguous questions might lead to different interpretations and responses. This fact led to criticism about the representativeness of HOBAS (Lipetsker, 2004). A similar argument could be made for this

study since the phrasing of the question might have affected the *data quality* of the response and thus the results of the study.

A strong point of this study was the reliance on previously tested scales for the construction of the adapted TAM2. Reliability and validity of most questionnaires used as inspiration was good (Venkatesh and Davis, 2000; Ghani et al., 2019), with only questions used from Schaaij et al. (forthcoming) not having any data about reliability and validity as of this day. All adapted items were held as closely to the original items as possible in wording and grammar. This can be considered a strength despite the fact that it did not lead to good reliability of the adapted TAM2, since it is more likely that bad reliability of the constructs is accounted for by other factors yet to be discovered. For example, the reliability could have been influenced by letting participants answer questions from the point of view of a character. The participants were able to imagine themselves somewhat well in this role. Across all participants, however, the degree to which people were able to imagine themselves as *Jamie varied*, leading to different experiences across the sample. Such differences might have altered answers for some people but not others through their varied ability to answer questions from the point of view of a character. Thus, this study shows that factors other than the questions themselves could impact the reliability of a questionnaire.

Further, while the adaption of the outcome variable to *data quality* might have been too much of a deviation from the original model, it was still a strong advantage of this study. With higher internal consistency of the original part of the model, outcomes could have very clearly shown if variables tied to *use intention* also predict the proper, or high-quality use, of the technology in question. Any outcome would have been a significant contribution to finding what

constitutes high *data quality*, either showing very clearly which variables predict high *data quality* or that more exploratory research is needed to answer the research question of this study.

A further advantage of this study lies in the deceit about the real purpose of the study. With the supposed focus of the study being on how much participants can imagine themselves in the role of a crisis negotiator, they probably did not give biased answers to questions based on what they thought would be a desirable answer. Furthermore, the information given about crisis negotiation and the NDB-NL served both the purpose of giving participants material to strengthen their imagination of being a crisis negotiator and giving them the necessary information needed to make informed decisions about the questions posed by the adapted TAM2 questionnaire, making the deceit more believable while also giving participants all the information needed to give informed answers.

Future recommendations

Future studies should keep investigating which factors favour high *data quality* in crisis negotiation databases to increase the validity of claims made based on the statistics of the NDB-NL. For this purpose, conducting targeted sampling and recruiting participants from the police force, specifically crisis negotiators, would ensure that the outcomes of the study are more applicable to the situation in which the NDB-NL is used. Also, exploratory research regarding the circumstances and factors related to high *data quality* crisis negotiation data could advance the construction of a model that is able to explain differences in *data quality*. For this purpose, focus groups of police personnel could be questioned about what they think would make it easier for them to write high *data quality* accounts. Alternatively, conducting archival research in existing crisis negotiation databases and finding high *data quality* crisis negotiation data and interviewing their authors could be useful. These expert interviews might reveal their views

about the crisis negotiation database, their working methods, and the circumstances under which they write accounts that might favour high *data quality*. Lastly, letting participants of future studies use the actual interface of the NDB-NL during usability testing would ensure that the actual interface of the database does not contain features that inhibit high *data quality*. Utilizing a think-aloud protocol could possibly make data more useful by revealing which features of the interface lead to higher *data quality* and which features are distracting or which questions are ambiguous in their wording.

Conclusion

In summary, this study shows that the current adapted TAM2 consisting of the variables *perceived usefulness, use efficacy, job relevance, output quality* and *result demonstrability*, cannot significantly predict differences in *data quality*. It also showcases that the TAM2, while versatile, should not be used too far out of its original context. It shows that low *data quality* is not a problem exclusive to data from the police as this study was conducted with people outside of the police force. Lastly, this study shows that *data quality* needs more investigation to make sure that the NDB-NL can profit from its data entries.

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Appendix

Survey Used for Data Collection

Crisis Negotiation - Bachelor Thesis

Start of Block: Informed consent

Thank you for participating in our research for our bachelor thesis!

The purpose of this research is to examine individual's ability to engage in the role of a crisis negotiator during a simulated crisis scenario, such as hostages, kidnappings, or suicidal cases. In such negotiations, the crisis negotiator communicates with either a perpetrator or a person in crisis (e.g., through a phone call) with the aim to lead the situation to a peaceful resolution and hereby preventing a fatal outcome.

As a participant of this survey, you will be asked to immerse yourself in the role of a crisis negotiator and fill out a database based on your experience, allowing us as researchers to assess the ability of imagining the role of a crisis negotiator during a crisis scenario and filling out a database afterwards.

This survey includes the following steps:

First, you will be asked to fill in the informed consent and answer several questions regarding your demographics. Afterwards, you will be asked to step into the role of a crisis negotiator and imagine you are part of an actual crisis negotiation. Eventually, you are asked to fill out a database by answering both closed and open questions regarding the crisis negotiation.

We would like to point out that all questions should be answered in the English language. If you have an insufficient understanding of the English language, we would like to ask you to withdraw from this research.

In total, the questionnaire will take approximately 15 minutes.

The data you provide to the researchers is completely anonymous and confidential, and will only be used for the purpose of this educational research project. The participation is entirely

voluntary. After the research project is completed, all data will be safely stored for a certain amount of time if it is needed for the replication of the research. The survey has gained ethical approval by the Ethics Committee BMS at the University of Twente. There are no known risks involved with participating. However, be aware that the crisis negotiation you will read includes gun violence and strong language.

You can decide to withdraw from this study at any time without giving a reason and without any consequences.

If you have any questions or are in need of support, you can contact one of the researchers.

Contact:

b.s.heukerofhoek@student.utwente.nl

f.tulk@student.utwente.nl

Q1 I consent that I have read the information above and agree that my answers will be used for research aims solely. That I understood that I can withdraw at any moment and that my participation is completely voluntary.

I consent (and have read and understood the information above) (1)

I do not consent (2)

Skip To: End of Survey If I consent that I have read the information above and agree that my answers will be used for resea... = I do not consent

End of Block: Informed consent

Start of Block: Demographics

Q2 Please indicate your age (in years)

Q3 Please indicate your gender

- Male (1)
- Female (2)
- Non-binary / third gender (3)
- Prefer not to say (4)

Q4 Please indicate your nationality

- Dutch (1)
- German (2)
- Other, please specify (3) _____

Q5 Please indicate your highest finished level of education

- Highschool diploma (e.g., HAVO, VWO, Abitur) (1)

- Associate Degree (2)
- Bachelor's Degree (3)
- Master's Degree (4)
- Professional Degree (5)
- Doctorate Degree (6)
- No schooling completed (7)
- Other (8)

Q6 How much do you know about crisis negotiations already?

- None at all (1)
- A little (2)
- A moderate amount (3)
- A lot (4)
- A great deal (5)

End of Block: Demographics

Start of Block: Info on CN, Database & Strategies

Please read the following information in order to understand your role as a crisis negotiator filling in a database.

Crisis Negotiations

The goal of a crisis negotiation is always to find a peaceful resolution. As a crisis negotiator you often work in teams and use active listening skills and empathy to build rapport with the person in crisis. Rapport is a combination of mutual attention, positivity (liking and respecting the other person), and coordination (both people share a mental model and are "on the same page"). When rapport is built, the negotiator can start to influence the person to make a peaceful solution possible. Negotiators are deployed when someone threatens suicide or barricades themselves, but also in hostage situations, kidnappings or extortions.

Influencing Strategies

Crisis negotiators can use several influencing strategies to influence the outcome of the crisis negotiation. Three of those strategies aim to focus on the relationship between the perpetrator and the crisis negotiator. These strategies are necessary to establish a good relationship to get to a climate where influencing the perpetrator is possible. Below is a short explanation of the relational strategies. Keep in mind that you might use influencing strategies in the crisis negotiation you are about to read.

1. Being kind: the crisis negotiator is friendly and tries to help the perpetrator (e.g., "I am listening, I want to help you").
2. Being equal: the crisis negotiator states something both parties have in common (e.g., "I also have children")
3. Being credible: the crisis negotiator shows expertise to handle the situation or proves they are reliable (e.g., "As promised, we went to the bank today").

Database

To make crisis negotiations more effective, the Dutch police force is working on a database for crisis negotiation incidents in which every deployment will be reported. Using the database to log deployments will be mandatory, however, only one of the negotiators present for each deployment has to write a report. The database will feature (text) fields to log information about the negotiator and his role (e.g. primary crisis negotiator, logger), the time the negotiator was called, the location type, disruptive factors, partners and their helpfulness, involvement of advisors or mediators (e.g. psychologists or friends of the person in crisis) and their helpfulness, threats made, the reason for the crisis, general information on the subject, information about the communication with the subject, the outcome and the evaluation of the deployment. This data

could be used to find empirically sound procedures to deal with crisis situations in the future, for instance what kind of behavioral technique works best for which type of situation or which type of advisor is most useful. With such knowledge, crisis negotiators could prepare for a deployment more effectively upon hearing what the situation looks like.

Scenario

Please imagine the following: You are Jamie, a crisis negotiator in the Dutch police force. You have been doing this job for a few years now because you always wanted to help people and solve conflict without violence. In the near future, the Dutch police will implement the above-mentioned database for crisis negotiations. To get a better picture of how people in each police station feel about the database, a questionnaire is given out to all crisis negotiators in the country to fill out.

End of Block: Info on CN, Database & Strategies

Start of Block: Technology Acceptance Model

Q7 The following questionnaire will measure your opinions and attitudes towards the previously mentioned crisis negotiation database. Please indicate your agreement to the following statements on a 5-point scale from "Strongly disagree" to "Strongly agree".

Q8 It is useful to keep track of crisis negotiation incidents in the database

- Strongly disagree (1)
- Somewhat disagree (2)
- Neither agree nor disagree (3)
- Somewhat agree (4)
- Strongly agree (5)

Q9 I think that valuable insights could be derived from the database

- Strongly disagree (1)
- Somewhat disagree (2)
- Neither agree nor disagree (3)
- Somewhat agree (4)
- Strongly agree (5)

Q10 The database will provide me with the exact information I need

- Strongly disagree (1)
- Somewhat disagree (2)
- Neither agree nor disagree (3)
- Somewhat agree (4)
- Strongly agree (5)

Q11 The database will provide up-to-date information

- Strongly disagree (1)

- Somewhat disagree (2)
- Neither agree nor disagree (3)
- Somewhat agree (4)
- Strongly agree (5)

Q12 The database will provide accurate information

- Strongly disagree (1)
- Somewhat disagree (2)
- Neither agree nor disagree (3)
- Somewhat agree (4)
- Strongly agree (5)

Q13 The database will improve my job performance

- Strongly disagree (1)
- Somewhat disagree (2)
- Neither agree nor disagree (3)
- Somewhat agree (4)

Strongly agree (5)

Q14 The database could make it easier to prepare for deployments

Strongly disagree (1)

Somewhat disagree (2)

Neither agree nor disagree (3)

Somewhat agree (4)

Strongly agree (5)

Q15 I find the database useful

Strongly disagree (1)

Somewhat disagree (2)

Neither agree nor disagree (3)

Somewhat agree (4)

Strongly agree (5)

Q16 I feel capable to fill in the database

- Strongly disagree (1)
- Somewhat disagree (2)
- Neither agree nor disagree (3)
- Somewhat agree (4)
- Strongly agree (5)

Q17 I expect obstacles while filling in the database

- Strongly disagree (1)
- Somewhat disagree (2)
- Neither agree nor disagree (3)
- Somewhat agree (4)
- Strongly agree (5)

Q18 I will find the database entries easy to write

- Strongly disagree (1)
- Somewhat disagree (2)
- Neither agree nor disagree (3)

Somewhat agree (4)

Strongly agree (5)

Q19 Learning how to properly write database entries is easy for me

Strongly disagree (1)

Somewhat disagree (2)

Neither agree nor disagree (3)

Somewhat agree (4)

Strongly agree (5)

Q20 It is easy to become skillful in writing database entries

Strongly disagree (1)

Somewhat disagree (2)

Neither agree nor disagree (3)

Somewhat agree (4)

Strongly agree (5)

Q21 What kind of information I have to provide in my database entries is clear to me

- Strongly disagree (1)
- Somewhat disagree (2)
- Neither agree nor disagree (3)
- Somewhat agree (4)
- Strongly agree (5)

Q22 It will be easy for me to find information through the database

- Strongly disagree (1)
- Somewhat disagree (2)
- Neither agree nor disagree (3)
- Somewhat agree (4)
- Strongly agree (5)

Q23 As a crisis negotiator, usage of the database is important

- Strongly disagree (1)

- Somewhat disagree (2)
- Neither agree nor disagree (3)
- Somewhat agree (4)
- Strongly agree (5)

Q24 As a crisis negotiator, usage of the database is relevant

- Strongly disagree (1)
- Somewhat disagree (2)
- Neither agree nor disagree (3)
- Somewhat agree (4)
- Strongly agree (5)

Q25 The quality of information I get from the database is high

- Strongly disagree (1)
- Somewhat disagree (2)

- Neither agree nor disagree (3)
- Somewhat agree (4)
- Strongly agree (5)

Q26 I will have no problem with the quality of the database's information

- Strongly disagree (1)
- Somewhat disagree (2)
- Neither agree nor disagree (3)
- Somewhat agree (4)
- Strongly agree (5)

Q27 I have no difficulty telling others about the results of using the database

- Strongly disagree (1)
- Somewhat disagree (2)
- Neither agree nor disagree (3)

Somewhat agree (4)

Strongly agree (5)

Q28 I believe I could communicate to others the consequences of using the database

Strongly disagree (1)

Somewhat disagree (2)

Neither agree nor disagree (3)

Somewhat agree (4)

Strongly agree (5)

Q29 The results of using the database are apparent to me

Strongly disagree (1)

Somewhat disagree (2)

Neither agree nor disagree (3)

Somewhat agree (4)

Strongly agree (5)

Q30 I would have difficulty explaining why using the database may or may not be beneficial

Strongly disagree (1)

Somewhat disagree (2)

Neither agree nor disagree (3)

Somewhat agree (4)

Strongly agree (5)

End of Block: Technology Acceptance Model

Start of Block: Information on writing a police report

Please read the following information on providing data regarding crisis negotiations carefully. You will be asked to provide data as a crisis negotiator later on in this survey.

Writing about crisis negotiations

Writing about crisis negotiations is different from writing traditional essays. This specific style of writing requires its own rules and conventions. While some expectations for providing contexts may differ depending on the police department, certain basic guidelines universally apply. When providing context to a crisis negotiation, you should write in first person, past tense, and organized in chronological order.

Furthermore, when writing about crisis negotiations, you want to abide by the 4 C's:

Clear: Try to be as specific as possible. Avoid any vague statements or phrases.

Concise: Avoid overly wordy language. Keep statements simple and direct.

Complete: Include all relevant information.

Correct: Make sure that the information you include is accurate and unbiased.

Furthermore, you should explain what happened at the scene by answering the 5W's and H: Who, What, When, Where, Why, and How. When providing context, one should write about 3-5 sentences.

Good Example: When I came to the scene around 21:00, Julius Watson was barricaded in his room in New Street 501 with a weapon. After talking to him for a minute, he told me that he barricaded himself in his room with a weapon because he was afraid his roommates would try to harm him for calling the police on one of them. I listened to his concerns, calmed him down and reassured him that he would not be in danger if he came out of the room. He soon opened the door and the situation was solved without him firing shots.

Bad Example: When I came to the scene, I talked to the suspect and tried to get him to come out of his room. After a few minutes, the problem was resolved.

End of Block: Information on writing a police report

Start of Block: Crisis Negotiation

Remember, you are Jamie, an experienced crisis negotiator. Half an hour before you were deployed this afternoon, a concerned mother had called the police because of a domestic dispute. When police arrived at Town Street 33, two police officers were shot by the subject, Richard, a 25-year-old male. Thus, you and two colleagues were deployed to respond to the crisis situation with the mission to resolve the situation without any more violence. When you arrive at the scene, you see a house typical for the suburban area, except for a broken window. Richard is sitting inside the house, still armed, but claiming he is done taking lives and needs medical attention. You decide it is best to engage communication with him outside of the house, by calling his phone. Below is the conversation you have with Richard.

Please read the following transcript carefully and listen to the audio above, you will be asked about it later on. Be aware that this conversation includes gun violence and strong language.

Phone call between Jamie and Richard:

Jamie (You): Is there any way that you can come to the window and put both hands out the window so that they know you're not going to shoot them and get you medical help?

Richard (Perpetrator): Well, here's what I think I could do. I'm going to crawl to the, to the, to the doorway. When you come in the doorway, I don't know if that officer is still laying there or not. You'll be able to look to your right, and I'll have my hand sliding out past, and then they can come in.

Jamie: Well, I don't know, is there any way you can get to the window so we know that you're not going to hurt anybody? Because I would bet I can get people right in there. Trust me, nobody's going to hurt you. I'm going to tell them what you're doing, and all you've got to do is stick both hands up so they can see them out the window, and peek from there, and I'll get somebody in to help you.

Richard: Ah, that's what's the f-king major problem, man. I mean, you know, I'm telling you, I'm not going to shoot anybody else and you're telling me f-king [inaudible]. I can't move. I'm shot and I'm dizzy.

Jamie: Okay, you can't move your ass?

Richard: I mean, I can maybe move, but it's like I'm extremely in pain. I'm dizzy. I'm like, I'm seriously, and I'm dizzy. That is why I think I'm going to lose consciousness.

Jamie: Okay, where are you shot?

Richard: I think I'm shot in the leg two times, maybe one time. My blood, my veins are bloodied with socks, and I can't, there's blood pools of blood, and I'm f-ing [inaudible].

Jamie: Do me a favor. Whichever leg is shot, press your hand down on your thigh right in front of it and slide your butt over towards the window and put your hand up and I'll get, I'll get EMS right in there. Can you do that for me?

Richard: Oh. I'm gonna try, are you talking about the window, the room that I'm in?

Jamie: Alright, which window? Facing the front of the house, which way are you facing?

Richard: The one that has been shot into a bunch of times.

Jamie: Yeah, but I, I don't know which one was shot, buddy. I just got here. Which window? Is it facing the front of the house?

Richard: The farthest right one.

Jamie: The farthest right window in the front of the house?

Richard: Yeah, it's completely shot out.

Jamie: Okay, do me a favor. Slowly, slide over on your butt. I'll make sure nobody does anything. When you get to that window, you let me know. Then you put both hands up, and I'll have them come in and help you and help everybody in there, alright?

Richard: Yeah, let me get these guys in there. I told you I'd give up.

Jamie: Okay, do me a favor, buddy. Slide over that window. I'll get them in there right now.

Richard: Don't beat my ass when you take me into custody.

Jamie: I will stay on the phone with you the whole time, nobody's gonna beat your ass, and nobody's gonna shoot. You slide over that window and you let me know you're there, I'll tell you to put your hands up, and I'll get him in there right away.

Richard: Alright, we're on speakerphone. I'm gonna slide, uh, over here. This is really a misunderstanding. Unfortunate occurrence here, sir.

Jamie: Well, that's what I want to straighten out. You know what I mean? Nobody knows what happened until we talk to you and talk to everybody. I need you to know that I'm here to help you. You understand that, right? I will help you any way I can.

Richard: Uh, are you here to help me? Let's be honest. When you're a cop, I'm not some of your comrades. I'm not so glad about it. Can you please get in here and get me some medical attention?

Jamie: Alright, are you near the window?

Richard: I'm back, like, I'm back near the window.

Jamie: Alright, let me know when you get over near the window.

Richard: I'm extremely close.

Jamie: Okay.

[Few seconds later]

Jamie: How you doing pal, you near the window yet?

Richard: Yeah, I'm there, I'm trying to sit my ass up.

Jamie: Alright, put both hands up so they can see both hands, and then they will come in and help you.

Richard: Alright, I got one hand. I can't, I can't reach the f-ing window, man.

Jamie: Alright, is there anything you can hold up that they'll be able to see?

Richard: Uh, yeah, I got a lamp here.

Jamie: Alright, you are gonna hold up that lamp if you can't reach the window.

Richard: I also got a slipper.

Jamie: Hold it up so they can see it and hold it there and I'll let him know. You stay on the phone with me and you keep that there.

Richard: Ah, look, see there's a slipper. I can't show you my hands. I can't f-king do it.

Jamie: Alright, stay right there by the window and stay on the phone with me.

Jamie: Alright, you have a weapon on you?

Richard: I shot with that AK and it's completely f-cked.

Jamie: Okay, so you don't have any weapon in your hands, nothing near you?

Richard: I'm gonna throw that revolver towards the door so that they see that before they see me.

Jamie: Okay, go ahead and do that.

Richard: Alright, I'm gonna take one last shot for good measure, but not at anybody.

Jamie: Don't shoot! Don't shoot! Don't shoot anything. I can't help you if you start shooting,

alright? Listen to me. Richard, you thought you could hear me? Don't shoot that revolver, buddy.

Richard: I'm gonna shoot it one last time and I'm gonna throw it into the, uh, into the hallway.

Jamie: Just throw it. Don't shoot it one last time. Throw it. If you shoot, that's gonna put things back a little bit. It's gonna take them longer to get to you.

Richard: I will try to throw it out the window. How about that?

Jamie: Throw it out the window. That'll work.

Richard: Yeah. I just, why are you guys making it such a project? I said I'm f-ing done. Just come get me.

Jamie: I understand that, pal, but you also still have a gun. I don't want you to get hurt or anyone get hurt. Too many people got hurt already today.

Richard: Listen, I don't want to f-ing hurt anybody else.

Jamie: I understand that. Is there any way you can throw that revolver out the window? Throw that revolver out the window or over towards the door, and I'll get people in there to help you.

Richard: I am not going to shoot anybody else, I just need help.

Jamie: I understand that. Throw that revolver out the window or over towards the door, and I'll get people in there to help you. I'll stay on the line with you, and make sure everybody knows what's going on, alright? But don't, don't crack any shots off.

End of transcript.

Eventually, Richard surrenders to the crisis negotiator and the police was able to arrest him a short time after this dialogue took place.

As Jamie, the crisis negotiator, you are asked to fill in the database to collect information on this case. Please go to the next question to fill out the database.

End of Block: Crisis Negotiation

Start of Block: Fill in data

Q31 Please provide some context to the situation in a few sentences (3-5 sentences).

End of Block: Fill in data

Start of Block: Manipulation

!!IMPORTANT!!

Impact of data quality

You just experienced a tense conversation with a perpetrator named Richard, after which you already filled in a part of the database. However, it is important to become aware of the impact your data can have on the outcome of future crisis negotiations. The details you provide are crucial for several purposes, two of those are mentioned below. Please read them carefully:

1. Predict crisis negotiations occurring in the future:

The data you will provide is used for an algorithm to predict the following:

- Where crisis negotiations will take place
- Identify potential perpetrators
- Predict potential victims

When low-quality data is put in, this can lead to an incorrect algorithm (e.g., identifying the wrong individuals while overlooking the actual risky individuals).

However, when the data you provide is correct, the right prediction can help to prevent crisis negotiations by identifying potential perpetrators and victims, and the place of crime. Police can then correctly act on these predictions.

2. The role of crisis negotiators:

The data you provide will be used by other crisis negotiators to learn from and improve. In this case, you as Jamie wanted to keep everybody safe. Therefore, the data you will provide later on should show properly how you were able to establish this. E.g., What influencing strategie(s) did you use? How did you implement this?

The role of crisis negotiators can be improved by understanding the implementation of the strategie(s) that led to a peaceful resolution.

If you provide incorrect data, this can have severe causes. E.g., if you would write down influencing strategies that were not actually used during the conversation, it leads to a wrong understanding of when what strategy is effective. This can lead to ineffective crisis negotiations in the future, which can have fatal outcomes.

Overall, high data quality is essential at the police station, as data of a crisis negotiation influences factors such as decision-making (e.g., regarding the use of influencing strategies) and predictive policing techniques.

Therefore, for the rest of the survey, we would like to ask you to imagine that your data will be used for these purposes mentioned above. It is therefore of high importance to write down useful data. Keep in mind the 4 C's (clear, concise, complete, and correct) and the purposes of your data when completing the database as Jamie, the crisis negotiator. Please answer the last questions of this survey to complete the database.

End of Block: Manipulation

Start of Block: This is shown when manipulation is not

You just experienced a tense conversation with a perpetrator named Richard, after which you already filled in a part of the database. Please answer the last questions of this survey to complete the database.

End of Block: This is shown when manipulation is not

Start of Block: Influencing strategies

Influencing Strategies (reminder):

Crisis negotiators can use several influencing strategies to influence the outcome of the crisis negotiation. Three of those strategies aim to focus on the relationship between the perpetrator and the crisis negotiator. These strategies are necessary to establish a good relationship to get to a climate where influencing the perpetrator is possible. Below is a short explanation of the relational strategies:

1. Being kind: the crisis negotiator is friendly and tries to help the perpetrator (e.g., "I am listening, I want to help you").
2. Being equal: the crisis negotiator states something both parties have in common (e.g., "I also have children")
3. Being credible: the crisis negotiator shows expertise to handle the situation or proves they are reliable (e.g., "As promised, we went to the bank today").

End of reminder.

You as a crisis negotiator named Jamie have possibly used one or multiple of these three strategies during your conversation with Richard. Please answer the following questions regarding the relational influencing strategies.

Q32 What influencing strategy/strategies did you as Jamie, the crisis negotiator, use? Tick the strategy/strategies you believe was/were used (multiple answers possible)

Being kind (1)

Being equal (2)

Being credible (3)

Q33 Please complete the database by providing an explanation on how you think the strategy 'being kind' was used. You can leave this open if you think 'being kind' was not used in the crisis negotiation.

Q34 Please complete the database by providing an explanation on how you think the strategy 'being equal' was used. You can leave this open if you think 'being equal' was not used in the crisis negotiation.

Q35 Please complete the database by providing an explanation on how you think the strategy 'being credible' was used. You can leave this open if you think 'being credible' was not used in the crisis negotiation.

End of Block: Influencing strategies

Start of Block: Control question

Please answer the following general questions regarding the crisis negotiation and influencing strategies

Q36 What is the crisis negotiation you just read about?

- Sexual assault (1)
- Shooting (2)
- Suicidal case (3)

Q37 Which influencing strategy is used in the following example: "I also have children" ?

- Being kind (1)
- Being equal (2)
- Being credible (3)

Q38 Which influencing strategy is used in the following example: "As promised, we went to the bank today" ?

- Being kind (1)
- Being equal (2)
- Being credible (3)

Q39 Which influencing strategy is used in the following example: "I am listening, I want to help you" ?

- Being kind (1)
- Being equal (2)
- Being credible (3)

Q40 How important is data quality to you in your daily work as a crisis negotiator?

- Not at all important (1)
- Not very important (2)
- Somewhat important (3)
- Very important (4)

Q41 How important is data quality in policing generally?

- Not at all important (1)
- Not very important (2)
- Somewhat important (3)
- Very important (4)

End of Block: Control question

Start of Block: How well were you able to imagine the scenario?

Q42 How well were you able to imagine you were a crisis negotiator named Jamie in the scenario on a scale from 1 (not at all) to 5 (very well)?

- Not at all (1)
- Not really (2)

- Somewhat (3)
- Well (4)
- Very well (5)

End of Block: How well were you able to imagine the scenario?

Start of Block: True aim of study

Debrief

For the purpose of collecting higher-quality data, we added a deception to this questionnaire. Our aim was not to see how well someone can engage in the role of a crisis negotiator during a simulated crisis scenario. Instead, we wanted to measure the quality of filling in a database and its dependence on factors like knowledge of the importance of good writing and perception of the database, like perceived usefulness and use efficacy. We included this deception to avoid the risk of people paying more attention to the quality of their report if they knew that it would be the measured variable.

If you know someone who will also partake in this study, please do not inform them of this deception ahead of time. Thank you for your discretion and understanding.

Q43 Please tick the appropriate box

- I agree with the data that I provided to be archived so it can be used for future research and learning (1)

I would like to withdraw from participation and delete my data (2)

Q54 Thank you for participating!

Your collected data will be used for our research to investigate data quality regarding crisis negotiations and potential influencing factors.

You can contact one of the researchers if you have any questions regarding your participation:

Contact:

b.s.heukerofhoek@student.utwente.nl

f.tulk@student.utwente.nl

Please click the next button to complete the survey and submit your data.

End of Block: True aim of study