Internet Crime Reporting: Evaluation of a Crime Reporting and Investigative Interview System by Comparison with a Non-interactive Reporting Alternative

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Abstract

This study reports on the evaluation of a crime reporting and investigative interview system, i-recall. i-recall emulates a police officer conducting a cognitive interview (CI). It incorporates CI techniques to enhance witness memory retrieval and leverages natural language processing technology to support understanding of witness narratives.

In a controlled user study i-recall was compared to a non-interactive textbox computer system. Sophomore college students acted as witnesses to a videotaped staged crime and reported what they saw using one of the two alternative reporting methods.

Results indicate that i-recall outperformed the textbox system significantly in one of two measures, completeness of report. On average i-recall elicited 14 percent of information from witnesses and the textbox system elicited five (5) percent of information, all with 94 percent accuracy. i-recall is a promising Internet reporting alternative. Future work will evaluate i-recall by comparing it to a human expert cognitive interviewer.

1. Introduction

Every year millions of crimes are committed in the US. Research indicates that the principal determinant to solving crimes is the completeness and accuracy of eyewitness reports [30]. However, 50% of crimes go unreported due to fear and privacy concerns [3]. In addition, police resource shortages (e.g., investigators, training, time to respond and transcribe reports) often lead to incomplete or inaccurate information.

Criminology researchers have urged the creation of alternative reporting methods that serve as a mediating instance between witnesses fear of contacting the police and police goal for preventing and solving crime [22,28]. Instances of Internet use to report crime currently exist. The FBI Tips and Public Leads System and the Claremont University Consortium’s Silent Witness Program are examples. Using the Internet, these systems address the concerns and fears of victims confronted with the decision to file or not file a report. The Internet provides the convenience to reach authorities 24/7 from any location with Internet access while protecting the victims’ identity. The FBI’s and the CUC’s systems allow victims and witnesses to report incidents to police with the option to provide as much information as they choose. The FBI’s system provides a single textbox for victims to file their report. The CUC’s system presents victims with a standard set of questions regardless of the type of crime being reported. Both systems require that the person filing a report remembers all vital information related to the crime without support for event recollection. Police authorities need to have more accurate and complete information related to a crime. To realize the benefits of Internet-based systems and before large scale implementations of these systems take place, it is necessary to test alternatives to find one that optimally addresses victims concerns while similarly facilitating the filing of accurate and complete reports.

We developed a crime reporting and investigative interview system, i-recall, that extracts information from witness crime narratives and emulates an investigative interview [12]. This system is a tool police can use to collect accurate and complete information when conducting face-to-face interviews it is not feasible or possible. In addition, witnesses can maintain their privacy by reporting information anonymously or using secured IDs. Specifically, the system asks witnesses to provide written narratives of a crime they witnessed and extracts relevant facts from the narrative using natural language information.
extraction techniques. The system then generates questions and an interview strategy to help witnesses recall missing facts about the crime they witnessed conforming to cognitive interview principles. Last, i-recall produces a written standard police report.

In this study, the newly developed system is compared to a non-interactive textbox computer system similar to those currently in use. This comparison sheds light on the extension of improvement achieved by i-recall. The importance of this contribution lies in the potential of using natural language information extraction technology and Internet-based interviewing systems to gather information from the public. Such a system may help alleviate the shortage of police resources while maximizing the quality of information collected from witnesses. Principles used in the design of i-recall informs the design of usable e-Government applications and services.

2. Cognitive Interview

The design of i-recall incorporates theories and principles from memory and eyewitness research. Findings in these fields suggest the use of specific methods and techniques to retrieve information from witness memory effectively and with better results. Geiselman and Fisher integrated these methods in what is known as the Cognitive Interview (CI) [7,8,9,17]. Evidence from CI experimental and field research indicate that when investigative interviewers conduct such cognitive interviews, as opposed to standard, questionnaire-based investigative interviews, the accuracy and richness of the information obtained from witnesses is significantly higher.

The CI uses various methods to help witnesses retrieve information from memory. These methods induce witnesses to reinstate mentally the context of the event to be remembered, to report in free and narrative form everything that they can remember, and to report information starting with mental images that are richest in details and then continuing with lesser rich images until all details about the event to be remember are exhausted. Using the CI skillful interviewers provide the proper guidance to reduce witness vulnerabilities such as memory blocking or inability to discriminate between relevant and irrelevant information to police investigations.

Even though the CI is a very effective investigative interviewing technique, it places high demands on the investigative interviewer in terms of training, time, ability, and availability [6,23,24]. At the time of a criminal incident, investigators may need to interview various witnesses, but due to limited police resources, they might choose to focus only on interviewing key witnesses, which leads to losing important pieces of information from other witnesses. Findings also indicate that if witnesses are not interviewed shortly after witnessing the incident, their memory of the incident can suffer from cross-contamination and decay [6,10]. Therefore, it is suggested that investigative interviews be conducted soon after the occurrence of the event.

Evaluations of the CI demonstrate its effectiveness and have made the CI a mandate in current police practice [25,26]. Research indicates CI is able to elicit an average of 41 percent (ranging from 15 percent to 147 percent) more correct details compared to standard police interview with 85 percent accuracy [8,17,23,24]. Using the CI, interviewers elicit substantially more information than interviewers using a standard interview technique [23]. However, conducting a CI poses high demands on interviewers personal qualities, intellectual abilities, motivation, and command of the technique.

Given the demands imposed by the CI, it is not surprising that its use in the field by police officers is very limited [9]. Police officers find the CI technique complex and cumbersome and requiring more time than what usually is available [5,6,15].

By leveraging cognitive interview principles we expect i-recall to serve as a mediating alternative that helps alleviate the shortage of police resources while maximizing the quality of information collected from witnesses. At this stage we are evaluating its efficacy in eliciting quality information from witnesses.

3. Criminal Investigation Process

When a crime is reported to the police department, the first officer arriving on the scene is usually a patrol officer. This responding police officer secures the crime scene, takes an initial report from victims, determines if and what type of crime was committed, and decides to or not to forward the case for further investigation. However, given the potential value of the information at the crime scene criminal justice researchers and practitioners are pushing towards expanding the role of patrol officers to conduct more investigative duties at the scene [11,32].

During their preliminary investigation, police officers look for information on the basic characteristics of the perpetrator and the committed offense, such as gender, height, built and whether a weapon was used. They also look for detailed information that would help them identify the perpetrator and the nature of the crime such as clothing, jewelry, distinguishing features, and the exact
4. Internet Crime Reporting

Internet crime reporting is a convenient alternative and presumably a good alternative to address unreported crime [22]. Using the Internet individuals can file reports any time of day or night and take the time they need to report in their own words the incident they witnessed. Witnesses can use this alternative to report quality of life threats or suspicious activities that might go otherwise unreported.

Evidence to suggest the potential of Internet crime reporting exists [1,14,20,22]. However existing implementations of Internet crime reporting with fill-in-the-blank forms and email address are not capable of enhancing the quality of information witnesses provide in the way a full CI would [27]. Especially if one considers the challenges witnesses may possibly face at the time of reporting (e.g., stressed, unable to remember, unaware of what is relevant to the investigation). An Internet crime reporting that is interactive may be capable of enhancing witnesses reporting experience, and encourage them to report or report more information. i-recall leverages information extraction technology to create such interactive environment.

5. Information Extraction

Information extraction (IE) uses a range of natural language processing (NLP) techniques to produce fixed-format data about domain-specific entities found in written narratives (i.e., texts, documents, articles, WebPages). The resulting data then may be used for database queries or further analysis.

In the development of i-recall we used a knowledge engineering, rule-based approach to IE [2]. We analyzed example narratives to identify such text snippets as named entities, grammars, and text patterns. Then, we created rules that model the grammar and text patterns identified in the example narratives. We fed the rules to i-recall’s IE module to use them to process new crime narratives. When the IE module detects instances of the modeled snippets, it automatically extracts and annotates them. To produce annotations, the IE module preprocesses narratives with tokenizing, sentence-splitting, and part-of-speech tagging tools. The IE module uses the output of these tools and processes it further using lexicon lookups to identify named entities. Finally, the IE module uses the grammar and text pattern rules to produce the required output.

For i-recall’s IE module named entities include people, locations, personal physical attributes, weapons, vehicles, acts, and personal property and a text pattern may be for example, “blue eyes.” When the i-recall’s rule-based IE module recognizes this pattern, it annotates as eye:body part and blue:eye color.

The IE rule-based approach is labor-intensive, but it is useful when the number of example narratives available to creating and testing rules is limited and the level of precision required is high. Rule-based IE systems often achieve these levels [2]. After various round of tests and adjustments using different types of witness narratives, the IE performance of i-recall currently shows that it extract 96% of information from witness narratives with 100% precision [12,13,18,19].

6. The System

i-recall incorporates CI techniques to maximize witness memory recall and IE capabilities to extract crime information from interviews. With incremental refinements we expect i-recall to approximate the performance effectiveness of a human cognitive interviewer.

i-recall comprises Internet, database and Java technology, and leverages open-source IE tools from the General Architecture for Text Engineering (GATE) [4]. Using these technologies, i-recall simulates the
tasks that a CI interviewer normally performs. First, it asks witnesses to provide general information (e.g., date, time, type of crime) about the crime and then a written narrative of the incident witnessed. Second, it uses IE tools to extract named entities and relevant facts from this narrative. Third, using the output of the initial extraction, i-recall assembles questions and designs an interviewing strategy, just like a CI interviewer does, and presents these questions to help witnesses recall facts that are missing in their report. To build the interviewing strategy, i-recall uses such data structures as a crime report checklist and an inference (network-like) data structure that represents various possible reporting sequences. Last, i-recall stores both complete narratives and annotated text in a database that can later be used to produce a written standard police report. The detailed system design is described and documented in [12].

7. The Study

The efficacy of i-recall was compared to the efficacy of a computer non-interactive reporting system, i-textbox, expecting to find evidence to indicate that i-recall achieves higher efficacy than the alternative method. To determine the efficacy of i-recall as a reporting system two measures were taken, the accuracy and completeness of witness reports. Participants in the study were randomly assigned to one of two reporting methods: i-recall, an Internet interactive reporting system; or i-textbox, a computer non-interactive (e-mail-like) reporting system similar to the system used by the FBI Tips and Public Leads. The study was conducted in a laboratory setting. In this experiment, participants acted as witnesses to a staged crime depicted on a video clip (two and a half minutes in length) and reported what they saw in the video. To report the crime they witnessed, participants were randomly assigned to one of the reporting systems. The following hypotheses represent the expected results:

Hypothesis 1 (H1):
Crime reports resulting from the use of i-recall are more complete than crime reports resulting from the use of i-textbox.

Hypothesis 2 (H2):
Crime reports resulting from the use of i-recall are more accurate than crime reports resulting from the use of i-textbox.

The study was a between subjects experimental design with one independent variable and two dependent variables. The output generated by the reporting method participants used was scored and means per system were compared. The independent variable in the study design is the reporting method with two levels:

(a) i-textbox: computer crime reporting system with an e-mail-type interface.
(b) i-recall: Internet crime reporting system with an interactive interview interface.

The dependent variables are report completeness and accuracy. These variables are defined as:

1. Completeness: number of correct items in report (quantity of recall).
2. Accuracy: number of correct items in report over the sum of all items in report including correct items, incorrect items and confabulated items (quality of recall).

Completeness and accuracy are two variables customarily used in the study of the efficacy of the cognitive interview technique [8,17]. To be consistent with previous studies this study uses these same metrics.

One additional set of data was collected. This set included the following participants’ demographic characteristics (control variables): participant’s age, gender, ethnicity, and educational level. These variables are known to affect eyewitness testimonies [21,29]. These variables were measured using items on a pre-test questionnaire.

8. Methodology

Data collection was done on an individual basis in two separate offices. These offices were equipped with one computer with Internet connection, a widescreen monitor, and speakers. Individual participants were assigned to one condition and sat at a desk in front of the computer monitor throughout the study. Participants were randomly assigned to each condition to ensure other influencing variables such as age, ethnicity, and educational level would balance out, affecting equally the results for each reporting condition. That is, random assignment of participants to conditions would even out the effect of extraneous variables on the dependent variables.

A video clip depicting a staged crime with duration of two and a half minutes was used as stimulus. This video is an excerpt of the commercial motion picture As Good As It Gets by James L. Brooks. This movie was rated by the Motion Pictures Association of
America for audiences of 13 years of age or older (PG-13). In this video, participants observed a crime being committed by two suspects (Suspect 1 and Suspect 2) aided by an accomplice (Model) on a victim (Artist/Painter). The crime is a home robbery invasion and aggravated assault. The suspects take property from the painter’s apartment while the model, who is posing for a portrait, distracts the painter. The painter is completing a full size portrait of the model. When the painter realizes (by his pet dog’s actions) he is being robbed, he confronts the assailants and is assaulted by one of them, who hits him repeatedly with a coat rack. The two suspects and the accomplice flee the scene taking the property items they had put in a sack. The portrait of the accomplice, which is a very accurate representation of the accomplice, is left behind at the scene.

After watching the video clip, participants were asked to report descriptive information of what they saw in the video and to avoid guessing. They were asked to provide descriptions on the suspects, the weapon, the stolen property items, the location, and the actions during the incident they witnessed.

8.1 Data Collection

In preparation for data collection various preliminary activities were performed, which included provisions to protect the study’s internal validity.

8.1.1 Gold Standard Creation. The stimulus video clip was coded and scored to identify relevant facts for a standard police report. One independent rater coded the stimulus. The video rater watched the video clip, extracted descriptive facts, and created a template grouping extracted facts in seven categories: suspect-1, suspect-2, accomplice, weapon, property items, location, and criminal acts. The total number of facts per category was tallied in the template. The template and the total number of facts represent the gold standard against which the resulting crime reports from each reporting method were compared and scored.

8.1.2 Pilot Testing. A pilot test of the study was run to ensure clarity and face validity of materials. This test served also as an opportunity to practice the study procedure and to verify the well functioning of the reporting methods. The pilot test was conducted a week prior to the study with six volunteers (three per reporting method). The crime reports created by these participants were not included in the study final dataset. Materials, procedures, and reporting methods were refined after the pilot test.

8.2 Procedure

Data collection activities were conducted at three different phases, presentation, testing, and data coding.

8.2.1 Presentation Phase. In the presentation phase a facilitator (a) introduced participants to the study, (b) had participants watch the video in isolation on an individual bases, (c) surveyed the demographic profile of participants; and (d) allowed participants to break for 20 minutes and asked them not to discuss the content of the video with anyone.

In reality some time passes by before a witness provides an account of the crime incident to police. Thus, to allow for a more naturalistic reporting situation, the 20-minute delay between viewing the stimulus and reporting what they saw was imposed. During the delay, participants conversed with a study confederate to ensure that they would not have the opportunity to replay the video in their minds trying to remember every detail or to discuss its content with anyone.

8.2.2 Test Phase. In the test phase the facilitator (a) assigned participants randomly to each reporting method; (b) instructed participants on the use of the reporting methods using screenshot slides; (c) instructed participants to begin their reports using the assigned condition; and (d) debriefed participants when they completed their reports and asked them not to discussed the study with anyone likely to participate in the study.

8.2.3 Data Coding Phase. During this phase the facilitator (a) formatted all reports uniformly to eliminate the possibility of identifying the reporting method that generated them, (b) submitted resulting reports to be coded and scored, (c) verified the accuracy and completeness scores of each report, and (d) coded demographic questionnaires results.

8.2.4 Data Coding Detailed Procedures. All reports and questionnaires were identified with a participant’s numeric code, only the primary investigator knew the names of participants and the reporting method they used. An independent rater coded and scored the resulting crime reports. The rater scored reports by hand using color-coding (one color per crime video’s category), and tallied totals using the gold standard template created by the video clip coder.
8.3 Statistical Analysis

Two types of statistics were calculated to allow for comparison among the two experimental conditions. These statistics were:

1. Descriptive statistics and chi-squares. These were calculated to obtain a profile of participants’ demographic characteristics and verify random assignment.

2. One-way ANOVAs. These were calculated to test the study’s hypotheses for the two dependent variables completeness and accuracy.

9. Results: Completeness and Accuracy

Resulting reports were prescreened to ensure content validity yielding 48 usable reports. Of the 48 usable reports, 23 resulted from i-recall and 25 from i-textbox. Participants in the study were sophomore students enrolled in various sections of the Management Information Systems (MIS) course in the College of Business Administration of the California State Polytechnic University, Pomona (CalPoly). These students majored in accounting; finance, real state and law; international business; e-business; marketing management; computer information systems; management and human resources; and technology and operations management, and all were computer literate. College students in their second year were selected to allow for a controlled sample in terms of educational level and verbal ability. The aim was to have a representative sample in terms of verbal ability of the U.S. adult population, where 52% have achieved some college education (2000 US Census).

The demographic profile for the 48 participants who provided usable reports showed that the sample was representative of the population which is expected to report using the Internet. In the sample, eighty-six percent had attained some college education 73 percent of the participants were between 18 and 25 years old and 51 percent were males. Statistics also indicated that the sample was ethnically diverse with all major ethnic background (the resulting ethnicity distribution is representative of the student population of the study site).

Chi-squares for demographic variables were calculated to verify that participants were equally distributed among reporting conditions. This equal distribution of influencing factors ensures results could be attributable to the influence of the independent variable and not to other variables.

9.1 Coding and Scoring of Reports

The 48 witness reports each with an average length of four pages were coded. Scores for each report were calculated by tallying the presence of descriptive items that relate to the video clip gold standard. Three totals were obtained, number of correct items (those that match items in the gold standard), number of incorrect items, and number of confabulated items (those not present in the gold standard).

9.2 Completeness

One-way ANOVA (one-tailed) was used to test for completeness (number of correct items in report) among the two reporting methods. Using an alpha level of 0.05, significant differences in mean completeness were observed. Table 1 shows completeness data and ANOVA main effect. Completeness differed significantly across the two methods $F(1, 47) = 30.97, \eta^2 = 0.402, p < .001$.

The results show that i-recall elicited 51 correct descriptive items from witnesses’ memory and the textbox system elicited 21 correct items. This indicates that i-recall elicits 143 percent more than i-textbox. Thus, results for completeness suggest that i-recall outperformed i-textbox in completeness and the direction of these results was as expected.

<table>
<thead>
<tr>
<th>Reporting Method</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>i-textbox</td>
<td>25</td>
<td>20.8</td>
<td>14.2</td>
<td>2.8</td>
</tr>
<tr>
<td>i-recall</td>
<td>23</td>
<td>51.4</td>
<td>23.3</td>
<td>4.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>11271.704</td>
<td>1</td>
<td>11271.04</td>
<td>30.97*</td>
<td>p &lt; .001</td>
</tr>
<tr>
<td>Within Groups</td>
<td>16740.212</td>
<td>46</td>
<td>363.918</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>28011.917</td>
<td>47</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Effect is significant at the 0.05 level
Table 2. Mean of Items in Report by Reporting Method

<table>
<thead>
<tr>
<th>Reporting Method</th>
<th>Mean Correct</th>
<th>Mean Incorrect</th>
<th>Mean Total in Report</th>
</tr>
</thead>
<tbody>
<tr>
<td>i-textbox</td>
<td>20.8</td>
<td>.56</td>
<td>21.3</td>
</tr>
<tr>
<td>i-recall</td>
<td>51.4</td>
<td>3.3</td>
<td>54.7</td>
</tr>
</tbody>
</table>

Table 3. Accuracy Data by Reporting Method and ANOVA Main Effect

<table>
<thead>
<tr>
<th>Reporting Method</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>Between Groups</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>i-textbox</td>
<td>25</td>
<td>965</td>
<td>.045</td>
<td>.009</td>
<td>.008</td>
<td>46</td>
<td>4.212</td>
<td>*</td>
<td>.046</td>
</tr>
<tr>
<td>i-recall</td>
<td>23</td>
<td>938</td>
<td>.044</td>
<td>.009</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Effect is significant at the 0.05 level

9.3 Accuracy

One-way ANOVA (one-tailed) was used to test for accuracy (number of correct items over the sum of correct items plus incorrect items plus confabulated items) between the two reporting methods. Some incorrect (incorrectly remembered) and confabulated items (not present in the video) were obtained from participants across the two methods. Incorrect and confabulated items were added together because they represented less than five percent of total items in each report (Table 2). i-recall (M=3.3) produced more incorrect items than i-textbox (M=0.56), but also elicited more information.

Using an alpha level of 0.05, significant differences in mean accuracy of reports were observed. Table 3 shows accuracy data and ANOVA main effect. Accuracy also differed across the two methods F(1, 47) = 4.121, η² = 0.084, p = .046, but not significantly.

The results show that i-recall elicited descriptive items from witnesses’ memory with 94 percent accuracy and i-textbox elicited items with 96 percent accuracy. This suggests that 94 percent of the information i-recall elicits is correct. Also, the results indicate that i-recall approached significantly the performance of i-textbox in accuracy, but the direction of the results of the comparison with i-textbox was not as expected. It is important to note that accuracy for the two methods seems to reflect a ceiling effect, where both achieve high levels in the range of 94 to 96 percent. Two possible explanations for achieving such high levels of accuracy are, first, that the 20-minute delay between viewing the stimuli and reporting the incident was too short and, second, that following instructions of the CI, participants were instructed to avoid guessing and to report only about what they were certain.

10. Discussion

The results obtained in this user study support the hypotheses. Differences among the methods in report completeness were significant, i-recall outperformed i-textbox (51 vs. 21 correct items). Overall, the methods achieved high accuracy. i-recall achieved equal accuracy to i-textbox (94% vs. 96.5%). Koehnken et al.’s [17] meta-analysis of 55 evaluations of the CI indicates that accuracy is affected by age of participants, delay between viewing stimuli and reporting the incident, and laboratory where the studies were conducted. In this study, delay is likely the reason for high accuracy levels for the methods. Other studies of the CI have reported anywhere from 76 percent to 100 percent accuracy.

11. Conclusions

The results obtained in this study lead to four conclusions on the efficacy of i-recall in enhancing witness communication and memory retrieval to elicit accurate and complete testimonies.

First, i-recall enhances witness communication and memory retrieval. In terms of completeness, i-recall outperformed i-textbox significantly. In terms of accuracy, i-recall equaled the performance of i-textbox. The direction of these results was as
expected except for the results of the comparison in terms of accuracy between i-recall and i-textbox.

Second, i-recall is a promising Internet reporting method considering existing Internet reporting implementations represented by i-textbox, such as the FBI Tips and Public Leads and the Claremont Colleges’ Silent Witness Program websites.

Third, i-recall’s performance as crime reporting and interviewing system is better than existing Internet reporting systems and maintains privacy protection and convenience qualities. i-recall is a crime reporting method with potential to attract reports from witnesses commonly unwilling to report face-to-face.

Last, natural language processing (NLP) technology allowed i-recall to apply successfully the CI memory-enhancing guidelines. Using these investigative interviewing techniques, i-recall is capable of eliciting accurate and complete witness testimonies. Provided cost-benefit analyses are conducted, computer interviews using NLP are promising technologies to offer interactive and usable interfaces in e-government services to the public.

11.1 Limitations

External validity threats are inherent to experimental designs. In this study these threats were anticipated and reduced to the extent possible, but they remain a limitation. These threats included:

Un-naturalistic reporting situation. Students acted as witnesses of a crime depicted in a video clip.

Raters bias. Efforts were made to hire independent video clip and report raters. This was limited by the resource available to conduct the study. The primary investigator participated directly in training, supervising, and at times coding the resulting 48 reports.

Possible ceiling effect for reporting methods’ accuracy. The alternative methods achieved accuracy levels in the range of 94 to 96 percent. Although these results are common in studies on the evaluation of the CI when compared with other alternative interviewing methods (i.e., standard interview), the results for i-recall’s accuracy should be taken with caution. Longer delays between viewing the stimulus and reporting the crime incident may yield more realistic results.

11.2 Implications

Criminology studies indicate that millions of crimes are committed annually, but only about one third of these are reported to police. Unwillingness to report, driven by inconvenience or fear, is cited as the primary reason for unreported crime. Singer advocates the creation of alternatives to mediate between police’s goals and victims’ fears [22,28]. Accordingly, law enforcement agencies launched Internet crime reporting as an alternative to face-to-face reporting. With an offer for convenience and privacy, i-recall is a promising example of Internet crime reporting that offers the benefits of producing crime reports that are more complete and as accurate as existing Internet alternatives. This represents a clear advantage over existing Internet reporting implementations. Future studies will compare the efficacy of i-recall to the efficacy of human expert cognitive interviewers and ultimately test whether i-recall is viable as a mediating alternative in natural settings.

12. References


