

WITNESS IDENTIFICATION PRACTICE IN POLICE OFFICERS

The Good, The Bad and The Ugly of Eyewitness Identification Practice in Police Officers – A Self-Report Survey Study

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Abstract

Witness identification practice of the police plays a critical role in the criminal proceedings. The current study examines police officers' knowledge regarding factors affecting witness memory as well as witness interview and identification practices in Taiwan, after relevant judicial reform had been implemented for more than a decade. A total of 499 police officers in Taiwan participated in the survey to report their knowledge and actual practice of eyewitness interview and identification. The findings revealed strengths as well as weaknesses in their current practice. More disconcertingly, most (87.8%) of them did not receive relevant training, and those who received training scored lower in both eyewitness knowledge and witness identification practice than those who received no training. These findings suggested that operations of eyewitness identification were not completely in line with recommended best practice outlined in recent Judicial Reform, and that the current training needs to be improved to increase its effectiveness.

Keywords: Eyewitness Identification, Witness Interview, Police, Bias, Judicial Reform

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The Good, The Bad and The Ugly of Eyewitness Identification Practice in Police Officers – A Self-Report Survey Study

The accuracy of eyewitness testimony plays a pivotal role in the criminal proceedings. A wealth of research evidence has indicated the accuracy of witness memory is subjected to various influences (e.g., Loftus, 2018; Steblay, Dysart, & Wells, 2011; Wells, Memon, & Penrod, 2006; Wise, Pawlenko, Safer, & Meyer, 2009). Eyewitness misidentification has been identified as a key contributing factor of wrongful convictions (Garrett, 2011). For example, 252 (69%) of the 365 DNA-exonerated wrongful conviction cases in the U.S.A. involved eyewitness misidentification (Innocence Project, 2019). Given the potential consequences of miscarriage of justice resulting from eyewitness misidentification, law enforcement officers must pay close attention in every step of the identification process. Evidence-based consensus regarding factors affecting witness memory and recommendations for eyewitness identification procedure have been available for law enforcement officers to guide best practice (e.g., International Association of Chiefs of Police, 2013; Kassin, Tubb, Hosch, & Memon, 2001; National Research Council, 2014; National Institute of Justice's Eyewitness Evidence: A Guide for Law Enforcement, Technical Working Group for Eyewitness Evidence, 1999; 2003; Wells, Small, Penrod, Malpass, Fulero, & Brimacombe, 1998). However, field studies evaluating the effectiveness of these guidelines remained limited.

Earlier studies in the U.S.A. (e.g., Benton et al., 2006; Brigham & Wolfskeil, 1983; Yarmey & Jones, 1983), U.K. (Kebbell & Milne, 1998), Canada (Winterdyk, 1988) and Sweden (Granhag, Strömwall, & Hartwig, 2005) showed that law enforcement officers have limited knowledge regarding factors that can influence the accuracy of eyewitness memory (referred to as "eyewitness factors" later in this paper). Aspects on identification practices were investigated by Wogalter, Malpass and McQuiston (2004), with 220 law officers from

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different departments across the United States, showing that many of the officers' practices at the time (in the early 1990s) violated the recommendations for lineups that were later included in "the National Institute of Justice's Guide" (The NIJ Guide; Technical Working Group for Eyewitness Evidence, 1999).

In order to examine law officers' knowledge and practice about eyewitness identification after the NIJ Guide had time to take effect, Wise, Shafer and Maro (2011) compared U.S. law enforcement officers from departments that had implemented eyewitness reforms (N = 83), and the officers from departments that had not implemented reforms (N = 449). The findings suggested that officers' knowledge of eyewitness factors was limited, and officers from both samples did not differ in both their knowledge of eyewitness factors nor in their use of proper interviewing procedures. Moreover, their witness interviews and identification procedures were not entirely in accordance with the NIJ Guide. Encouragingly, officers in reform departments did report following more correct lineup procedures than those in non-reform departments. Subsequently, a national survey of eyewitness identification policies, training, and procedures in U.S. law enforcement agencies was conducted using a random stratified sample (N= 619) (Police Executive Research Forum, 2013). This report showed that most police agencies have not implemented the recommendations thoroughly from the NIJ Guide, with some of the guidelines being implemented more widely than others. Such findings illustrated the lack of uniformity in implementing and enforcing policy changes, even after a decade since the publication of NIJ Guide in 1999.

Similar findings were reported among police officer in Canada (Fraser, Waite, & Bond-Fraser, 2013), and China (Jiang & Luo, 2016) after national policies on eyewitness identification and interviewing procedure have been revised according to evidence-based recommended best practices (e.g., Technical Working Group for Eyewitness Evidence, 1999 and FPT Heads of Prosecutions Committee Working Group, 2004, in Canada; and in China,

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key legislation regulations regarding witness interview practices such as Chinese Criminal Procedure Law (CCPL), 1996; Chinese Criminal Procedure Law (CCL), 1997; Supreme People's Prosecution Institution (SPPI) Regulation of Criminal Procedure, 1998; 2005). The police officers still showed limited understanding of eyewitness factors, with average scores of 61% (of 14 questions) among the Canadian officers and 58.2% (of 12 questions) among the Chinese officers (Fraser et al., 2013; Jiang & Luo, 2016). These findings suggested that, across different countries and jurisdictions, law enforcement officers' knowledge on eyewitness factors are still limited, even after extensive judicial reforms.

In Taiwan, the Ministry of Justice and the National Police Agency had implemented the Procedures for Eyewitness Identification for Police Agencies (PEIPA) in 2001, and some additions were made in 2017 and 2018. The initial guidelines in PEIPA were devised based on the recommendations in the NIJ Guide in the U.S.A., and the additions and amendments were made based on later research (e.g., National Research Council, 2014). A summary of the PEIPA guidelines was provided in Table 1. However, its effectiveness and implementation have not been examined. There has been plenty of research evaluating training effectiveness for witness interview practice in police officers in the UK (e.g., Clarke, Milne, & Bull, 2011; Dando, Wilcock, & Milne, 2008; Griffiths & Milne, 2006; Walsh & Milne, 2008); however, whether police officers received adequate training on general eyewitness identification knowledge and practice and whether the training was effective in enhancing both their knowledge of eyewitness factors and lineup practice remained unknown. Therefore, the present study aimed to expand our knowledge of police officers' understanding of factors affecting accuracy of witness' testimony, and their actual practice of witness interviewing as well as identification procedures, in a sample that had not been reported before. Moreover, the comparison between trained and untrained officers' responses would offer insights into whether current training made a difference in their knowledge and practice.

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Method

Participants

A total of 499 (434 (87%) males, 63 (12.6%) females and 2 (0.4%) unidentified) police officers participated in this study. They were between 21 to 58 ($M = 38.17$, $SD = 8.71$) years of age, and have been serving in the police force for an average of 16 years (range from 0.5 to 38 years, $SD = 9.97$). These police officers worked as local police stations Patrol Officers (135, 27.1%) or as Detectives in local police stations (140, 28.1%), Detectives in the regional criminal investigation team (153, 30.7%) or others (71, 14.2%). The majority (438, 87.8%) of the officers said they had not received any trainings regarding eyewitness identification procedures, only a small number (61, 12.2%) said they had received some relevant training. Out of those who had received some training, all of them were trained on arrangement of photo lineups, some also received training on witness identification procedure (34, 55.7%), the psychology of eyewitness testimony (12, 19.7%), and live lineup procedure (6, 9.8%). Regardless of whether officers had received some training (50 (82%) of the trained ones) or not (342 (78.1%) of the untrained ones), the majority (392, 78.6%) of them reported that more training on eyewitness identification knowledge and practice were necessary. There were no statistically significant differences between the trained and untrained officers in terms of their age ($t(492) = .941$, $p > .05$) and years serving in the police ($t(475) = .966$, $p > .05$). The sample of the current study was geographically stratified, with officers having varied years of experience and ranks, and gender ratio was comparable to the national statistics of Taiwan Police Force (National Police Agency, 2020), thus the sample was considered representative.

Procedure

Ethical approval for the current project was obtained from the Institutional Review Board at Central Police University in Taiwan before the recruitment began. The participants

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were recruited from three metropolitan areas in northern, central and southern Taiwan, so that the sample could be geographically representative. The response rate from each of the metropolitan areas was 87.6%, 67.8% and 50.4% respectively. Local police departments in these metropolitan areas were recruited over formal invitation letters from the Central Police University, agreeing police departments contacted the research team to arrange a time for the trained research assistants to come to the local police department to administer the survey. Agreeing agencies then sent out information letters to their police officers, informed them about the data collection time, and underscored the voluntary nature of the participation. During data collection session, the participating police officers were briefed about the study, encouraged to ask questions, and reminded of the study's voluntary nature and their rights to withdraw at any time of the study. The participants then signed the consent forms before they filled out the survey in hard copy. The survey took between 20 to 30 minutes to complete. After collecting the survey, the research assistants entered the responses into SPSS (version 24) for subsequent data analyses. In the SPSS file, all responses were only identified by an ID number to ensure anonymity. The current research data was collected between June to October 2017, after the 2017 revision of the PEIPA was published in January.

Measures

The survey, composed of the following four sections: (1) police officers' background information and experiences, (2) knowledge regarding eyewitness testimony, (3) eyewitness interview practice, and (4) eyewitness identification practice. Questions in section 2-4 were translated (as well as back-translated to ensure accuracy) and adapted from Wise, Safer and Maro (2011)'s research, with some items added to reflect the specific regulations in the PEIPA in Taiwan. The questionnaire had been pilot-tested in the police academy with police officers in training to ensure their reliability and validity before its formal administration.

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Officers' Background Information and Experiences. This section of the survey covered demographic information such as each officer's age, gender, city/county of their service, years of experience working in the police, whether they had received training regarding eyewitness identification and if so on which topics, whether they know about the regulations in PEIPA, the frequency and types of their administration of eyewitness identification within the past year, and whether they had personal encounter with cases of eyewitness misidentification.

Knowledge Regarding Eyewitness Testimony. We based our questions on the questionnaires designed by Wise et al. (2011), which assessed officers' knowledge on the following aspects of eyewitness identification: relationship between witness confidence and accuracy, impact of stress, ability to recall minor details, weapon focus, forgetting curve, partial inaccuracy, initial biased lineup, mug-shot-induced bias, presentation format, double-blind procedure, and wording of questions (see Table 2 for the description of all items). These items were chosen for the strong empirical evidence about their effects on eyewitness accuracy as well as the frequency these issues arise during criminal trials (Kassin et al., 2001; Wise & Safer, 2004; Wise, et al., 2011). There are 14 items in this section, and the respondents answered each item on a 4-point Likert scale (1= strongly disagree, 2= disagree, 3= agree, 4= strongly agree). Items 1, 3, 7, 9 and 11 were reverse-coded. To facilitate and simplify the scoring, the responses 'strongly disagree' and 'disagree' were combined and counted as incorrect (score 0), whereas 'agree' and 'strongly agree' were combined and counted as correct (score 1). A total score summing up these 14 items and a percentage score were also calculated to indicate the general knowledge level of the officer, with higher score indicating superior knowledge. Internal consistency (Cronbach's α) for this scale is .770.

Witness Interview Practice. There are 12 items in this section, and the respondents answered each item on a 4-point Likert scale to indicate to what extent their practice is in

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accordance with the item (1= very dissimilar, 2= dissimilar, 3= similar, 4= very similar). Again, these witness interview practice items were adapted from Wise et al. (2011)'s questionnaire, which assessed officers' practice regarding witness interviews. It covered topics on establishing rapport, asking whether the witness had heard other accounts, use of technique on mental reconstruction, asking the witness to tell them everything, telling the witness that details are needed, paying attention to the place of interview, tailoring questions and asking the witness to avoid discussing the incident with others (see Table 2 for detailed description of all items). Items 7 and 9 were reverse-scored. To facilitate the scoring, the responses 'very dissimilar' and 'dissimilar' were combined and counted as incorrect (score 0), whereas 'similar' and 'very similar' were combined and counted as correct (score 1). A total score summing up these 12 items and a percentage score were also calculated to indicate the officers' witness interview practice, with higher score indicating better practice. Internal consistency (Cronbach's α) for this scale is .806.

Eyewitness Identification Practice. There are 20 items in this section. Most of these eyewitness identification practice items were adapted from Wise et al. (2011)'s questionnaire to evaluate officers' practice on strategies for selecting fillers, least amount of evidence, double-blind lineup, post-lineup feedback, and post-lineup confidence. Some items were added in the questionnaire which were in accordance with the recommended practice in the PEIPA (see Table 2 for the full description of items). For items 1-18, the respondents answered each item on a 4-point Likert scale to indicate to what extent their practice is in accordance with the item (1= very dissimilar, 2= dissimilar, 3= similar, 4= very similar). Items 1-5, 7, 8, 11, 12, 16,17,18 were reverse-coded. To simplify the scoring, the responses 'very dissimilar' and 'dissimilar' were combined and counted as incorrect (score 0), whereas 'similar' and 'very similar' were combined and counted as correct (score 1). Item 19 was a multiple-choice item, where correct responses were scored as 1, and incorrect responses were

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scored as 0. A total score summing up items 1-19 and percentage score were calculated to indicate the level of practice of the officer, with higher score indicating better practice. Item 20 was not scored, as this item indicated factors affecting officers' witness identification procedure. Internal consistency (Cronbach's α) for this scale is .801.

Analytic Strategies

First, descriptive statistics were conducted to illustrate the knowledge level and current practice of the police officers regarding eyewitness interviewing and identification procedure. Thereafter, correlational analyses were conducted to examine the relationships between demographic factors (such as age and gender), work experience (such as the place of their service and number of years serving in the police) and officers' knowledge and practice. Significant factors will then be controlled for in the subsequent MANCOVA as covariates when examining the effects of officers' training on their knowledge and practice. Finally, a MANCOVA was conducted to investigate the differences between trained and untrained officers' knowledge and witness interview as well as identification practices.

Results

Officers' experiences in lineups and eyewitness identification

The officers who had experience (487, 97.6%) were instructed to answer questions about their experiences in administering lineups. When the officers had identified a suspect, the most commonly used lineups method was photo lineups followed by single photo identification. The use of live lineups and live show-ups were less common. When there was no identified suspect, approximately half of them reported having used mugshot searches, and the use of composite sketches was relatively rare. See Table 3 for more details about the frequencies and prevalence of trained and untrained officers' use of identification methods.

Regarding their arrangement for photo lineups, in terms of the number of photos used in each photo array, 20 (4%) officers used 4 or less photos, 20 (4%) used 5 photos, 186

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(37.3%) used 6 photos, 260 (52.1%) used 7 or more photos in a photo array. Thus, the majority (93.4%) of surveyed officers operated in accordance with the NIJ Guide, the National Research Council report (2014) and PEIPA's recommendations for using a minimum of 5 photos. As for the modes of photo lineup presentation (officers could select all options that applied), simultaneous presentation of hard copy (364, 75%) or digital (139, 28.5%) photos were more commonly used than sequential presentation of hardcopy (78, 16%) or digital (68, 13.9%) photos.

In terms of selecting and processing photos for lineups, if there is a long delay between the identification and the time of the crime, the majority of officers (352, 70.5%) reported that they would use the suspects' photo taken near the time of the crime, which is in accordance with the recommendation from the NIJ Guide, the National Research Council report (2014) and PEIPA. As for the sources of filler photos (officers can select all options that applied), majority of the officers (385, 77.8%) had used photos from the National ID data base, National Crime database (324, 65%), and social media (305, 61.6%), some used photos in their local database (221, 44.6%), photos of people with criminal record of the suspected crime (147, 29.7%), CCTV footage (143, 28.9%), and photos of their fellow police officers (67, 13.5%). When asked about how the officers would do to adjust the lineups if the suspect has prominent facial features, 209 (41.9%) of the officers reported that they would choose fillers that have matching features, 51 (10.2%) of the officer said they would mask the fillers accordingly using the "replication" technique (i.e., replicate the suspect's distinctive facial feature across lineup members), and 24 (4.8%) of the officers said that they would conceal/eliminate the prominent features of the suspect' photo with image processing software (i.e., the "concealment" technique). Although the PEIPA does not have specific regulation on masking fillers, more than half of the surveyed officers reported that they would choose fillers matching the witness' description or mask the fillers either using the

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replication or concealment technique. Moreover, more officers reported using the replication technique than the concealment technique for masking. As replication technique produced more correct identifications in target-present lineups without increasing the incorrect identification of foils in target-absent lineups than did concealment technique (Zarkadi, Wade & Stewart, 2009), the officers' practice demonstrated understanding and appropriate practice.

Some officers had indicated that they themselves (158, 31.7%) or their colleagues (113, 22.6%) had encountered cases of witness misidentification previously. And the majority of the officers (326, 65.3%) reported knowing about the PEIPA regulations regarding witness identification procedures, and more (77%) of the trained officers reported knowing about the PEIPA than the not-trained officers (64.6%). However, the officers who knew about PEIPA did not differ from officers who did not know about PEIPA in their knowledge or practice regarding eyewitness identification. The majority (392, 78.6%) of the officers believed that more training on eyewitness identification is needed, regardless of whether the officers had received training (50, 82%) or not (342, 78.1%).

Descriptive analyses of officers' level of knowledge and practice

Table 2 illustrates detailed description of each item in the questionnaire, and the correct response rate of trained and untrained officers' response on each of them. Chi-square analyses were conducted to distinguish whether the correct response rates between trained and untrained officers differ on each item. Significant differences were marked with * indicating significance at a .05 level and ** indicating significance at a .01 level. To our surprise, the reportedly untrained officers generally outperformed officers who reported to have received some training in their knowledge, interview practice and identification practice. We also identified the items for which at least 80% of the police officers gave the correct answer (as recommended by Kassin et al., 2001 and Wise et al., 2011) in each section of the survey to indicate areas where officers demonstrated adequate understanding.

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In terms of officers' knowledge regarding eyewitness testimony, at least 80% gave correct answer in 5 items (items 2, 5, 10, 13 and 14), demonstrating understanding in these areas (impact of stress, forgetting curve, mug-shot-induced bias, unconscious suggestion and the impact of witness' testimony on the judges). For the 14 statements regarding eyewitness knowledge, officers who received some training averaged 8.28 (59%) ($SD = 1.68$) correct answers, whereas reportedly untrained officers averaged 8.76 (62%) ($SD = 1.92$) correct answers, which was a significant difference, $t(483) = 1.875, p < .05$. Thus, untrained officers showed better knowledge regarding factors influencing eyewitness memory than reportedly trained officers.

As for witness interview practice, more than 80% of officers answered correctly in the following 6 items (items 1, 3, 4, 6, 8, and 12), regarding rapport, details needed, mental reconstruction, place of interview, tailoring questions, and contact information. For the 12 statements regarding eyewitness interview practice, officers who received training averaged 8.90 (74%) ($SD = 1.93$) correct answers, whereas reportedly untrained officers averaged 8.74 (73%) ($SD = 1.93$) correct answers, which was not significant different ($t(483) = -.62, p > .05$). Such findings demonstrated that the two groups of officers did not differ in their interview practices, showing that the degrees of change in officers' interview practice induced by training or policy change was limited. However, these findings showed some encouraging advancement in officers' interview practice, particularly in the officers' effort in establishing rapport, using mental reconstruction technique to help with recall, and in leaving the contact detail for the witness (this was a recommended practice in PEIPA), where approximately 90% of the officers gave correct responses.

With regards to eyewitness identification practice, there was only one item (12, regarding witness-suspect relationship) for which more than 80% officers answered correctly, showing unsatisfactory witness identification practice among the police officers. For the 19

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scored items regarding eyewitness identification practice, officers who received some training averaged 6.38 (34%) ($SD = 2.55$) correct answers, whereas reportedly untrained officers averaged 7.19 (38%) ($SD = 2.77$) correct answers, which was a significant difference, $t(483) = 2.17, p < .05$. The results showed that, again, untrained officers outperformed reportedly trained officers in their witness identification practice. For item 20, officers reported the least evidence they require before they conduct a photo lineup. Because a culprit-absent lineup poses the greatest risk for eyewitness misidentification (Charman & Wells, 2007), requiring little or no evidence of the suspect's guilt before conducting a lineup increases the probability of such error. Therefore, some researchers (e.g., Penrod, 2003; Wise et al., 2007) recommended that a lineup should only be conducted for eyewitnesses who will testify in court when there is probable cause to believe a suspect committed the crime. However, like Wise et al. (2011), we did not designate a correct answer to this item because there was insufficient research evidence to support this hypothesis and this is not a recommendation in the NIJ Guide, the National Research Council report (2014) or PEIPA. The trained and untrained officers did not differ significantly in their responses ($X^2(3) = 4.84, p > .05$), and the percentages of each response respectively were as follows: place a suspect in a lineup with no evidence of the suspect's guilt (1.9% and 2.8%), on the basis of a hunch (28.8% and 21.5%), if there was some evidence of the suspect's guilt (30.8% and 22.5%) and require probable cause (38.5% and 53.3%).

The officers' responses also revealed some problematic witness identification practices regarding information which may bias the eyewitness' response before the identification (item 1-5), such as showing some potential suspect pictures before the lineups (average incorrecion rate 68.7%), letting the eyewitness see the suspect in person (average incorrecion rate 64.1%) or the suspect's photo (average correction rate 76.4%) prior to the lineups, or providing information about the crime to "help" the eyewitness remember who the

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suspect is (average incorrecion rate 82.4%). Moreover, the majority (413, 82.8%) of surveyed officers reported that they knew who the suspect was when conducting the lineups, demonstrating that the identification procedure was not double-blinded, violating the recommendation of the NIJ Guide, the National Research Council report (2014) and the latest version of PEIPA (2018). After conducting the identification procedures, more than half (269, 53.9%) of the officers indicated that they would give feedback to the eyewitness about their choice (item 10), which may increase the risk of commitment effect (Gorenstein & Ellsworth, 1980). The majority (373, 74.7%) of the officers did report that they would ask the eyewitness about their confidence level after they made an identification, which is in accordance with the recommendation of the NIJ Guide, the National Research Council report (2014) and PEIPA. Despite some research reported the general poor association between witness confidence and memory accuracy (e.g., Smalarz, Kornell, Vaughn, & Palmer, 2019), other research suggested that witness confidence in an identification can be a highly reliable indicator of accuracy, especially if the lineup is fairly administered (Wixted, Mickes, Dunn, Clark & Wells, 2016). Therefore, recording witness confidence can be a useful piece of information for estimating identification accuracy.

Additionally, items 16-18 asked officers about whether the seriousness of the crime (item 16), the types of crime (item 17) and the evidence officers had about the crime (item 18) would affect how they arrange their eyewitness identification procedure. Theoretically speaking, the identification procedures should be conducted in accordance with the recommended best practice to optimize the accuracy of eyewitness memory, irrespective of the characteristics of the crime. However, the results revealed that the majority of the surveyed officers' eyewitness identification arrangements were affected by the seriousness of the crime (incorrecion rate 70.5%), the types of crime (incorrecion rate 71.7%) and the

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evidence they have about the crime (incorrection rate 79.2%), which can be especially problematic if the identification procedure is not double-blind.

Associations between demographic factors, years of practice, knowledge and practice

Pearson's correlations were conducted to examine the relationships between demographic factors (such as age and gender), work experience (number of years serving in the police), knowledge and practice. As illustrated by Table 4, officers' age and year of service in the police are highly correlated ($r = .94, p < .0001$), we only included officers' years of service in the subsequent analyses. Because officers' gender only had a significant effect on their knowledge level ($t = -3.14, p < .01$) but not on witness interview or identification practices, it is excluded in the subsequent MANOVA analyses. Additionally, a one-way MANOVA was conducted to examine the effect of officers' location of service on their knowledge and practice, and no significant effect was found, thus officers' location of service was not included in the subsequent analyses. Interestingly, officer's level of knowledge was significantly positively associated with their witness interview practice ($r = .15, p < .01$) but not with their witness identification practice, demonstrating that there is a gap between knowledge and practice particularly in officers' witness identification practice.

Did the trained and untrained officers performed differently?

In order to determine whether officers who had received training demonstrate different levels of knowledge in eyewitness identification as well as witness interview and identification practices after accounting for their years of experience in policing, a one-way Multivariate Analyses of Covariance (MANCOVA) was conducted. Officers' training (trained vs. untrained) was the between-subject factor, whereas officers' year of practice in the police was entered as covariate in order to control for its effect. The dependent variables were the overall (sum) scores of officers' (1) level of knowledge, (2) witness interview practice and (3) witness identification practices. The MANCOVA revealed significant multivariate effect

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of officers' training experience ($F_{(3, 487)} = 3.377$, Pillai–Bartlett trace = .020, $p < .05$, $\eta^2 = .020$) as well as a significant effect of year of practice as a covariate ($F_{(3, 487)} = 4.006$, Pillai–Bartlett trace = .024, $p < .01$, $\eta^2 = .024$). The achieved statistical power of this MANCOVA was .763 (see Table 5). Follow-up univariate analyses of covariance (ANCOVAs) with Bonferroni corrections were then conducted to examine the effects of covariate (year of practice) and training on each of the dependent variable, see Table 6. The results revealed significant covariate effects of officers' year of practice on their knowledge on eyewitness testimony ($F_{(1, 489)} = 6.385$, $p = .012$), as well as significant univariate effect of officer training on knowledge ($F_{(1, 489)} = 4.419$, $p = .036$) and identification practice ($F_{(1, 489)} = 4.922$, $p = .027$). Subsequent pairwise comparisons revealed that untrained officers not only outperformed trained officers in their knowledge level ($MD = .547$, $p = .036$) but also in their identification practice ($MD = .845$, $p = .027$). The mean scores and standard deviations of each outcome variable by officers' training experience are summarised in Table 7. In summary, the MANCOVA results revealed that untrained police officers outperformed trained police officers in terms of their level of knowledge and witness identification practice, even after their years of practice in policing was accounted for.

Discussion

The current study demonstrated that training of eyewitness identification in Taiwanese police is not common, and the current training was not effective in improving officers' knowledge or practice in eyewitness identification procedure. The untrained officers even outperformed the trained officers in both their eyewitness knowledge and in their reported witness identification practice; but the trained and untrained officers did not differ in their witness interview practice. The majority of the officers also acknowledged that more training is needed. Overall, the officers' responses showed satisfactory witness interview

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practice; but limited understanding in factors affecting eyewitness memory and unsatisfactory eyewitness identification practice.

The Good – Areas of Strength in Officers' Practice

Findings regarding the officers' witness interview practice showed some encouraging progress, such as being selective and considerate about the place where interview takes place, establishing rapport, their use of questions and specific skills during the interview, and giving contact information after the interview, which were all recommended in the PEIPA. Some good witness identification practice where officers operated in accordance with PEIPA's recommendations were also identified, such as using a minimum of 5 photos in each photo array, selecting the suspect photos sensitively and masking the filler photos when necessary. Moreover, our findings were comparable to previous findings from the U.S.A. (Wise et al., 2011), Canada (Fraser et al., 2013) and China (Jiang & Luo, 2016) in terms of officers' knowledge level.

Specifically, current findings regarding officers' knowledge in eyewitness factors showed encouraging knowledge advancement (above 80% for only 5 out of 14 statements; overall correction rate 62.2%) compared to the findings from Wise et al. (2011)'s study where correction rate was above 80% for only 2 out of 11 statements; and more comparable to the correction rate of 61% in the Canadian (Fraser et al., 2013) and 58.2% in the Chinese officers (Jiang & Luo, 2016). Additionally, the officers in the current study reported relatively good interview practice (overall percentage score 73.8% compared to 58% in Wise et al., 2011), particularly in officers' effort in establishing rapport, using mental reconstruction technique to help with recall, and in leaving the contact detail for the witness at the end of interview, where approximately 90% of the officers gave correct responses. Similar to findings with police officers in the U.K. (Dando et al., 2008), that some of the

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components from their interview training were used, although not all the techniques were used consistently.

Regarding presentation modality for lineup, the officers reported more frequent use of simultaneous presentation over sequential presentation. Although this was not in accordance with the NIJ Guide's recommendation (sequential presentation over simultaneous presentation; e.g. for reviews, see Steblay, Dysart, Fulero, & Lindsay, 2001 and Steblay, Dysart & Wells, 2011), the PEIPA in Taiwan did not specify about the mode of photo lineup presentation and the National Research Council report (2014) suggested that sequential presentation was not superior to simultaneous lineups. The officers' arrangement for lineup seemed to be in accordance with the recommended best practice. Additionally, our findings demonstrated that photo spreads were the most frequently used method of identification procedures, which is consistent with previous research (Police Executive Research Forum, 2013; Wells, Campbell, Li & Swindle, 2016). Although it is difficult to draw conclusions about patterns of selection results across field studies because of different identification procedures and data collection methods other studies adopted, it is important for researchers to continuously document the selection outcomes of real-world identification procedures.

Moreover, our findings shed lights on current police practice regarding the least amount of evidence required before conducting an identification procedure, although there may not be a consensus in the field yet. Regardless of whether these officers received some trainings or not, they did not differ significantly in their responses. Our findings suggested that very few officers (1.9% trained and 2.8% untrained) would place a suspect in a lineup with no evidence of the suspect's guilt; and the majority of the officers would only conduct an identification if there was some evidence (30.8 % trained and 22.5% untrained) or a probable cause (38.5% and 53.3%) of the suspect's guilt. As culprit-absent lineup may increase the the risk for eyewitness misidentification (Charman & Wells, 2007), requiring

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little or no evidence of the suspect's guilt before conducting a lineup may increase such error. Therefore, our current finding was in line with some researchers' recommendation that a lineup should only be conducted for eyewitnesses who will testify in court when there is probable cause to believe a suspect committed the crime (e.g., Penrod, 2003; Wise et al., 2007). However, future research investigating officers' strategies for evidence gathering and least amount of evidence required before their identification is clearly needed.

The Bad - Areas of Weakness in Officers' Practice

Areas of weakness in practices were revealed. For instance, mugshot searches were still used by approximately 50% of the surveyed officers, despite more than 80% of them knew about mugshot-induced bias. Highly problematic and potentially biasing practices were also identified: Officers reported letting the witness see the suspect (in person or photographs) prior to the lineups, providing information about the crime to "help" the witness remember who the suspect is, and the non-blinded identification practice were alarming. After conducting the identification, the majority of the officers indicated that they would give feedback to the eyewitness about their choice, which may increase the risk of commitment effect (Gorenstein & Ellsworth, 1980). Moreover, officers also reported that their witness identification arrangement differed according to the seriousness and types of crime and the evidence they obtained, which is especially concerning when the identification procedure is not double-blinded. The identification procedures should be conducted according to the recommended guidelines regardless of the characteristics of the crime. Such practices put suspects' right to justice at risk of confirmation bias. This could trigger to "*bias cascade*" and "*bias snowball*" effects (Dror, 2018), contributing to miscarriage of justice.

The Ugly - Issues of Policy Adherence and Effectiveness of Training

Our findings also demonstrated ineffectiveness in the implementation of policy and legal reforms, indicating the inadequacy of the current police trainings. Although the majority

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of the surveyed officers (65.3%) reported knowing about the PEIPA regulations (77% of the trained and 64.6% of the untrained officers; higher than the 18% of the reform officers and 1% of the non-reform officers in Wise et al., 2011), knowing about PEIPA did not affect their knowledge or practice. Similar to Wise et al (2011), we found that many officers still adopted practices that violated the recommended guidelines (e.g. non-double-blind procedure, and knowing about mug-shot-induced bias but still using mugbook), and the change in their interview practice after training or policy change was limited.

Several field studies (e.g., Clarke et al., 2011; Clifford & George, 1996; Dando et al. 2008; Kebbell & Milne, 1998; Memon, Holley, Milne, Koehnken, & Bull, 1994) evaluating witness interview training showed the difficulty in transference of knowledge into practice. Moreover, providing written guidance on how to conduct interviews did not seem to support skills being transferred to the field (Griffiths & Milne, 2006). However, results from child interviewing research has shown that adherence to interview scripts (e.g., the NICHD protocol; Lamb et al., 2008), supported by continuous monitoring and feedback to interviewers can help to transfer desirable interview skills to the field (Price & Roberts, 2011); whereas the lack of continuous feedback would be accompanied by declines in learned skills over time (Lamb, Sternberg, Orbach, Esplin, Mitchell, 2002). Given the lack of formal feedback and monitoring procedures for the participating police organization, the lack of difference in interviewing skills between trained and untrained officers could be expected.

A disconcerting majority (87.8%) of the officers did not receive relevant eyewitness identification training, moreover, untrained officers outperformed trained officers in both level of knowledge and witness identification practice, even after their years of practice in policing was accounted for. This underscored the urgent need to improve current police training. Currently, the training in Taiwanese police forces is largely based on senior officers passing their field experiences on to junior officers; systematic and evidence-based training

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programs are not yet available in Taiwanese police agencies. As most (78.6%) of the officers correctly indicated, more training is clearly needed. Interestingly, a higher percentage of trained (82%) than untrained (78%) officers acknowledged the need for more training, which may help to explain the seemingly adverse effect of training. This maybe a result of increased awareness of and sensitivity to their inadequacy in knowledge and practice (the conscious incompetence stage, Dreyfus, & Dreyfus, 1986) after training; whereas the untrained officers in the unconscious incompetence stage (Dreyfus, & Dreyfus, 1986) may not notice when something was done incorrectly.

Limitations and Implications

Some limitations of the current study need to be acknowledged. First, officers who voluntarily participated in the survey, compared to those who did not participate, might be more motivated to improve their skills and more aware of the challenges they encounter in practice. Thus, the self-selecting nature of the sample may compromise the representativeness of the sample and the applicability of our findings. Moreover, officers' self-report may not reflect their actual practice, but instead their perception of practice. Previous findings examining police officers' interview practice using interview recordings revealed the difficulty in transferring knowledge into practice, even after receiving specific interview training (e.g., Clarke et al., 2011; Dando et al., 2008; Walsh & Milne, 2008). Further research examining officers' actual practice is needed to assess the level of knowledge transference to practice. Finally, the unequal numbers of trained and untrained participants may also compromise the reliability of the current findings, despite they were statistically homogeneous. Moreover, the current study did not collect further information regarding the content, length, and types of trainings they had received. Future study should purposefully sample more comparable sample sizes between the two groups, and gather more information about any training received (such as when training was received, who offered the training,

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detailed content of the training programs, and how long the training was) to better assess the training effectiveness.

Eyewitness knowledge is still not a ‘common sense’ among the law enforcement officers. Police agencies need to strictly enforce the policies and have mechanisms to monitor its implementation more closely. The current PEIPA needs to be accompanied by a more detailed and concrete practitioners’ manual to support its effective implementation in the field. Government agencies should construct tangible plans to transfer research knowledge to practice and set clear evaluation criteria to ensure comprehensive administration of policy changes. A more systematic and evidence-based approach to eyewitness identification training and evaluation integrated in the education of police officers is clearly needed. Moreover, continuous supervision, feedback and empirical evaluation from external expert advisors can help to enforce the reform more thoroughly and sustainably. Our findings echoed various recent studies’ (e.g., Wells et al., 2016; Wixted et al., 2016) urge for the need for future field studies with police agencies to capture complete data, including detailed information regarding trainings officers received, information about identification results (suspect, filler, and no identifications), and the association between witness confidence and accuracy, just to name a few. Future field research examining actual police identification practice and the investigation outcomes is clearly warranted.

Conclusion

After nearly 20 years since the PEIPA took effect and relevant Judicial Reforms in Taiwan, our findings suggested that operations of eyewitness identification were not completely in line with recommended best practice. Not only would the current police training need to be improved, but various legal professionals (lawyers, prosecutors, judges and legislatures) must contribute to monitor the law enforcement departments’ adherence to policy reforms; as the police force is only one part of the criminal justice system. For the

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reform to be effective, the whole criminal justice network must work together to safeguard evidence-based best practice.

Author Contributions

The first author designed the study, analysed and interpreted the data, and wrote the manuscript. The second author designed the study, acquired funding, collected the data and assisted in editing the manuscript. The authors declare no conflict of interest.

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Data Availability Statement

The data that support the findings of this study are available from the corresponding author, CHS, upon reasonable request with the permission of National Police Agency Taiwan.

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Table 1. Summary of Key Regulations Regarding Witness Identification Procedure in PEIPA

	PEIPA, 2001	Additions or amendments in 2017	Additions or amendments in 2018
Photospread Arrangement	<p>1. The appearances of the target and the fillers should not be significantly different.</p> <p>2. The use of single photo showup is forbidden.</p> <p>3. Avoid using old photos in the photospread.</p>	<p>- As described in 1, 2 and 3 in the 2001 version.</p> <p>4. The size and formatting of the photos in the photo lineups should not differ significantly.</p> <p>5. There should be at least 3 persons/photos in each lineup.</p>	<p>- As described in 1, 2, 3 and 4 in the previous versions.</p> <p>- Addition to 4: the photos used in the lineups should be clear and up-to-date.</p> <p>- Amendment of 5: There should be at least 6 persons/ photos in each lineup.</p>
Instruction	<p>1. The witness should be informed that the suspect may not be in the lineup.</p> <p>2. Any suggestive or leading instruction or arrangement in the identification process is forbidden.</p>	<p>- As described in 1 and 2 in the 2001 version.</p>	<p>- As described in 1 and 2 in the previous versions.</p>

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Identification procedure	<p>1. The identification should not be single-target showup.</p> <p>2. The identification procedure, including all the photos used in the lineups should be documented.</p>	<p>- As described in 1 in the 2001 version.</p> <p>Addition to 2: An identification procedure should be documented using a checklist, which included the number of photos/people in the lineup, and the confidence level of the witness. And the identification procedure should be entirely audio- or video-recorded.</p> <p>3. When there are 2 or more witnesses, the witnesses should be separated and the identification should be conducted independently.</p>	<p>- As described in 1, 2 and 3 in the previous versions.</p> <p>-Addition to 2: In the checklist, the witness should indicate if there is any suggestive or leading practice in the identification procedure.</p> <p>-Addition to 3: The identification for different suspects and from different witnesses should be recorded independently.</p> <p>4. The identification procedure should be conducted by an officer not involved in the investigation (blinded procedure).</p>
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Table 2.

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Knowledge regarding eyewitness testimony, eyewitness interview practice, and eyewitness identification practice, and the percentage of officers who provided correct answer to each item

Topic	Statement	Correct (%) among trained officers (N= 61)	Correct (%) among untrained officers (N= 438)
Knowledge regarding eyewitness testimony (14 items)			
1. Confidence- accuracy	An eyewitness's confidence is a good predictor of his or her accuracy in identifying the defendant as the perpetrator of the crime. (R)	23.3	25.8
2. Impact of stress	Very high levels of stress can impair the accuracy of eyewitness testimony.	83.3	87.2
3. Minor details	A witness's ability to recall minor details about a crime is a good indicator of the accuracy of the witness's identification of the perpetrator of the crime. (R)	16.7	12.3
4. Weapon focus	The presence of a weapon can impair an eyewitness' ability to accurately identify the perpetrator's face.	63.3	66.1

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5. Forgetting curve	The rate of memory loss for an event is greatest right after the event and then levels off over time.	85.0	87.9
6. Partial inaccuracy	If a witness is wrong about some of what they recall, then it is likely that the other information they provide will also be inaccurate.	76.7	75.7
7. Initial biased lineup	If an initial identification procedure is suggestive or biased for an eyewitness, it is still possible to conduct later a fair or unbiased procedure. (R)	26.2	43.6**
8. Wording of questions	How a law enforcement officer asks questions of a witness can influence whom the witness identifies as the perpetrator of the crime.	77.0	87.0*
9. No double- blind procedure	Whether the officer know who the suspect is when conducting a photo lineup would not affect the result. (R)	42.6	52.5
10. Mug-shot- induced bias	Exposure to mug shots of a suspect increases the likelihood that the witness will later choose that suspect from a lineup.	83.6	82.7
11. Advance information	Providing crime-relevant information to the witness before the identification procedure can enhance their memory. (R)	25.4	30.2
12. More error in showup	Showup produces more erroneous eyewitness identifications than a lineup.	62.3	55.2

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13. Unconscious suggestion	The officers' conscious or unconscious feedback to the witness during the identification process may affect the identification outcome.	86.9	87.5
14. Impact on the judge	The outcome of the witness's identification can affect the judge's decision making.	82.0	83.9
Witness Interview Practice (12 items)			
1. Establish rapport	Before I ask the witness any questions, I try to put the witness at ease and establish rapport with the witness.	96.7	91.0
2. Heard other accounts	At the beginning of the interview, I inquire if the witness had heard any other accounts of the incident (such as from the media, other witnesses, law enforcement officers, etc).	77.0	73.3
3. Details needed	At the beginning of the interview, I explain to witnesses the type and detail of information I need.	86.9	87.5
4. Mental reconstruction	At the beginning of the interview, I instruct the witness to take a moment and try to mentally picture the circumstances surrounding the crime.	93.3	88.8
5. Tell everything	At the beginning of the interview, I instruct the witness to tell me everything they know about the crime, even if it may seem trivial.	77.0	77.3

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6. Place of interview	I select a place to interview the witness where they will not be distracted by other people or things in the environment.	86.7	83.4
7. Advance information	I would provide crime-relevant information to the witness before the interview to enhance their memory. (R)	19.7	25.3
8. Tailoring questions	During the interview, I deliberately try to tailor my questions to what the witness is saying. For example, if the witness is thinking or talking about the perpetrator's car, I ask questions only about the car and not some other aspect of the incident, such as the perpetrator's appearance.	88.5	87.5
9. Interrupting a witness	During the interview, I will interrupt a witness if I think the witness is providing trivial information or if I think of an important question to ask. (R)	13.1	18.1
10. Confidence	I ask how confident the witness is about his/her account.	78.7	80.7
11. Avoid discussion	Before ending an interview, I instruct the witness to avoid discussing the details of the incident with other witnesses.	83.6	75.4
12. Contact information	I left my contact information to the witness and tell him/her to contact me if s/he thinks of any more information after the interview.	91.8	90.7
Eyewitness Identification Practice (20 items, 1 not scored)			

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1. Advance filtering	When there is no other evidence, I would show the witness pictures of potential suspects in this area before the identification process. (R)	19.3	30.2
2. Advance exposure	When there is a prime suspect, I would show the witness the picture/video footage of this suspect before the identification process. (R)	20.3	21.8
3. Seeing suspect first	Before a live lineup, I would let the witness see the suspect first before the identification process. (R)	26.3	34.1
4. Advance information	I would provide crime-relevant information to the witness before the interview to help them remember who the suspect is. (R)	11.9	14.7
5. No double-blind	I know who the suspect is when I conduct a photo lineup. (R)	8.5	14.7
6. Attorney Present	During the identification procedure, I allow the suspect's attorney to be present.	76.3	68.1
7. Multiple suspect	If I have more than one potential suspects for a crime, I will put all the suspects in one photo lineup for the witness. (R)	5.1	16.3*
8. Minimal effort	When making a record of the identification, I started with previous files and only replace the suspect's picture. (R)	16.9	23.3

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9. Post-lineup confidence	If an eyewitness identifies a suspect in the photo array, I ask how confident he or she is about the identification.	81.4	76.1
10. Post-lineup feedback	When an eyewitness chooses the suspect, I may tell them something like 'We thought he was the one'. (R)	37.3	45.9
11. Confirm before interview	I would ask the witness first if the suspect is the perpetrator before conducting the interview. (R)	27.1	23.5
12. Witness-suspect relation	I would conduct the identification procedure regardless if the witness knows the suspect or not.	86.4	80.4
13. Strategy for selecting fillers	I use fillers for the photo lineup that fit the eyewitness's description of the perpetrator.	36.1	45.8
14. Masking facial features	I would mask the filler photos with the same distinct facial features (such as a spot on the face) as the suspect.	59.0	56.3
15. Randomise lineup pictures	I randomise the sequence of photos presented to witness in a photo lineup.	57.4	68.5
16. Seriousness	The seriousness of crime would affect how I arrange an identification. (R)	15.3	28.7*
17. Crime type	The type of crime would affect how I arrange an identification. (R)	16.9	26.9

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18. Evidence strength	The amount of evidence I have would affect how I arrange an identification. (R)	15.3	18.5
19. Picking filler instead of suspect	When a witness indicated one of the fillers as the perpetrator instead of the suspect, I would: (1) just record it honestly (correct). (2) show them some relevant evidence and ask them to do the identification again using the same spread (incorrect). (3) show them some relevant evidence and ask them to do the identification again after replacing the fillers (incorrect). (4) others (incorrect).	41.8	44.6
20. Least amount of evidence (not scored)	What is the least amount of evidence you need before you are willing to show a photo lineup to a witness who may later be used in court to make an identification of the defendant? I will show a photo lineup to a witness if (Please check one): (1) I have no evidence about who the perpetrator is. (2) I have a hunch that the suspect is the perpetrator.	Percentage of response for each option: (1) 1.9% (2) 28.8%	Percentage of response for each option: (1) 2.8% (2) 21.5%

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(3) I have some evidence that the suspect is the perpetrator.	(3) 30.8%	(3) 22.5%
(4) I have probable cause to believe the suspect is the perpetrator.	(4) 38.5%	(4) 53.3%

Note: (R) Indicates the item is reversely scored.

* $p < .05$.

** $p < .01$.

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Table 3.

Frequency (Mean), standard deviation and prevalence of reported use of each type of lineups by trained and untrained officers.

	Trained officers		Untrained officers		All officers	
	Mean (<i>SD</i>)	Prevalence	Mean (<i>SD</i>)	Prevalence	Mean (<i>SD</i>)	Prevalence
Show-ups	1.00 (<i>2.19</i>)	17 (29.8%)	2.31 (<i>5.90</i>)	160 (41.3%)	2.16 (<i>5.53</i>)	177 (39.8%)
Live lineups	0.14 (<i>0.55</i>)	4 (8%)	0.33 (<i>2.02</i>)	29 (7.5%)	0.30 (<i>1.87</i>)	33 (7.5%)
Single photo identification	1.37 (<i>2.71</i>)	171 (43%)	2.97 (<i>7.33</i>)	16 (28.6%)	2.77 (<i>6.90</i>)	187 (41.8%)
Photo lineups	8.34 (<i>10.09</i>)	40 (71.4%)	8.42 (<i>12.66</i>)	296 (71.5%)	8.65 (<i>13.10</i>)	336 (71.5%)
Mugshot searches	4.30 (<i>8.96</i>)	27(48.2%)	5.61 (<i>13.16</i>)	201 (49.6%)	5.51 (<i>12.66</i>)	231 (50.1%)
Composite sketches	0.43 (<i>1.62</i>)	6 (11.7%)	0.18 (<i>1.87</i>)	14 (3.6%)	0.21 (<i>1.83</i>)	20 (4.5%)

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Table 4.

Pearson's correlations between officers' age, year of serving in the police, knowledge and practice.

	1	2	3	4
1. Age	-			
2. Year serving in police	.938**	-		
3. Knowledge on eyewitness testimony	-.111*	-.109*	-	
4. Eyewitness interview practice	.060	.085	.147*	-
5. Eyewitness identification practice	.003	.010	.030	-.012

* $p < .05$, ** $p < .01$, two-tailed.

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Table 5.

Significant Multivariate Effects

	Pillai's Trace	<i>F</i>	<i>df</i>	Error <i>df</i>	<i>p</i>
Officers' training experience	.020	3.377	3	487	.018
Years of practice in the police	.024	4.006	3	487	.008

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Table 6.

Summary of Univariate Effects

Dependent Variables	<i>F</i>	<i>df</i>	Error <i>df</i>	<i>p</i>
Knowledge on witness testimony	4.419	1	489	.036
Witness interview practice	.418	1	489	.488
Witness identification practice	4.922	1	489	.027

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Table 7.

Mean and standard deviation of outcome variables by officers' training experience

	Trained		Untrained		All	
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>
Knowledge on witness testimony (12 items)						
Adequate knowledge (70% correct) = 8.4	8.25	1.71	8.77	1.91	8.71	1.89
Witness interview practice (14 items)						
Adequate knowledge (70% correct) = 9.8	8.92	1.94	8.75	1.91	8.77	1.91
Witness identification practice (19 items)						
Adequate knowledge (70% correct) = 13.3	6.37	2.59	7.22	2.76	7.12	2.75