

RESEARCH ARTICLE

Cross-cultural differences in eyewitness memory reports

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Summary

Increasingly, investigators conduct interviews with eyewitnesses from different cultures. The culture in which people have been socialised can impact the way they encode, remember, and report information about their experiences. We examined whether eyewitness memory reports of mock witnesses from collectivistic (sub-Saharan Africa) and individualistic (Northern Europe) cultures differed regarding quantity and quality of central and background details reported. Mock witnesses (total $N = 200$) from rural Ghana, urban Ghana, and the Netherlands were shown stimuli scenes of crimes in Dutch and Ghanaian settings and provided free and cued recalls. Individualistic culture mock witnesses reported the most details, irrespective of detail type. For each cultural group, mock witnesses reported more correct central details when crime was witnessed in their own native setting than a non-native setting, though for different recall domains. The findings provide insight for legal and investigative professionals as well as immigration officials eliciting memory reports in cross-cultural contexts.

KEYWORDS

cultural differences, eyewitness memory reports, individualism–collectivism, interview

1 | INTRODUCTION

An international criminal tribunal, The Special Court for Sierra Leone, put Charles Taylor, a former president of the West African state of Liberia, on trial in The Hague. Taylor was accused of war crimes, crimes against humanity, and violations of international human rights law during the civil war in Sierra Leone. He was alleged to have supplied arms to rebel groups in Sierra Leone in exchange of diamonds and also to have been involved in the massacre of many innocent people. In the legal proceedings that ensued in his trial, eyewitness evidence from sub-Saharan African witnesses was instrumental (Keith, 2012). As in the trial of Taylor, eyewitness memory reports in international criminal settings are crucial in prosecuting alleged atrocities. However, due to the cross-cultural context of international criminal settings, investigators who interview

witnesses in such settings may find it challenging, particularly if insight into culturally determined reporting norms of the witnesses is limited.

Aside from international criminal settings, the increase in international migration has made it more likely that legal and investigative professionals in different countries will need to obtain eyewitness memory reports in cross-cultural contexts. For instance, police detectives are increasingly likely to interview eyewitnesses from cultural backgrounds different to their own. In other contexts, immigration officials typically interview asylum seekers from different cultures about their recollections of events and locations in order to verify their claims (van Veldhuizen, Maas, Horselenberg, & van Koppen, 2018). Irrespective of the case type, such interviewees will have been socialised into their respective cultures, and embedded in these cultures are norms (Hofstede, 2001). Various cultural norms may have

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implications for how people view, remember, and report about their experiences and how they behave in the course of cross-cultural interactions (Kastanakis & Voyer, 2014; Wang, Song, & Kim Koh, 2017). Hence, it is entirely possible that witnesses, victims, and other interviewees reflect culturally determined reporting norms when being questioned in legal and forensic contexts. Therefore, an increased understanding of the impact of cross-cultural differences on interviews in forensic settings is vital (see Hope & Gabbert, 2019).

The culture in which people have been socialised has been shown to impact both behaviour and psychological processes (Schwartz, Boduroglu, & Gutchess, 2014; Wang, 2004). The individualism–collectivism cultural dimension has been particularly influential in research exploring cross-cultural differences across various social phenomena (Triandis, 2001; Triandis, Bontempo, Villareal, Asai, & Lucca, 1988). Individualism refers to a cultural orientation where the ties between individuals in a society are relatively loose, whereas collectivism refers to a cultural orientation where a person is embedded in a complex web of social relationships (Hofstede, 1983). The individualism–collectivism cultural dimension may lead to biases in what is considered worthy and informative to report when people from these cultures are exposed to similar scenes (Boduroglu, Priti, & Nisbett, 2009). For example, drawing on the individualism–collectivism dimension, Markus and Kitayama (1991, 2003) proposed independent–interdependent cognitive styles. According to Markus and Kitayama (1991, 2003), an independent construal of the self is a characteristic of individualistic societies and features the self as having significant dispositional attributes, and as being more autonomous and independent. For that reason, individuals with an independent self-construal become more perceptually oriented towards the properties of an object than the context (analytic perception). Accordingly, they become more prone to attend to the properties and characteristics of an object and as a result, narrow their attentional resources to focal objects at a visual field (Boduroglu et al., 2009). In contrast, an interdependent construal of the self, whereby individuals view the self as integrated with (i.e., not separate from) the social context, is proposed as a characteristic of collectivistic cultures. Markus and Kitayama (1991) argued that due to the interdependent self-construal, people from collectivistic cultures become more perceptually oriented towards a broader visual field (holistic perception) and, as a result, are more likely to allocate their attentional resources broadly. Applying Markus and Kitayama's (1991) framework, it might be predicted that reports about events by people from individualistic and collectivistic cultures may differ as their cultural background biases them to be either analytically or holistically oriented.

Aside from an individual's cultural background, it has also been suggested that the characteristics of a cultural setting could direct attention (Masuda & Nisbett, 2006; Miyamoto, Nisbett, & Masuda, 2006). Proponents of that perspective have argued that irrespective of their cultural background, individuals are likely to detect changes to focal objects of scenes from individualistic cultures than scenes from collectivistic cultures. Conversely, they argue that individuals, regardless of their cultural background, are more likely to detect changes to contextual objects for scenes from collectivistic cultures than scenes from individualistic cultures (Masuda & Nisbett, 2006). Other researchers have observed a

tendency for familiar environments to modulate the processing of visual stimuli (Epstein, Higgins, Jablonski, & Feiler, 2007). According to Epstein et al. (2007), people activate long-term representations of spatial structures of familiar environments to aid recall. Therefore, it is plausible that eyewitnesses are likely to have superior performance when attending to scenes in their native cultural environment (own-setting effect) than scenes located in a different cultural environment.

Consistent with these perspectives, research suggests that individuals' cultural orientation can bias their perceptual processing and content of their reports (Boduroglu et al., 2009; Istomin, Panáková, & Heady, 2014; Masuda & Nisbett, 2006). For example, in a study comparing children from three Siberian cultures, Istomin et al. (2014) found children from the two cultures with holistic perception included more contextual information in their drawings than those from the culture with analytic perception. They also found that children from a collectivistic cultural orientation tend to draw background objects before drawing focal objects, whereas the reverse was true for those from individualistic cultural orientation. Istomin et al. (2014) attributed these findings to differences in attention that the different cultures accord to contextual information.

However, other results have been inconclusive with respect to cultural differences in memory reporting. For example, Wong, Yin, Yang, Li, and Spaniol (2017) compared Canadian and Chinese participants with respect to memory for individual and background objects of picture scenes. Participants were exposed to picture drawings containing focal and background scenes and later reported whether they attended to the focal or background scene. Irrespective of participants' cultural background, participants reported attending more to focal details than background details, and there was no difference in memory for focal objects between cultures. However, Canadian participants reported attending more to background scenes than Chinese participants did. Thus, there seem to be mixed findings on research on the influence of culture on memory.

1.1 | The current research

Increasingly, investigators interview witnesses from diverse cultural backgrounds, and given that cultural norms may influence the nature or content of the information reported in such interviews, this may have implications for the criminal justice system. Criminal justice professionals can be confronted with challenges when they lack the relevant awareness, knowledge, and training about cultural differences in eyewitness memory reports. To date, research in this area has largely been conducted using Western, Educated, Industrialised, Rich and Democratic (WEIRD; Henrich, Heine, & Norenzayan, 2010) samples, with little consideration of cross-cultural factors or comparisons. There have been calls for cross-cultural research to go beyond Western borders to enhance our understanding of cultural variations in behaviour (Brady, Fryberg, & Shoda, 2018; Gelfand, Harrington, & Jackson, 2017) and, more specifically, to appreciate cultural differences relevant for the field of investigative interviewing (Hope & Gabbert, 2019).

Consequently, efforts are being made in psychological science to explore other non-WEIRD samples. However, a recent meta-analytic

review revealed that, even for the small proportion of non-WEIRD populations studied in cross-cultural research, the majority of these non-WEIRD populations were from East Asia (collectivistic culture), with only 0.63% of the non-WEIRD sample populations from Africa (Veillard, 2017). Hence, in the current study, we sampled participants from sub-Saharan Africa (typifying collectivistic culture) and Western Europe (typifying individualistic culture). Within the collectivistic culture, we were also interested in comparing rural and urban cultures, as the latter tends to be less collectivistic than the former (Rooks, Klyver, & Sserwanga, 2016). This difference is likely due to the fact that urban centres are prone to cultural infiltration, and there is greater exposure to western cultural values in urban areas than in rural areas (Ma, Pei, Jin, & De Wit, 2015). To date, the literature on cross-cultural cognition has rarely made the distinction between rural and urban dwellers in collectivistic societies. To address this issue in the current research, we compared eyewitnesses from Western European culture with eyewitnesses from urban and rural sub-Saharan African cultures.

Mock witnesses from sub-Saharan Africa and Western Europe viewed stimuli scenes presenting African and European settings and reported what they saw in a free recall test. Afterwards, they were asked cued recall questions that focused on both central and background details of the scenes. Drawing on theory and previous findings, we predicted cultural differences in the types of details reported by the cultural groups. Specifically, we expected Western European mock witnesses to report more focal details about the crime scene than sub-Saharan African mock witnesses. Conversely, we expected sub-Saharan African mock witnesses to report more contextual details than Western European mock witnesses. Among sub-Saharan African mock witnesses, we expected differences between mock witnesses from rural and urban areas in the type of details reported. Specifically, we predicted that those from rural sub-Saharan Africa would report more contextual details than those from urban sub-Saharan Africa. Mock witnesses from urban sub-Saharan Africa were expected to report more focal details than those from rural sub-Saharan Africa. We also expected that cultural setting would play a role in the memory reports of mock witnesses of all cultural groups. Specifically, we predicted that mock witnesses across cultures would report more central details about Western European cultural settings than sub-Saharan African cultural settings. Mock witnesses across cultures were also predicted to report more background details for sub-Saharan African settings than Western European settings. Finally, we expected mock witnesses from sub-Saharan Africa to report more central and background details about sub-Saharan African settings than Western European settings, whereas we expected the reverse for mock witnesses from Western Europe.

2 | METHOD

2.1 | Participants and design

A total of 207 participants were sampled from Ghana ($n_{\text{rural Ghana}} = 78$; $n_{\text{urban Ghana}} = 73$) and the Netherlands ($n = 56$). The selection of countries

for inclusion is consistent with previous research (Hofstede, 1983, 2001).¹ Out of the 207 participants recruited, seven were excluded. These participants were excluded because they did not follow instructions ($n = 2$), viewed only three out of the four scenes ($n = 4$), and had East Asian parents although born in the Netherlands ($n = 1$). Our final sample comprised 200 participants (103 males and 97 females; $M_{\text{age}} = 28.44$, $SD = 12.43$). The urban sample ($n = 70$; $M_{\text{age}} = 26.39$, $SD = 10.79$) in Ghana was recruited in the capital city, Accra, whereas the rural sample ($n = 75$; $M_{\text{age}} = 31.61$, $SD = 14.29$) was recruited in Akim Aduasa, a farming community in the Eastern Region of Ghana. Participants from the Netherlands ($n = 55$; $M_{\text{age}} = 26.78$, $SD = 10.96$) were recruited in Maastricht, a provincial capital in the south of the country. Student participants in the Netherlands were awarded course credits, whereas nonstudent participants received a €5 shopping voucher. Student and nonstudent participants from Ghana received a GH¢5 voucher for phone credit.

The design for the study was a 3 (cultural group: rural Ghana, urban Ghana, The Netherlands) \times 2 (crime setting: Ghanaian setting, Dutch setting) mixed factorial design. The between-group variable was cultural group, and the within-group variable was crime setting. The dependent variables were correct, incorrect, and withheld (Don't know) details, for both central and background information.

2.2 | Materials

2.2.1 | Stimuli

The stimuli used were eight photographs rich in central and background details. The photographs depicted four crime scenarios (theft, assault, accident, and robbery). Each of these crime scenarios was photographed in a Ghanaian setting as well as in a Dutch setting. For example, for a crime depicting, a theft in a Ghanaian setting, the same crime was depicted in a Dutch setting. Each participant viewed four of these stimuli (two stimuli each for Dutch and Ghanaian settings). The stimuli were prepared in the Netherlands and Ghana. Scenarios were prepared with a very clear central event that was distinct from the background.

Two of the stimuli (one Ghanaian setting and one Dutch setting) were piloted in the respective countries. A total of 14 participants (nine males and five females, $M = 24.07$, $SD = 3.20$) from Ghana and 15 participants (four males and 11 females, $M = 30.40$, $SD = 13.12$) from the Netherlands provided ratings, using a 5-point Likert scale. They rated the extent the stimulus (a) represented their native setting and (b) represented a crime scene. Consistent with Paz-Alonso, Goodman, and Ibabe (2013), the mid-rating score was used in deciding whether a stimulus received sufficient rating. The stimuli settings were rated by participants to adequately represent settings in their respective countries (Ghanaian stimuli— $M = 3.79$, $SD = .97$; Dutch stimuli— $M = 3.33$, $SD = .62$) and reflect plausible crime scenes (Ghanaian stimuli— $M = 3.43$, $SD = 1.28$; Dutch stimuli— $M = 3.47$, $SD = .83$). The pilot study also determined which details participants regarded as central and background details in each scene. To establish

stimulus centrality, the participants were asked two open-ended questions: "What do you regard as the central event in the picture?" and "What do you regard as background event(s) in the picture?." All participants identified the central and contextual events in a manner consistent with our intended central and contextual elements when constructing the stimuli (with the exception of one participant who did not identify central event for the Ghanaian stimuli as such). Results from this pilot informed the development of the remaining stimuli with Ghanaian and Dutch settings, which were developed to have a clear central event distinct from the background. The stimuli are available on Open Science Framework at https://osf.io/t89hu/?view_only=59e038117b2d4d5588e00c804de3539a

2.2.2 | Cultural orientation scale

We used the cultural orientation scale (Triandis & Gelfand, 1998) to measure self-reported individualism and collectivism of participants. That scale has 16 items with a 9-point Likert scale (1 = *never or definitely no* and 9 = *always or definitely yes*). It has four subscales: vertical individualism (VI), horizontal individualism (HI), vertical collectivism (VC), and horizontal collectivism (HC).² Sample items on the scale include VI—"winning is everything"; HI—"I often do my own thing"; VC—"Parents and children must stay together as much as possible"; and HC—"If a co-worker gets a prize, I would feel proud." The coefficient alphas of the subscales range from .62 to .75 (Soh & Leong, 2002).

2.3 | Procedure

All participants in the study were tested individually. After consenting to participate, participants completed the cultural orientation scale and a short demographic questionnaire. Participants then viewed the stimulus scenes, one at a time. Consistent with previous research (e.g., Wang & Pomplun, 2012), participants viewed each scene for 5 seconds. After viewing a scene, participants worked on a distractor task (mathematical problems) for 5 minutes. Participants were then instructed to provide a verbal free recall describing what they could remember about the scene they viewed. Participants were asked to be as detailed and accurate as possible in their reports about the scene. Participants had up to 6 minutes to provide that account.

After the free recall task, participants answered 20 cued recall questions about central and background events or items in the stimulus (e.g., "How was the attacker dressed" and "Can you describe the colour of the building?"). The order of questions alternated between questions on central and background details. The instructions and questions for some participants in rural Ghana were given in the local language (Twi) as these participants had a low level of English comprehension.³

After completing both recall tasks, participants saw the next scene, and the procedure was repeated until they had viewed all four scenes. The presentation of the scenes was counterbalanced.

Participants received the same instructions for all tasks. Participants' responses were audio recorded. After completing the procedures, they were thanked and debriefed. The test session took approximately 60 min per participant. The study received ethical approval from the Ethics Review Committee Inner City faculties, Maastricht University, and the Ethics Committee for the Humanities, University of Ghana.

2.4 | Coding

Verbal responses were transcribed. The interviews conducted in Twi in rural Ghana were translated into English during the transcription by one of the research assistants indigenous to the region. A detailed coding template for each of the stimulus scenes was developed by the first author and was adapted from previous research (Gabbert, Hope, & Fisher, 2009; Wright & Holliday, 2007). For the purposes of our study, details provided by participants were classified as either a background detail or central detail, in both free and cued recall, adhering a coding manual prepared in advance.⁴ An item was coded as correct if it was present in the stimuli scene and given a correct description. Incorrect items were also coded and scored accordingly. Vague responses (e.g., it was a red or green bag) or subjective inferences (e.g., the car belonged to the woman lying on the floor) were not coded. "Don't know" responses were coded as withheld details. A second coder coded 20% of the transcripts, which were randomly selected to check for coding consistency. We found high intercoder reliability (intraclass correlation coefficient) for free recall with regard to correct central details ($r = .97$) and correct background details ($r = .95$). The details provided by participants were collated across all stimuli, and analysis was based on data for all scenes.

3 | RESULTS

Analyses were conducted using a mixed factorial analysis of variance (ANOVA), except analysis on type of detail that dominated in the memory reports of the cultural groups, where repeated measures ANOVA was used. Where significance difference existed, we used Games-Howell multiple comparisons test as this post-hoc test is suitable for comparison groups of unequal size (Lee & Lee, 2018). We applied a Bonferroni correction (.017) to control for increased error rates arising from multiple tests.

3.1 | Free recall

3.1.1 | Central details

Cultural group had a significant main effect on the number of correct central details reported, $F(2, 197) = 43.02, p < .001, \eta_p^2 = .30$. Participants from the Netherlands reported significantly more correct central details than participants from urban Ghana ($p = .003$), who also reported

significantly more correct central details than participants from rural Ghana ($p < .001$; see Table 1). We also found a significant main effect for crime setting on correct central details, $F(1, 197) = 8.78, p = .003, \eta_p^2 = .04$. Participants reported more correct central details when the crime scene was a Ghanaian setting ($M = 15.91, SD = 7.50$) than when it was a Dutch setting ($M = 14.54, SD = 7.35$). There was no significant interaction effect between cultural group and crime setting, $F(2, 197) = 3.28, p = .04, \eta_p^2 = .03$. In order to test evidence in favour of the null, we proceeded with a Bayesian ANOVA analysis using JASP (Wagenmakers, 2007). The analysis yielded a Bayes Factor of $BF_{10} = 2.35 \times 10^{14}$. According to Raftery (1995), Bayes factor of 150 and above is indicative of very strong evidence in favour of the alternate hypothesis. A planned comparison revealed both participants from rural Ghana ($p = .019$) and urban Ghana ($p = .001$) significantly reported more correct central details for Ghanaian crime settings than Dutch crime settings. Participants from the Netherlands, however, did not significantly differ in correct central details reported for Ghanaian and Dutch crime settings ($p = .770$). Results are shown in Figure 1.

There was a significant main effect of cultural group on the number of incorrect central details reported, $F(2, 197) = 9.27, p < .001, \eta_p^2 = .09$. Participants from rural Ghana reported significantly fewer incorrect central details than participants from the Netherlands ($p = .001$). Participants from urban Ghana and the Netherlands did not significantly differ in incorrect central details reported ($p = .055$). Participants from rural Ghana and urban Ghana also did not significantly differ in incorrect central details reported ($p = .146$; see Table 1). Crime setting did not have a significant effect on incorrect central details $F(1, 197) = 3.80, p = .05, \eta_p^2 = .02$. The interaction effect for cultural group and crime setting for incorrect central details was not significant, $F(2, 197) = 2.05, p = .13, \eta_p^2 = .02$.

3.1.2 | Background details

There was a significant main effect of cultural group on the reporting of correct background details $F(2, 197) = 45.35, p < .001, \eta_p^2 = .32$. Participants from the Netherlands reported more correct background details than participants from urban Ghana ($p = .002$). Participants from urban Ghana also reported more correct background details than participants

from rural Ghana ($p < .001$; see Table 1). There was also a significant main effect for crime setting, $F(1, 197) = 38.03, p < .001, \eta_p^2 = .16$. Participants reported more correct background details for crime scenes with Dutch settings ($M = 9.22, SD = 5.94$) than Ghanaian settings ($M = 6.93, SD = 4.81$). However, the interaction between cultural group and crime setting was not significant, $F(2, 197) = .94, p = .39, \eta_p^2 = .01$.

Cultural group had no significant main effect on incorrect background details reported, $F(2, 197) = .47, p = .62, \eta_p^2 = .01$. Crime setting also had no significant main effect on incorrect background details reported, $F(1, 197) = .33, p = .57, \eta_p^2 = .00$. The interaction between cultural group and crime setting on incorrect background details was also not significant $F(2, 197) = 1.13, p = .33, \eta_p^2 = .01$.

3.1.3 | Type of detail reported

We examined the total (correct and incorrect) amount of central and background details reported by each group. Participants from the Netherlands reported more central details than background details, $F(1, 54) = 93.25, p < .001, \eta_p^2 = .63$. A similar pattern was found for participants from urban Ghana who also reported more central details than background details, $F(1, 69) = 100.85, p < .001, \eta_p^2 = .59$. Participants from rural Ghana also reported more central details than

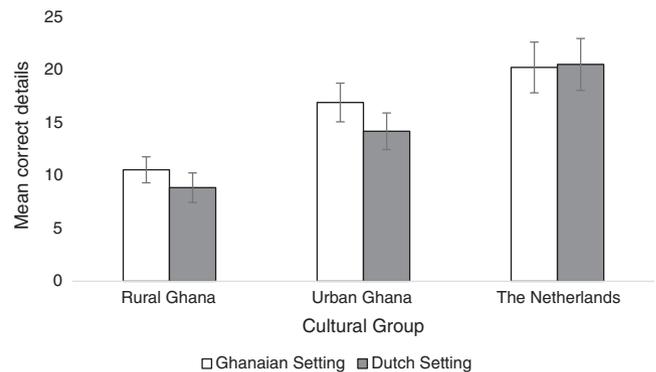


FIGURE 1 Mean correct details for different crime settings reported across cultural groups under free recall. Error bars represent 95% confidence intervals

			Rural Ghana	Urban Ghana	The Netherlands
Free recall	Correct	Central	9.71 (6.58)	15.57 (6.53)	20.39 (5.78)
		Background	3.99 (4.76)	8.36 (4.69)	11.87 (4.75)
	Incorrect	Central	1.13 (1.39)	1.51 (1.34)	2.17 (1.33)
		Background	.78 (1.13)	.91 (1.09)	.96 (1.11)
Cued recall	Correct	Central	13.47 (5.72)	18.06 (5.69)	22.77 (5.71)
		Background	4.59 (3.38)	6.26 (3.35)	10.73 (3.34)
	Incorrect	Central	5.59 (2.25)	5.15 (2.26)	6.10 (2.30)
		Background	4.27 (2.51)	4.27 (2.51)	5.73 (2.52)
Withheld	Central	6.25 (4.16)	5.54 (4.18)	3.75 (4.15)	
	Background	10.54 (3.64)	10.13 (3.68)	7.18 (3.63)	

TABLE 1 Mean (standard deviation) correct, incorrect, and withheld central and background details reported in free and cued recall by cultural groups

background details, $F(1, 74) = 156.35, p < .001, \eta_p^2 = .68$ (see Table 3). Although central details dominated in the memory reports of all cultural groups, there was a significant difference in the total amount of central details reported across cultural groups, $F(2, 197) = 43.09, p < .001, \eta_p^2 = .30$. Participants from the Netherlands significantly reported more central details than participants from urban Ghana ($p = .002$), who also reported more central details than participants from rural Ghana ($p < .001$; see Table 3).

3.2 | Cued recall

3.2.1 | Central details

There was a significant main effect of cultural group on correct central details reported in response to cued recall questions focused on central details, $F(2, 197) = 42.66, p < .001, \eta_p^2 = .30$. Participants from the Netherlands reported more correct central details than participants from urban Ghana ($p < .001$), who also reported more correct central details than participants from rural Ghana ($p < .001$; see Table 1). There was also a significant main effect of crime setting on correct central details reported, $F(1, 197) = 5.82, p = .017, \eta_p^2 = .03$. Participants reported more correct central details when the crime scene was a Dutch setting ($M = 18.66, SD = 7.21$) than when it was a Ghanaian setting ($M = 17.55, SD = 6.08$). The interaction between cultural group and crime setting was not significant, $F(2, 197) = 2.85, p = .06, \eta_p^2 = .02$. We proceeded with a Bayesian ANOVA to test for evidence for the null. We found the Bayes Factor to be $BF_{10} = 7.964 \times 10^{12}$, indicative of very strong evidence (Raftery, 1995) in favour of the alternate hypothesis. A planned comparison revealed participants from rural Ghana did not significantly differ on correct central details reported for Ghanaian and Dutch crime settings ($p = .91$). Participants from urban Ghana also did not significantly differ on correct central details reported for the two cultural settings ($p = .36$). However, participants from the Netherlands reported more correct central details for Dutch crime settings than they did for Ghanaian crime settings ($p = .01$; see Figure 2).

The main effect of cultural group on incorrect central details reported, in response to questions focused on central details, was not significant, $F(2, 197) = 2.66, p = .07, \eta_p^2 = .02$. There was, however, a significant main effect of crime setting on incorrect central details reported, $F(1, 197) = 10.16, p = .002, \eta_p^2 = .05$. Participants reported more incorrect central details when crime setting was a Ghanaian setting ($M = 6.02, SD = 2.97$) than when it was a Dutch setting ($M = 5.21, SD = 2.83$). The interaction between cultural group and crime setting was not significant, $F(2, 197) = .36, p = .699, \eta_p^2 = .00$.

Cultural group had a significant main effect on the central details withheld by participants, $F(2, 197) = 5.97, p = .003, \eta_p^2 = .06$. Participants from rural Ghana withheld more responses for questions about central details than participants from the Netherlands ($p = .004$). Participants from urban Ghana also withheld more central details than participants from the Netherlands ($p < .00$). Participants from rural Ghana and urban Ghana did not significantly differ in central details withheld ($p = .619$; see Table 1). Crime setting did not have a

significant main effect on the central details withheld by participants, $F(1, 197) = .90, p = .34, \eta_p^2 = .01$. The interaction between cultural group and crime setting on withheld central details was also not significant, $F(2, 197) = 1.29, p = .28, \eta_p^2 = .01$.

3.2.2 | Background details

There was a significant main effect of cultural group on correct background details reported in response to questions about background details, $F(2, 197) = 55.59, p < .001, \eta_p^2 = .36$. Participants from the Netherlands reported more correct background details than participants from urban Ghana ($p < .001$) and rural Ghana ($p < .001$). Participants from urban Ghana also reported more correct background details than participants from rural Ghana ($p = .004$; see Table 1). The main effect of crime setting on correct background details reported was significant, $F(1, 197) = 130.51, p < .001, \eta_p^2 = .40$. Participants reported more correct background details when crime setting was a Dutch setting ($M = 8.95, SD = 4.38$) than when it was a Ghanaian setting ($M = 5.44, SD = 3.68$). The interaction between cultural group and crime setting was also significant, $F(2, 197) = 15.23, p < .001, \eta_p^2 = .13$. A planned comparison revealed participants from rural Ghana reported more correct background details for Dutch settings than Ghanaian settings ($p < .001$). Participants from urban Ghana also reported more correct background details when crime scene was a Dutch setting than Ghanaian setting ($p < .001$). We found a similar pattern for participants from the Netherlands, who reported more correct background details when crime setting was a Dutch setting than when it was a Ghanaian setting ($p < .001$). The interaction effect for correct background details could be accounted for by the magnitude of the simple main effect. This is because, for all cultural groups, the slopes of the simple main effect of crime setting have the same direction. See Table 2 for descriptive statistics on interaction between cultural group and crime setting.

There was also a significant main effect of cultural group on incorrect background details, $F(2, 197) = 6.81, p = .001, \eta_p^2 = .07$. Participants from urban Ghana reported few incorrect background details than participants from the Netherlands ($p = .009$). Participants from rural Ghana also reported few incorrect background details than participants from the Netherlands ($p = .005$). Participants from urban Ghana and rural Ghana did not differ in incorrect background details reported ($p = 1.00$; see Table 1). Setting of crime had a significant main effect on incorrect background details reported, $F(1, 197) = 15.29, p < .001, \eta_p^2 = .07$. Participants reported more incorrect background details for Dutch crime settings ($M = 5.22, SD = 3.25$) than Ghanaian crime settings ($M = 4.30, SD = 2.83$). The interaction effect between cultural group and crime setting on incorrect background details reported was not significant, $F(2, 197) = 1.50, p = .23, \eta_p^2 = .02$.

The analysis also revealed that the main effect of cultural group on background details withheld by participants was significant, $F(2, 197) = 15.06, p < .001, \eta_p^2 = .13$. Participants from urban Ghana withheld significantly more responses for questions on background details than participants from the Netherlands ($p < .001$). We also found a similar pattern for participants from rural Ghana, who

TABLE 2 Mean (standard deviation) correct and incorrect details reported in free and cued recall for cultural groups by crime setting

			Rural Ghana		Urban Ghana		The Netherlands	
			Ghanaian setting	Dutch setting	Ghanaian setting	Dutch setting	Ghanaian setting	Dutch setting
Free recall	Correct	Central	10.56 (5.45)	8.87 (5.02)	16.93 (7.80)	14.21 (7.38)	20.25 (9.08)	20.53 (9.29)
		Background	3.20 (2.68)	4.79 (4.52)	7.06 (4.86)	9.66 (6.76)	10.55 (6.63)	13.20 (6.40)
	Incorrect	Central	1.29 (1.55)	.97 (1.00)	1.46 (1.73)	1.56 (1.97)	2.53 (2.40)	1.82 (1.86)
		Background	.63 (1.17)	.93 (1.26)	.97 (2.02)	.86 (1.12)	.95 (1.15)	.96 (1.41)
Cued recall	Correct	Central	13.51 (5.70)	13.44 (6.70)	17.69 (6.30)	18.44 (7.72)	21.45 (5.85)	24.09 (6.70)
		Background	3.72 (3.10)	5.45 (3.86)	4.81 (3.17)	7.71 (4.06)	7.78 (4.54)	13.67 (5.17)
	Incorrect	Central	5.85 (3.28)	5.33 (2.96)	5.61 (2.47)	4.69 (2.61)	6.60 (3.20)	5.60 (2.86)
		Background	3.59 (2.60)	4.96 (3.02)	4.06 (2.76)	4.49 (3.15)	5.25 (3.06)	6.20 (3.37)
	Withheld	Central	6.45 (11.26)	6.05 (3.05)	4.81 (2.52)	6.27 (2.47)	3.56 (2.49)	3.93 (2.36)
		Background	11.96 (4.64)	9.39 (4.16)	10.74 (4.17)	9.51 (3.69)	8.55 (4.61)	5.81 (3.53)

TABLE 3 Mean (standard deviation) of amount of central vs background details for cultural groups under free and cued recall

	The Netherlands				Urban Ghana				Rural Ghana			
	Central		Background		Central		Background		Central		Background	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Free recall	45.13	19.21	25.65	11.70	34.16	14.27	18.54	12.34	21.69	9.41	9.55	6.66
Cued recall	57.75	10.97	32.91	9.89	46.43	11.83	20.97	8.02	38.13	12.24	17.64	8.59

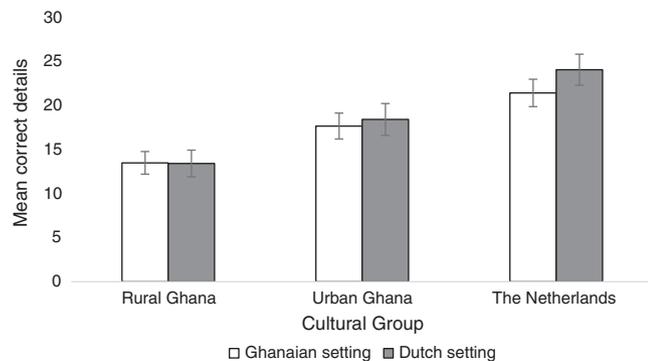


FIGURE 2 Mean correct details for different crime settings reported across cultural groups under cued recall. Error bars represent 95% confidence intervals

withheld significantly more responses to questions on background details, than participants from the Netherlands ($p < .001$). No significant difference was observed for withheld responses for participants from rural Ghana and urban Ghana ($p = .781$; see Table 1). The setting of crime also had a significant main effect on background details withheld by participants, $F(1, 197) = 54.54, p < .001, \eta_p^2 = .22$. Participants withheld more background details for Ghanaian crime settings ($M = 10.33, SD = 4.53$) than Dutch crime settings ($M = 8.24, SD = 3.81$). The interaction effect between cultural group and crime setting for background details withheld by participants was not significant, $F(2, 197) = 2.47, p = .09, \eta_p^2 = .02$.

3.2.3 | Type of detail reported

The total (correct and incorrect) amount of details reported for central and background details for each group was compared to find out the type of detail that dominated in their reports. Participants from rural Ghana significantly reported more central details than background details, $F(1, 74) = 304.58, p < .001, \eta_p^2 = .81$. Participants from urban Ghana also significantly reported more central details than background details, $F(1, 69) = 370.02, p < .001, \eta_p^2 = .84$. We found the same pattern for participants from the Netherlands who also significantly reported more central details than background details, $F(1, 54) = 334.83, p < .001, \eta_p^2 = .86$ (see Table 3). Notwithstanding the observation that in all cultural groups central details dominated in the memory reports, the cultural groups significantly differed in amount of central details reported, $F(2, 197) = 44.11, p < .001, \eta_p^2 = .31$. Participants from the Netherlands significantly reported more central details than participants from urban Ghana ($p < .001$), who also reported more central details than participants from rural Ghana ($p < .001$).

3.3 | Self-reported cultural orientation

We conducted an exploratory analysis on the self-reported cultural orientation of participants from the cultural groups. The analysis revealed that the cultural groups did not differ on horizontal collectivism, $F(2, 197) = .69, p = .50, \eta_p^2 = .01$, but did differ on vertical collectivism,

$F(2, 197) = 8.30, p < .001, \eta_p^2 = .08$. Participants from rural Ghana ($M = 29.72, SD = 6.87$) significantly scored higher on vertical collectivism than participants from the Netherlands ($M = 26.20, SD = 4.67; p = .002$). Participants from urban Ghana ($M = 30.01, SD = 4.99$) also scored higher on self-reported vertical collectivism than participants from the Netherlands ($p < .001$). There was no significant difference between participants from rural Ghana and urban Ghana on vertical collectivism ($p = .95$).

There was also a (marginally) significant difference between the cultural groups on horizontal individualism, $F(2, 197) = 3.05, p = .05, \eta_p^2 = .03$. Participants from rural Ghana ($M = 26.83, SD = 6.45$) and the Netherlands ($M = 25.84, SD = 4.78$) did not differ on scores on horizontal individualism ($p = .57$). There was also no significant difference between participants from rural Ghana and urban Ghana ($M = 28.29, SD = 5.21$) on self-reported horizontal individualism ($p = .29$). However, there was a significant difference in self-reported horizontal individualism between participants from urban Ghana and the Netherlands ($p = .02$). Participants from urban Ghana gave higher ratings than participants from the Netherlands on horizontal individualism. The cultural groups significantly differed on self-reported vertical individualism $F(2, 197) = 14.86, p < .001, \eta_p^2 = .13$. Participants from rural Ghana ($M = 24.52, SD = 6.80$) reported higher scores on vertical individualism than participants from the Netherlands ($M = 17.98, SD = 7.26; p < .001$). Participants from urban Ghana ($M = 23.04, SD = 6.83$) also significantly gave higher ratings on vertical individualism than participants from the Netherlands ($p < .001$). There was no significant difference between participants from rural Ghana and urban Ghana on self-reported vertical individualism ($p = .40$).

4 | DISCUSSION

We examined eyewitness memory reports of individuals from different cultural groups thought to typify individualistic (Western Europe) and collectivistic (sub-Saharan Africa) cultures. The results appear to reveal a tendency towards the underreporting of details by sub-Saharan African mock witnesses. In addition, central details dominated in the eyewitness memory reports provided across cultures. The results also showed that in free recall, sub-Saharan African mock witnesses reported more correct central details when the crime scenario was witnessed in their own native setting than when it was witnessed in a non-native setting. Western European mock witnesses also reported more correct central details in cued recall when the crime scenario was witnessed in their own native setting than a non-native setting. Mock witnesses from sub-Saharan Africa reported more background details about a non-native setting than they did for their own setting under cued recall. Crime context did not appear to affect the nature of correct background details that Western European Mock witnesses reported in free recall. However, they reported more correct background details when crime was witnessed in their own native setting than a non-native setting in cued recall.

The differences between cultural groups with respect to the amount of reported details is noteworthy. One possible explanation

for this finding could be elaboration differences due to socialisation affordances (Peterson, Sales, Rees, & Fivush, 2007). Such a difference is conspicuous in childrearing practices, where it has been observed that parents from individualistic cultures provide much more feedback to their children in conversations than those from collectivistic cultures (Wang, 2004). It may be the case that differences in linguistic elaboration are transmitted to children and persist to later adulthood. Consequently, although eyewitnesses from collectivistic cultures report details about a crime scene, they may not spontaneously provide a detailed elaboration in their memory narratives. This speculation fits with assertions that individuals from collectivistic cultures report less specific and more generic details than individuals from individualistic cultures (Millar, Serbun, Vadalía, & Gutches, 2013; Wang & Ross, 2005). Similar results have been observed in research on deception detection, showing interviewees in individualistic cultures typically report more explicit details than interviewees from collectivistic cultures (Leal et al., 2018). Leal et al. (2018) argued that interviewees from collectivistic cultures tend to leave many things unsaid, allowing the context to communicate what is implied, whereas in individualistic cultures, the communication style tends to be more explicit. Therefore, during investigative interviews, it may be necessary to prompt and encourage eyewitnesses from collectivistic cultures to elaborate further on the initial information they provide.

Apart from the possibility of elaborative differences, it may be the case that individuals from collectivistic cultures have a tendency to be more modest or restrained when providing their memorial accounts than those from individualistic cultures. Cultural differences in self-effacement and self-enhancement have been documented, with self-effacement attributed to collectivistic cultures and self-enhancement attributed to individualistic cultures (Takata, 2003; Yamagishi et al., 2012). Such differences may reflect cultural disparities in the independent-interdependent construal of the self (Markus & Kitayama, 1991). Individuals from cultures with independent construal of the self are more likely to emphasise the unique attributes of a person. This tendency may be reflected in their self-presentation in regard to expressing themselves, as they may be inclined to emphasise their positive attributes (self-enhancement; Takata, 2003). In contrast, individuals from collectivistic cultures, in comparison with individuals from individualistic cultures, have a tendency to be self-critical and modest about emphasising their unique attributes (self-effacement; Heine, Lehman, & Takata, 2000). Therefore, individuals from collectivistic cultures are more likely to be modest in terms of self-presentation and expression (Wise, Gong, Safer, & Lee, 2010). These concepts have been identified as powerful determinants of behaviour, especially within a social context (Brown & Gallagher, 1992). It is possible for a witness from a collectivistic culture to self-efface when being interviewed, by being modest in terms of the extent of the personal memory narrative provided (i.e., providing a less elaborative or detailed account spontaneously). However, it is worth noting that this tendency to self-efface may attenuate when the implications or stakes of self-effacing are high (Yamagishi et al., 2012). Future research should explore whether this tendency is

attenuated when investigators emphasise the importance of providing details to pursue an investigation.

In the current study, mock witnesses from the collectivistic cultural groups provided more "Don't Know" responses than those from the individualistic cultural group. Thus, in this study at least, participants from collectivistic cultures might have applied a relatively strict criterion for reporting, and withheld details they remembered but were not confident about (Cai, Brown, Deng, & Oakes, 2007). This pattern aligns well with the self-effacing tendency of collectivistic cultures. In a study on self-effacement and self-enhancement among Canadians and Japanese participants, Heine et al. (2000) found that although the former were confident they performed well on a test, the latter were reluctant to admit that they had performed better. It may be that when sub-Saharan mock witnesses were not confident about memory for certain details, they simply decided not to report them. Consistent with this notion is the observation that participants from Western Europe, who tend to be more assertive and expressive than people from collectivistic cultures (Matsumoto et al., 2008), provided more inaccurate responses than participants from sub-Saharan Africa, which suggests Western European mock witnesses had a looser threshold for reporting accurate details. Future research should examine the extent to which there are cultural differences in the reporting of low-confidence memories.

The social dynamics during the interview may have also played a role in the amount of information mock witnesses reported, particularly those from sub-Saharan Africa. Individuals from sub-Saharan Africa have been shown to be high on the cultural dimension of power distance (Hofstede, 1983). Power distance, another dimension in which cultures differ, is the extent to which a society endorses hierarchy in social relationships (Oyserman, 2006). High power distance (endorsement of hierarchy in social relationships) may inhibit free and spontaneous communication when an individual is in a social interaction with an authority figure (Ghosh, 2011). Consistent with this speculation, in the present study, sub-Saharan African mock witnesses endorsed more hierarchy in social relationships (vertical collectivism) than Western European mock witnesses. Therefore, there is a possibility that the mere fact of reporting to an authority or expert (i.e., a researcher) may have produced cultural differences in the amount of details provided. Future research should explore the impact of this dimension further to (a) determine whether in an interview context, the presence of an authority figure plays a culture-related role in the amount of information reported by witnesses and (b) explore how such differences might be attenuated.

None of the cultural groups appear to have processed background information deeply (cf. central details; Wong et al., 2017) as, regardless of cultural background, central details dominated in the memory reports provided. This finding does not align with previous research suggesting collectivistic cultures attend holistically to a visual field (Istomin et al., 2014). However, it is worth noting that the stimuli used in our study were crime scenes and quite different to the stimuli used in previous research. Previous studies used stimuli such as pictures from the physical environment and artistic representations (Boduroglu et al., 2009; Miyamoto et al., 2006). The focus of attention

when a crime occurs is likely not the same as any ordinary or neutral everyday scene. For example, in a robbery, the threatening and unusual nature of the scene will make it more likely for people at the scene to attend to this focal event than other activities that may be going on at the background. The tendency to attend more to noticeable details at a visual field is well-documented (Loftus & Mackworth, 1978; Masuda & Nisbett, 2006, Experiment 3; Wang & Pomplun, 2012).

It is also worth noting that past research on culture and visual attention focused mostly on comparing East Asian and other Western cultures. Hence, even though African cultures are regarded as collectivistic, the findings for East Asian cultures may not be generalisable to sub-Saharan Africa. Studies in cross-cultural cognition have largely studied East Asian cultures, and it may be that the collectivistic self (interdependent self-construal) may not be a one-size-fits-all phenomenon for all collectivistic cultures. This conclusion is consistent with the notion that collectivism is not a context-free construct (Triandis, 2001). As such, the self-construal for collectivistic cultures may be context-specific. For example, it has been argued that the interdependent self-construal among Africans does not suggest a total loss of the independent self in the collective (Adams & Dzokoto, 2003), and there may be different variations of the interdependent self-construal among collectivistic cultures. In that vein, the holistic-analytic categorisation of visual attention across cultures may be relative. Future research should explore differences between and within different collectivist cultures.

The current results suggest that the cultural setting in which a crime is witnessed may also be important when considering eyewitness reports. Mock witnesses reported more correct central details for Ghanaian crime settings than for Dutch crime settings for free recall. When cued recall questions were asked, mock witnesses reported more correct central details for Dutch settings than Ghanaian settings. That finding partially aligns with the results of previous research. For example, Masuda and Nisbett (2006) found that both participants from individualistic (North America) and collectivistic (Japan) cultural groups detected focal changes to North American stimuli scenes quicker than they did for Japanese stimuli scenes. In the current research, sub-Saharan African mock witnesses reported more correct central details in free recall, when reporting about crime witnessed in their own native setting than when it was witnessed in a non-native setting. This superior performance for crime witnessed in a native setting was not observed when cued recall questions were asked. However, Western European mock witnesses reported more correct central details when the witnessed crime was in their own native setting than a non-native setting in cued recall, but not for free recall. The own-setting effect for central details observed for the cultural groups is consistent with work that shows familiar environments have the tendency to modulate the processing of visual details (Epstein et al., 2007). However, that explanation does not fit for correct background details witnessed by sub-Saharan African mock witnesses when crime setting was considered, as sub-Saharan African mock-witnesses reported more contextual information about a non-native setting than they did for their own setting in cued recall. We

suspect that because the non-native setting was an unfamiliar setting, participants from sub-Saharan Africa may have attended more to contextual information in that setting than they did for their own setting. Future work should pursue the issue of crime context and how this relates to reporting in cross-cultural contexts.

There are some limitations associated with the current research. The first limitation relates to some unavoidable differences in the education levels for one of the cultural group samples. Although the Dutch and urban Ghanaian samples comprised mainly university-level students with a similar age range and were, as such, well-matched with respect to education level, this was not the case for the rural Ghanaian sample. Participants from rural Ghana had a minimal level of education and were relatively older. Both of these factors may have affected the performance of this group relative to the other experimental groups—although it is also worth noting that it would likely be impossible to recruit university-level educated sample in rural Ghana. Similar issues relating to the difficulty of matching samples across different cultures are common in the cultural literature (Buil, De Chernatony, & Martínez, 2012). A second possible methodological concern relates to the test language. As the study instructions were translated for participants in rural Ghana who lacked adequate comprehension of the English language, we do not rule out the possibility that the translation into a different language may have in some way affected the outcomes for the rural sample. Finally, we acknowledge that the static nature of the stimuli used limit generalisability to the eyewitness context. Typically, crime events involve dynamic movement and action, and the reporting of such information may also vary culturally. Although static images might be a useful starting point to examine reporting from memory, future research should adopt the more typical mock witness paradigm using recorded or live events.

5 | CONCLUSION

In this research, we sought to take the first steps in addressing an important gap in the eyewitness literature. Specifically, drawing on samples from sub-Saharan Africa and Western Europe, we examined eyewitness memory reports for differences predicted by theory in the cross-cultural literature. Our results show that individuals from individualistic cultures provide more details in their account of crime scene information, irrespective of type of detail. We also found evidence that regardless of the cultural background of eyewitnesses, central details dominate in their reports of crime scene information. Finally, we found evidence that the cultural setting in which a crime is witnessed may play a role in eyewitness memory reports. These findings not only identify important routes for future research in this area but also highlight the importance of considering the cultural background of the witness when eliciting memory reports. As such, these findings should be informative for legal and investigative professionals working in international criminal justice settings, border and security practitioners interviewing in asylum, migration and intelligence-gathering contexts, and law enforcement personnel who regularly interview witnesses from different cultural backgrounds.

CONFLICT OF INTEREST

The authors declare no conflict of interest

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ENDNOTES

- ¹ Hofstede's individualism–collectivism index indicates the extent to which countries are individualistic and collectivistic. On Hofstede's index (ranging from 0 to 100), the Netherlands is associated with an individualism index of 80, whereas Ghana is associated with an index of 14, where a higher score reflects greater individualism.
- ² Vertical individualism refers to individualistic cultures where hierarchy is emphasised in social relationships; horizontal individualism refers to individualistic cultures where equality is emphasised in social relationships; vertical collectivism refers to collectivistic cultures where hierarchy is emphasised in social relationship; and horizontal collectivism refers to collectivistic cultures where equality is emphasise in social relationships (Triandis & Gelfand, 1998).
- ³ A PhD student in Linguistics with expertise in the Ghanaian language translated the protocol. The interviewer who also had a good command of the local language explained the study instructions to these participants thoroughly and also read the questions out to such participants in the Twi language.
- ⁴ Classification of central and background details in this coding manual was based on stimulus centrality established in the pilot study earlier reported.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are openly available at https://osf.io/9gs78/?view_only=135f537f7bf8437998906da24a4184c5

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