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Knowledge about eyewitness testimony: a survey of Indonesian police officers and psychologists

Nathanael Sumampouw a,b,c, Ludvig Daæ Bjørndal d, Svein Magnussen d, Henry Otgaar b,c and Tim Brennen d

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ABSTRACT
Faulty eyewitness testimony can be a notorious source of mistakes in the legal system potentially leading to wrongful convictions and miscarriages of justice. The current study examined the knowledge of a sample of police officers (n = 270) and psychologists (n = 63) in Indonesia regarding factors known to influence the validity of eyewitness testimony given by adults and children. Previous studies have documented that police and psychologists in Western countries have less-than-optimal knowledge about the psychology of eyewitness testimony. Similarly, our non-Western sample also demonstrated a lack of knowledge that may be damaging in the legal context such as the belief that recall of minor details indicates accuracy of memory. For both adult and child eyewitnesses, the psychologists performed significantly better than the police but at the item level these differences were small in size. Intriguingly, we also found that psychologists were more likely than the police officers to endorse the item about repression of memories. The findings show the need for teaching on the psychology of eyewitness testimony for professional groups involved in the legal arena.

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KEYWORDS
Police; psychologists; eyewitness testimony; children; Indonesia

Memory-based testimony and eyewitness evidence are often crucial in criminal trials where legal and non-legal professionals (e.g. psychologists, social workers) are involved. Reliance on memory-based testimony is especially heightened when there is little or no forensic evidence available to support claims from witnesses and suspects (Otgaar & Howe, 2018). However, when such testimony contains inaccuracies, it can contribute to wrongful convictions and miscarriages of justice (Cooper et al., 2019). Hence, it is of vital importance that both legal and non-legal professionals involved in the evaluation of eyewitness testimony and evidence have sound and correct knowledge of important factors that may affect them.

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Absolute reliance on eyewitness statements can be problematic because memories are reconstructive which under certain conditions (e.g. suggestive interviewing) might lead to the formation of false memories, that is, memories for non-experienced details and events (Loftus, 2005). Cases such as the McMartin preschool case in the U.S. concerning alleged child sexual abuse (Garven et al., 1998) and which ended with no convictions have over the past decades sparked a vast amount of empirical research into the validity and fallibility of eyewitness memory. However, there continue to be gaps between what scientific research tells us about for example the reliability of memory, what practitioners believe, and what triers of fact need to know about memory in order to give proper weight to memory evidence (Otgaar et al., 2019; but see also Brewin et al., 2019).

**Research on knowledge of eyewitness memory**

Researchers have examined legal professionals’ knowledge of eyewitness memory in various countries and regions across the world, including China (Jiang & Luo, 2016; Wise et al., 2010), France (Dodier et al., 2019), Italy (Magnussen et al., 2013), Scandinavia (Granhag et al., 2005; Magnussen et al., 2008), and the U.S. (Wise & Safer, 2004). In general, these surveys have found that legal professionals lack sufficient knowledge of important factors that reduce the accuracy of eyewitness testimony, and that the knowledge of legal professionals is not superior to the knowledge of students, lay people, jury or prospective jury members (e.g. Magnussen et al., 2010; Wise & Safer, 2010). We briefly review such studies with police and psychologists below.

Wise et al. (2011) reported that a high proportion of US law enforcement officers mistakenly agreed that a witness’s ability to recall minor details about a crime is a good indicator of the entire accuracy of the testimony, and only about half correctly agreed with the statement that it is a harder for a witness to recognize a perpetrator of a crime who is wearing a hat. Benton et al. (2006) found low agreement rates among responses of law enforcement officers with that of eyewitness experts for several items, such as the relationship between confidence and accuracy, weapon focus and the forgetting curve. Granhag et al. (2005) noted that Swedish police officers lacked sufficient knowledge concerning certain eyewitness issues, including the malleability of memory, the increased risk of inaccurate identification in a simultaneous compared with sequential lineup, and the effects of emotion on remembering details of an incidence. Thus, studies have identified gaps in knowledge regarding eyewitness memory among police and law enforcement officers.

Examining knowledge of eyewitness memory and testimony among non-legal professionals such as psychologists and psychiatrists is also highly relevant as they often play an important role in criminal proceedings. Magnussen and Melinder (2012) found that Norwegian psychologists were no more knowledgeable than laypeople or trial judges regarding issues of eyewitness memory. In a review paper, Otgaar et al. (2019) reported that a substantial proportion of psychologists, from 59% to 96%, endorsed erroneous beliefs about repressed memories (the putative phenomenon where traumatic memories, for instance of committing murder, become unconsciously blocked), and recovered memories (the putative phenomenon where one remembers traumatic events of which one previously had absolutely no recollection). Furthermore, Melinder and Magnussen (2015) noted that only 30% of regular psychologists and 39% of
psychologists and psychiatrists serving as expert witnesses in court discounted the existence of repressed memories.

Knowledge about children as witnesses is expanding with increasing research on this topic, and because there is a relatively stable scientific consensus on several aspects in this field (Kassin et al., 2001), we decided to include several items on children’s testimony in the present study. Melinder et al. (2004) studied the beliefs and opinions about children’s memory, suggestibility and credibility of a group of practitioners working with children within the Norwegian legal system, including police and psychologists. They reported that police officers expressed greater belief in children being able to be good witnesses whereas psychologists were more skeptical, especially regarding younger children. Interestingly, a recent study showed that, on the topic of children as eyewitnesses, defense lawyers were more skeptical than psychologists (Kostopoulos et al., 2019).

The present study

This study compared the knowledge of police officers and clinical psychologists regarding factors that may affect eyewitness evidence in children and adults. Almost all of the surveys that have assessed knowledge and beliefs related to these topics among legal and non-legal professionals have been conducted in WEIRD countries (Western, Educated, Industrialized, Rich and Democratic; see Henrich et al., 2010). Two exceptions are studies that investigated this issue among legal professionals in China (Jiang & Luo, 2016; Wise et al., 2010) and they also reported limited eyewitness knowledge in judges and defense attorneys. The present study surveys the knowledge and beliefs of Indonesian police officers in comparison to psychologists regarding eyewitness topics and thus makes Indonesia the second non-WEIRD country to be surveyed in this way.

There are at least three reasons why more non-WEIRD studies on this topic are timely. At a general level, psychology’s pretensions to make claims of universality require studies also to be carried out in non-WEIRD contexts. Also, in contrast to many Western systems, the training of Indonesian police officers contains little or no exposure to relevant topics in psychology. It is at present unclear whether they will perform at similar levels as police officers in Western studies, or will they be worse? Finally, research has shown that culture can affect the functioning of memory (Wang, 2021) with collectivistic cultures (such as Indonesia) being more likely to encode the context of events while Western cultures are more likely to remember salient details (Nisbett & Masuda, 2003). The consequence of these differences in memory as a function of culture might also drive differences in people’s beliefs about the functioning of memory.

Importantly, the current study is also the first non-WEIRD study comparing law enforcement officers to psychologists, who, due to their curriculum would be expected to have superior knowledge on this topic. In the Indonesian national curriculum for a bachelor in psychology, there are compulsory courses on developmental and cognitive psychology (AP2TPI, 2019), which both cover the topic of memory.

Indonesia is a particularly interesting country in which to examine beliefs concerning eyewitness memory because the country still bears the imprint of centuries long Dutch colonial rule, which is reflected in the Indonesian Civil Code and Criminal Code. After independence in 1945, Indonesia established its modern law, modifying existing Dutch legal principles, drawing from the customary law (adat) that existed before colonisation, as well
as Islamic law (sharia) which applies to Muslims (Butt & Lindsey, 2018). Thus it is a non-WEIRD country with Western, local and Islamic influence.

**Method**

**Participants**

When the study was initiated in 2017, there was no research ethics committee at the Faculty of Psychology, Universitas Indonesia (FPsi UI), where the first author works, or at the Police Science College Indonesian National Police (STIK-PTIK). We obtained an approval letter from the dean of FPsi UI. Then, a formal letter asking permission to conduct the survey with the research proposal and questionnaire including an informed consent form was sent to the head of the national board of the Indonesian Clinical Psychologists association and to the head of the STIK-PTIK. We informed them that participation in the survey was voluntary and that no identifying data would be stored. The researchers had no professional relationship with the potential respondents. We were granted permission to conduct the study from both the Indonesian Clinical Psychologists association and the head of STIK-PTIK. The study followed the principles of the Declaration of Helsinki.

Participants completed the online questionnaire in Indonesian that was posted on Google Form. There were two waves of data collection, which were conducted during 2017 and 2018. First, the online questionnaire link was distributed via email to members of Indonesian Clinical Psychologists Association. Second, data was collected via either online questionnaire link or booklet on four different occasions (one occasion with psychologist and three occasion with police officers) at either seminar or lecture sessions delivered by the first author. The topics of these sessions were not related to those assessed in the current survey (Table 1).

In total, 343 responses were obtained, of which 333 were included for the final analysis. The data can be accessed at: https://osf.io/ab3wf. Ten entries were excluded after data cleaning because of multiple submission from the same respondents. Respondents were 232 male and 101 female professionals. The age of the participants ranged from 20 to 65 years with a mean of 31.9 (SD = 6.28). The respondents consisted of two distinct professional groups: a police group (n = 270; 81%) and a psychologist group (n = 63; 19%). There was a statistically significant difference between number of years of work

<table>
<thead>
<tr>
<th>Table 1. The demographics for the two groups.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Police (n = 270; 81%)</strong></td>
</tr>
<tr>
<td><strong>Gender</strong></td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td><strong>Age</strong> (x = 31.9, SD = 6.28, Range = 20–65)</td>
</tr>
<tr>
<td>20–30</td>
</tr>
<tr>
<td>31–40</td>
</tr>
<tr>
<td>Above 40</td>
</tr>
<tr>
<td><strong>Years of work</strong> (Median = 7.4, SD = 5.05, Range = 1–37)</td>
</tr>
<tr>
<td>&lt;= 2 years</td>
</tr>
<tr>
<td>3–5 years</td>
</tr>
<tr>
<td>6–10 years</td>
</tr>
<tr>
<td>&gt;10 years</td>
</tr>
</tbody>
</table>
experience in the psychologist group ($M = 9.62; SD = 8.99$) and the police group ($M = 6.88; SD = 3.40$), $t(327) = 3.92, p < .001, d = .55$.

A majority of respondents (66%) reported that they had never read an article, a book or attended a seminar on eyewitness psychology or the application of memory in legal settings. Moreover, a majority of respondents (63%) reported no previous exposure to educational materials related to children as witnesses and eyewitness memory. A majority of respondents (65%) had previously been directly involved in a case in which children appeared as witnesses. In the group comprising psychologists only 13 respondents (20%) had experience with being expert witnesses in a trial. They were mostly clinical psychologists working in a hospital or private clinic, or at a university as a lecturer.

**Materials**

The first section of the questionnaire comprised items assessing knowledge about eyewitness testimony and eyewitness memory, adapted from Magnussen et al. (2008) and Wise and Safer (2004). These were presented as statements (e.g. an eyewitness’s perception and memory for an event may be affected by his or her attitudes and expectations). As Indonesia has adopted a civil law legal system in which decisions are made by a panel of three judges (and not juries), we adapted item 12 (‘jurors can distinguish between accurate and inaccurate eyewitnesses’), changing ‘jurors’ to ‘judges’, to better fit the context of our study. Respondents were asked to indicate if they believed these statements to be true or false or if they agreed or disagreed. Correct responses were coded as 1 and incorrect responses were coded as 0. For each participant, we calculated a total score and a correction-for-guessing score to eradicate the chance achievement involved in the scores. The formula is: ‘$D Y / k – 1$’ which D is the number of questions answered correctly, Y is the number of questions answered incorrectly, and k is the number of choices (Şenel et al., 2015). The 12 items evaluating knowledge of these topics are in Appendix 1. A similar questionnaire has previously been administered to assess knowledge levels among Italian defense attorneys (Magnussen et al., 2013), Norwegian judges, jurors and general public (Magnussen et al., 2008, 2010; Wise & Safer, 2004), and U.S. judges (Wise & Safer, 2010). One change that we made was to remove the neutral ‘neither agree nor disagree’ option. Although this complicates comparisons with previous data, it was deemed necessary to prevent participants from answering neutrally, which was a real possibility given the esoteric nature of the questions for many in this sample. This forced choice procedure has been used in previous related work as well (e.g. see Erens et al. (2020) using a forced choice method with a Dutch sample).

The second section consisted of 12 items assessing knowledge and beliefs about children as eyewitnesses (numbered 13–24). All items were also used by Kostopoulos et al. (2019). Five items (no. 13, 14, 15, 17, 18) were about the reliability of child witness accounts based on current scientific knowledge. Another five items (no. 19, 20, 21, 22, 24) were about child reliability issues that were judged as less straightforward according to current scientific knowledge (Kostopoulos et al., 2019). Finally, two items (no. 16, 23) were about indicators of credibility of young child witnesses. For the items in this entire section, respondents were instructed to think of a 3- to 6-year-old child in answering the question and then indicated their level of agreement using a 5-point Likert scale (from $1 = strongly disagree$ to $5 = strongly agree$). Responses were recoded to three
categories (1 = strongly disagree or disagree, 2 = neither agree nor disagree, 3 = agree or strongly agree) for analysis. Responses were coded as correct if participants’ response was either agree or strongly agree to a favorable statement and either disagree or strongly disagree to an unfavorable statement. The 12 items (numbered 13–24) evaluating knowledge related to children as witnesses are presented in Appendix 2.

Respondents were also asked to provide demographic information concerning their age, gender, profession, years of work experience, estimated number of cases in which respondents had worked with children as witnesses, and experience with seminars or educational materials about eyewitness memory and children as witnesses. Furthermore, we asked respondents of their opinion regarding the importance of more teaching in psychology and law for lawyers, to provide an estimate of the number of wrongful convictions that would be partly influenced by eyewitness error (out of 100), and agreement or disagreement with the statement that only in exceptional circumstances should a defendant be convicted of a crime on the basis of eyewitness testimony alone. The items were translated to Indonesian following a back-translation procedure. The first author translated the English questionnaire into Indonesian. Subsequently, the items were back translated by a different translator. Final checks and changes were discussed and agreed upon by the first author and the translator.

Results

The participants’ responses were collated and coded for accuracy. Table 2 presents the percentages of correct answers by the police group and the psychologist group for the items assessing knowledge of factors that affect eyewitness testimony and memory. Tables 3 and 4 present the percentage of correct answers for both groups for items assessing knowledge and beliefs related to children as eyewitnesses.

Eyewitness factors

On the 12 eyewitness memory questions, the psychologists group had a higher average knowledge score (M = 7.63; SD = 1.69; CI 95% = [7.21, 8.06]; M_corrected-for-guessing = 3.27; SD

<table>
<thead>
<tr>
<th>Topic</th>
<th>Police</th>
<th>Psychologist</th>
<th>χ²</th>
<th>P</th>
<th>V</th>
<th>OR [95% CI]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Effects of a hat*</td>
<td>86%</td>
<td>65%</td>
<td>12.98</td>
<td>&lt;.001</td>
<td>.21</td>
<td>1.16 [−1.78 to −0.54]</td>
</tr>
<tr>
<td>2. Minor details*</td>
<td>2%</td>
<td>11%</td>
<td>11.97</td>
<td>.001</td>
<td>.21</td>
<td>2.12 [−3.38 to −0.87]</td>
</tr>
<tr>
<td>3. Attitudes and expectations</td>
<td>87%</td>
<td>97%</td>
<td>4.01</td>
<td>.045</td>
<td>.12</td>
<td>1.51 [0.62–2.97]</td>
</tr>
<tr>
<td>4. Conducting line-ups*</td>
<td>29%</td>
<td>56%</td>
<td>15.54</td>
<td>&lt;.001</td>
<td>.22</td>
<td>1.14 [0.58–2.07]</td>
</tr>
<tr>
<td>5. Effects of post-event information*</td>
<td>83%</td>
<td>98%</td>
<td>9.12</td>
<td>.003</td>
<td>.18</td>
<td>2.57 [0.57–4.57]</td>
</tr>
<tr>
<td>6. Confidence-accuracy*</td>
<td>9%</td>
<td>37%</td>
<td>28.57</td>
<td>&lt;.001</td>
<td>.30</td>
<td>1.72 [−2.39 to −1.07]</td>
</tr>
<tr>
<td>7. Confidence malleability</td>
<td>65%</td>
<td>79%</td>
<td>4.08</td>
<td>.043</td>
<td>.12</td>
<td>.72 [0.66–1.38]</td>
</tr>
<tr>
<td>8. Weapon focus</td>
<td>52%</td>
<td>56%</td>
<td>.15</td>
<td>.697</td>
<td>.03</td>
<td>.15 [−.40 to 0.70]</td>
</tr>
<tr>
<td>9. Mug-shot induced bias*</td>
<td>96%</td>
<td>84%</td>
<td>10.12</td>
<td>.001</td>
<td>.19</td>
<td>1.49 [−2.40 to −0.58]</td>
</tr>
<tr>
<td>10. Line-up presentation format</td>
<td>77%</td>
<td>70%</td>
<td>.94</td>
<td>.332</td>
<td>.06</td>
<td>.35 [−.96 to .26]</td>
</tr>
<tr>
<td>11. Forgetting curve*</td>
<td>84%</td>
<td>62%</td>
<td>14.27</td>
<td>&lt;.001</td>
<td>.22</td>
<td>1.18 [−1.78 to −0.57]</td>
</tr>
<tr>
<td>12. Judges distinguish eyewitnesses*</td>
<td>16%</td>
<td>49%</td>
<td>29.85</td>
<td>&lt;.001</td>
<td>.31</td>
<td>1.61 [−2.19 to −1.01]</td>
</tr>
<tr>
<td>Average accuracy across items</td>
<td>57%</td>
<td>64%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Bonferroni correction for multiple comparisons was applied to the p values [.05/12 = .004] and the significance threshold was set at .004.*p < .004. (V) indicates Cramer’s V effect size.
CI 95% = [2.44, 4.10]) than the police officers group (M = 6.84; SD = 1.64; CI 95% = [6.65, 7.04]; M corrected-for-guessing = 1.69; SD = 3.29; CI 95% = [1.30, 2.08]). An independent samples t-test revealed both mean differences, before and after correction, to be statistically significant, t(331) = 3.41, p = .001, d = .48.

For the police officers group, the percentage of correct responses on individual items ranged from 2% (Minor details item) to 96% (Mug-shot induced bias item), with an average accuracy of 57% across items. For the psychologists group, the percentage of correct responses ranged from 11% (Minor details) to 98% (the statement that post-event information can impact eyewitness testimony) with an average accuracy of 64% across items. For three items, the police officers group had a statistically significant higher percentage of correct responses compared with the psychologists group (assessing the effects of a hat; knowledge of mug-shot induced bias; and knowledge of the

### Table 3. Children as eyewitnesses topics and percentages of correct answers for the police and psychologist groups.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Police (e)</th>
<th>Psychologist (e)</th>
<th>χ²</th>
<th>P</th>
<th>V</th>
</tr>
</thead>
<tbody>
<tr>
<td>13. Tell the truth</td>
<td>78% (.2)</td>
<td>71% (−.5)</td>
<td>2.11</td>
<td>.35</td>
<td>.08</td>
</tr>
<tr>
<td>14. Remember more details</td>
<td>25% (−.3)</td>
<td>30% (.6)</td>
<td>2.66</td>
<td>.26</td>
<td>.09</td>
</tr>
<tr>
<td>15. More vulnerable to influence</td>
<td>81% (0)</td>
<td>79% (−.1)</td>
<td>.81</td>
<td>.96</td>
<td>.02</td>
</tr>
<tr>
<td>16. Having verbal skills is more credible</td>
<td>32% (.1)</td>
<td>30% (−.2)</td>
<td>.24</td>
<td>.89</td>
<td>.03</td>
</tr>
<tr>
<td>17. Less accurate memory*</td>
<td>55% (−.4)</td>
<td>65% (8)</td>
<td>12.05</td>
<td>.002</td>
<td>.19</td>
</tr>
<tr>
<td>18. Less susceptible to authority influence*</td>
<td>30% (−1.8)</td>
<td>64% (3.6)</td>
<td>35.68</td>
<td>&lt;.001</td>
<td>.33</td>
</tr>
<tr>
<td>19. Detailed and rich memories are correct*</td>
<td>12% (−1.3)</td>
<td>29% (2.7)</td>
<td>25.47</td>
<td>&lt;.001</td>
<td>.28</td>
</tr>
<tr>
<td>20. Remember traumatic memories worse than adults*</td>
<td>20% (−1.5)</td>
<td>43% (3)</td>
<td>21.13</td>
<td>&lt;.001</td>
<td>.25</td>
</tr>
<tr>
<td>21. Repression of traumatic memories*</td>
<td>57% (1.3)</td>
<td>27% (−2.7)</td>
<td>18.53</td>
<td>&lt;.001</td>
<td>.24</td>
</tr>
<tr>
<td>22. Later understanding of an assault</td>
<td>77% (−.1)</td>
<td>81% (3)</td>
<td>.69</td>
<td>.71</td>
<td>.05</td>
</tr>
<tr>
<td>23. Easier to detect children lying</td>
<td>14% (−1.1)</td>
<td>29% (2.4)</td>
<td>9.28</td>
<td>.01</td>
<td>.17</td>
</tr>
<tr>
<td>24. More likely to give true accounts*</td>
<td>7% (−.6)</td>
<td>13% (1.2)</td>
<td>18.81</td>
<td>&lt;.001</td>
<td>.24</td>
</tr>
<tr>
<td>Average accuracy across items</td>
<td>41%</td>
<td>47%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Bonferroni correction for multiple comparisons was applied to the p values [.05/12 = .004] and the significance threshold was set at .004. * p < .004.

(V) Indicates Cramer’s V effect size; (e) refers to standardized residual.

For the police officers group, the percentage of correct responses on individual items ranged from 2% (Minor details item) to 96% (Mug-shot induced bias item), with an average accuracy of 57% across items. For the psychologists group, the percentage of correct responses ranged from 11% (Minor details) to 98% (the statement that post-event information can impact eyewitness testimony) with an average accuracy of 64% across items. For three items, the police officers group had a statistically significant higher percentage of correct responses compared with the psychologists group (assessing the effects of a hat; knowledge of mug-shot induced bias; and knowledge of the

### Table 4. Children as eyewitnesses topics: distribution of responses (in percentage).

<table>
<thead>
<tr>
<th>Topic</th>
<th>Strongly agree (1)</th>
<th>Agree (2)</th>
<th>Neither agree nor disagree (1)</th>
<th>Disagree (2)</th>
<th>Strongly disagree (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>13. Tell the truth</td>
<td>26</td>
<td>14</td>
<td>52</td>
<td>57</td>
<td>10</td>
</tr>
<tr>
<td>14. Remember more details</td>
<td>12</td>
<td>8</td>
<td>51</td>
<td>44</td>
<td>12</td>
</tr>
<tr>
<td>15. More vulnerable to influence</td>
<td>18</td>
<td>11</td>
<td>63</td>
<td>68</td>
<td>5</td>
</tr>
<tr>
<td>16. Having verbal skills is more credible</td>
<td>8</td>
<td>8</td>
<td>46</td>
<td>46</td>
<td>14</td>
</tr>
<tr>
<td>17. Less accurate memory*</td>
<td>3</td>
<td>0</td>
<td>30</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>18. Less susceptible to authority influence*</td>
<td>8</td>
<td>5</td>
<td>54</td>
<td>16</td>
<td>8</td>
</tr>
<tr>
<td>19. Detailed and rich memories are correct*</td>
<td>19</td>
<td>8</td>
<td>60</td>
<td>39</td>
<td>9</td>
</tr>
<tr>
<td>20. Remember traumatic memories worse than adults*</td>
<td>28</td>
<td>11</td>
<td>48</td>
<td>37</td>
<td>4</td>
</tr>
<tr>
<td>21. Repression of traumatic memories*</td>
<td>4</td>
<td>11</td>
<td>31</td>
<td>48</td>
<td>8</td>
</tr>
<tr>
<td>22. Later understanding of an assault</td>
<td>11</td>
<td>14</td>
<td>66</td>
<td>68</td>
<td>7</td>
</tr>
<tr>
<td>23. Easier to detect children lying</td>
<td>15</td>
<td>9</td>
<td>64</td>
<td>52</td>
<td>7</td>
</tr>
<tr>
<td>24. More likely to give true accounts*</td>
<td>15</td>
<td>10</td>
<td>69</td>
<td>51</td>
<td>9</td>
</tr>
</tbody>
</table>

Note: (1) Police (2) Psychologist.

**Bold** indicates the most correct response according to current research.

The Bonferroni correction for multiple comparisons was applied to the p values [.05/12 = .004] and the significance threshold was set at .004. * p < .004.
forgetting curve). For five items, the psychologists group had a statistically significant higher proportion of correct responses compared with the police officers groups (minor details; conducting line-ups; effects of post-event information; the confidence-accuracy relationship; and for the item assessing beliefs related to jurors’ ability to distinguish eyewitnesses). No statistically significant difference in accuracy was observed for four items: attitudes and expectations; confidence malleability; weapon focus; and line-up presentation format.

**Children as eyewitnesses**

Similar to the domain of eyewitness memory in general, the average knowledge score of the psychologist group ($M = 5.60; SD = 1.55; CI 95% = [2.56, 8.63]$) was higher than the police group ($M = 4.88; SD = 2.06; CI 95% = [0.84, 8.91]$). An independent samples t-test revealed this difference to be statistically significant, $t (331) = -3.11, p = .002, d = .37$.

For the police officers group, the percentage of correct responses for items related to children as eyewitnesses ranged from 7% (for the statement that a child witness being interviewed is more likely to give true accounts than adults) to 81% (for the statement that a child witness is more vulnerable to influence than adults) with an average accuracy of 41%. For the psychologists, the percentages of correct responses ranged from 13% (for the statement that a child witness being interviewed is more likely to give true accounts than adults) to 81% (for the statement that children that experience assault when too young to understand this can later come to understand the experience as an assault) with an average accuracy of 47%.

For five items, the psychologist group had a statistically significant higher percentage of correct responses when compared with the police group: less accurate memory; less susceptible to authority influence; detailed and rich memories means the child often remember correctly; children remember traumatic memories worse than adults; and for the statement that children are more likely to give true accounts of events.

Interestingly, the police group had a higher proportion of correct responses than the psychologist group for a single item only: the repression of traumatic memories. No statistically significant difference in accuracy was observed for the remaining six items, comprising the following statements: children usually tell the truth about crimes they have experienced; children remember more details than adults about events they experienced; children’s memory for an event is more vulnerable to subsequent influence than adults; a child who has the verbal skills of an older child is perceived as more credible; young victims can come to understand their experience as an assault later on as adults; and it is easier to detect children lying than adult lying.

**Correlates of knowledge scores**

A Pearson $r$ correlational analysis revealed a non-significant relationship between knowledge of eyewitness factors and knowledge of children as eyewitnesses. We conducted $t$-test analyses to explore the relationships between knowledge score and other dichotomous variables: the personal exposure experience to educational material; the perception of the importance of psychology and law teaching for lawyers and agreement that only in exceptional circumstances a defendant could be convicted solely on the basis of
eyewitness testimony. Moreover, we conducted Pearson $r$ correlational analyses exploring the relationships between knowledge scores and other continuous variables, including years of experience and the estimated proportion of wrongful convictions ($M = 20.59; SD = 21.39$). We did not find any statistically significant relationship between knowledge scores and these other variables.

**Discussion**

In the current study, we examined the knowledge of Indonesian police officers and psychologists regarding eyewitness factors and children as eyewitnesses. The present study is the first to explore knowledge of these topics among professionals in Indonesia, and the first to explore this among police officers and psychologists in a non-WEIRD context. In both domains, the psychologist group scored significantly higher than the police group, yet overall the results also suggest that both groups lacked knowledge about important factors affecting the memory of eyewitnesses, and about children as eyewitnesses.

The average accuracy for items assessing knowledge of eyewitness factors in the police officers group was 57%, and the average accuracy in the psychologists group was 64%. There was a statistically significant difference in accuracy between these two groups so that, overall, psychologists were more knowledgeable concerning eyewitness testimony issues than police officers. At the level of items, accuracy was higher for seven items in the psychologists group, and for three items in the police officers group. Our analyses showed that the groups performed significantly differently on many items but also that these differences had mainly small effect sizes.

Low accuracy was observed for both groups with regard to several items that concerned issues that are well-established within the field. The lowest accuracy was observed for the statement of minor details as an indicator of accuracy, where the empirical evidence is quite strong against the claim (Deffenbacher et al., 2004; Wells & Olson, 2003). Remarkably, only four police participants and seven psychologist respondents provided the correct answer. Even though the psychologists group scored higher than the police group, only 11% answered correctly. Furthermore, the majority of respondents (91% in the police group; 63% in the psychologists group) incorrectly endorsed the statement that eyewitness’s confidence is a good predictor of accuracy of identification. The research literature shows a weak relationship between eyewitnesses’ confidence and their accuracy (Deffenbacher, 1991; Memon et al., 2003; Sporer et al., 1995), notwithstanding evidence that the relationship is stronger when optimal procedures are followed (Wixted & Wells, 2017). Moreover, expressions of confidence obtained in the courtroom are likely to be misleading (Brewer, 2006).

The scientific consensus regarding whether judges are able to distinguish between accurate and inaccurate eyewitnesses would be that they are not able to do so (Ekman & O’Sullivan, 1991; Granhag et al., 2005; Wise & Safer, 2004). Somewhat worryingly, a large majority (84%) of the police sample (and 51% of the psychologist sample) agreed incorrectly with this statement. Perhaps police participants as actors in the legal system are particularly biased to overestimate the ability of judges to identify whether eyewitness statements are accurate or not.

Low accuracy was also observed for the item concerning the use of a double-blind line-up procedure. It is well-documented that failure to use a double-blind procedure risks
contaminating any identifications (Kovera & Evelo, 2017). Around half of the participants from the psychologists group and only around one-third of police participants correctly agreed with this item. The low proportion of correct responses in the police group is quite alarming, as improper practices during forensic investigation are well-known to be a factor that contributes to wrongful convictions (e.g. Saks & Koehler, 2005).

The present data allowed a comparison between Indonesian police and psychologists with their counterparts elsewhere because several studies have used identical items. Recall that in the present study the items were forced choice, with no neutral alternative. This will give the Indonesian sample an advantage over participants who had such a response alternative. Benton et al. (2006) evaluated knowledge in a U.S. sample of law enforcement personnel and our data are quite similar to theirs. On the issues of the influence of attitudes and expectations on memory, post-event information and the malleability of confidence, both samples gave high proportions of correct responses. Thus, for these items, the results of the current study suggest a comparable level of knowledge among Indonesian and U.S. police officers. On the other hand, comparing items also used by Wise et al. (2011) in a sample of US police officers, we observed lower accuracy for the items on the topics of minor details and the confidence-accuracy relation, despite the easier question format used here.

As for knowledge of eyewitness factors, the average accuracy with regard to the items assessing knowledge of children as eyewitness in criminal cases was low for both groups in the current study. Overall accuracy for psychologists (47%) was significantly higher than the accuracy of the police group (41%). A large majority of respondents in both groups incorrectly answered the three items concerning the reliability of child witness accounts. First, they agreed with the statement that children remember more details compared to adults, which is in fact not supported by the evidence. Indeed, it is well-established that adults’ episodic memory is better than children’s, in terms of the number of details reported (Eisen et al., 2007; Pozzulo et al., 2009). Second, few respondents (12% in the police group; 29% in the psychologist group) correctly believed that when a child’s statements are detailed and rich that does not mean that the statements are accurate. Indeed, there is no evidence showing that a detailed and rich statement is a good cue to the memory being correct. For example, Bernstein and Loftus (2009) argued that there were no reliable ways to discern between true and false memories. Therefore, in terms of the present item, it means that detailed and rich memories may for example be based on a false memory or confabulation.

Finally, we observed that very few of the respondents (7% in the police group; 13% in the psychologists group) accurately disagreed with the statement that compared to adults a child witness being interviewed is more likely to provide true accounts of an event. This item was judged as less straightforward by Kostopoulos et al. (2019) as the scientific consensus is less clear. In research on forensic interviewing of children, it is a well-documented result that if a child is interviewed properly according to recommended practice, the child will generally report past experiences correctly. They may report fewer details than older children and adults but with the same proportion of correct statements (Lamb et al., 2018).

Based on the aforementioned findings regarding the general believability of a child witness, the respondents generally believed that children can be good eyewitnesses, which is in line with previous findings (Otgaar et al., 2018). We noticed that a majority of respondents in both groups (55% in the police group; 65% in the psychologist
Nonetheless, it seems that especially the respondents in the police group tend to overestimate children’s ability as witnesses: the majority viewed the child witness as being less susceptible to authority influence, and more likely to give true accounts of an event compared to an adult witness. Whereas 64% of the psychologists correctly rejected the statement that children are less susceptible to influence from authority, only 30% of the police sample did the same. This suggests that police may underestimate the effects of authority on inaccurate statements of children, and may require education in this in order to avoid false statements and false confessions. Furthermore, the majority of respondents in both groups incorrectly asserted that detecting a lie in a child is easier than in an adult. Taken together, these results imply that although respondents generally supported the idea that children can be better eyewitnesses than adults, they may underestimate children’s suggestibility, thereby not showing sufficient appreciation of factors that may lead to inaccurate statements from the children. Similarly, the respondents appeared to overrate our ability to detect lying in children.

A striking finding was also observed regarding the issue of repressed memory, which, although widely believed to exist by laypeople, has received little empirical support (Otgaar et al., 2019). The police group correctly doubted its existence at a higher rate than the psychologists (57% vs. 27%) for this item. This figure is very much in line with Melinder and Magnusson (2015) who reported that 39% of psychologists and psychiatrists who serve as expert witnesses believe, and 30% of those who don’t serve as expert witnesses, expressed disbelief in repressed memories. Similarly, Pathis et al. (2014) noted that a majority of a sample of clinical psychologists believed that traumatic memories are often repressed, compared to lower rates for research-oriented psychologists. Thus, also in a non-WEIRD country psychologists seem to have a more accepting attitude towards the notion of repressed memories than the science warrants.

Although the psychologist group scored slightly better than the police group, we noticed the psychologists’ knowledge of children as eyewitness is still limited. It seems reasonable to assume that the psychologist group would have received more education related to children’s memory and frequently encounters this group as professionals. In the Indonesian national curriculum of bachelor in psychology, there are compulsory courses on developmental and cognitive psychology (AP2TPI, 2019), where both courses cover the topic of memory. Three quarters of the participants in the psychologists group were clinical psychologists. Being a clinician does not guarantee a better understanding of the phenomena of memory (Dodier, 2018; Dodier et al., 2019; Magnusson & Melinder, 2012; Melinder & Magnusson, 2015), and being an expert in clinical psychology by no means automatically means that one is also an expert on memory. Rather clinical psychologists are trained primarily in diagnosing and treating mental disorders, and, as our data also show, they have little exposure to aspects of cognition relevant in legal settings. Yet, Indonesian psychologists are involved in the legal arena as expert witnesses. Thus, this study demonstrates the need for increased training related to eyewitness memory and evidence for this group of professionals.

In our samples of Indonesian police officers and psychologists we observed what may be described as patchy knowledge of eyewitness memory and of how reliable children are as witnesses. We recommend increased training and knowledge transfer for professionals involved in criminal investigations, especially for those working directly with eyewitnesses and children as eyewitnesses. Indeed, education about the science of eyewitness memory
plays a role in correcting false memory beliefs (Sauerland & Otgaar, 2021). Two-thirds of the respondents reported that they had no experience reading an article, a book, or attending a seminar on eyewitness psychology or the application of memory in legal setting. Furthermore, a majority of respondents (63%) also reported having no exposure on the course of children as witnesses and eyewitness memory in their education.

**Limitations**

There are some important caveats associated with our findings. First, some survey items were presented in a forced-choice format: either true or false/agree or disagree. This format allows responses based on guessing without actually understanding the meaning of the statement. However, even with this advantage, the Indonesian police did not outperform their Western counterparts. Second, the number of respondents who were psychologists was relatively low. We faced the logistical difficulty of getting in touch with many of them. We mostly relied on an online platform to collect data from the psychologists group. Given that only 20% of participants in the psychologists group had experience as expert witnesses, perhaps other potential psychologists decided not to participate in the survey because they deemed the topic irrelevant to their professional interests.

**Conclusion**

We found that Indonesian police officers and psychologists had less than optimal knowledge about aspects of eyewitness memory in general, and children as eyewitness in particular. Our findings align with those from other countries showing that professionals possess limited knowledge related with memory in the legal context. Replicating research in the area of legal psychology is needed as most legal psychological research has been conducted in Western countries. An absolute focus on novel results and a corresponding lack of attention to methodology has been implicated as a source of the replicability crisis (Giner-Sorolla, 2012). It is our contention that especially in the area of legal psychology in which research findings can have direct applied relevance, replication work is necessary. Our results underline the need of enhanced education or training in these domains to improve Indonesian professionals’ knowledge of eyewitnesses’ memory that can play a critical role during criminal investigations and in court.

**Open Scholarship**

This article has earned the Center for Open Science badges for Open Data and Open Materials through Open Practices Disclosure. The data and materials are openly accessible at https://osf.io/ab3wf/ and https://osf.io/x9t8b/.

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