



The acculturation effect and eyewitness memory reports among migrants

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Purpose. When people migrate to new cultures, they adapt to their new culture while at the same time retaining the norms of their original culture. The phenomenon whereby migrants adapt to the cultural norms of a host culture has been referred to as *acculturation*. Using a mock witness paradigm, we examined the acculturation effect in the eyewitness memory reports of sub-Saharan African migrants in Western Europe.

Methods. We sampled sub-Saharan African migrants in Western Europe, as well as sub-Saharan Africans living in Africa as a control group (total $N = 107$). The mock witnesses were shown stimuli scenes of crimes in African and Western European settings and provided free and cued recall reports about what they had seen.

Results. Central details were reported more than contextual details by both groups of sub-Saharan Africans. Relative to the control group of sub-Saharan Africans living in Africa, sub-Saharan African migrants in Western Europe provided more correct central details in free recall. The longer migrants had resided in Western Europe, the less collectivistic they become. Migrants also provided more elaborate reports the longer their duration of residence in Western Europe.

Conclusion. The findings of the current research suggest the new cultural environment of migrants impact their cultural norms, which may have implications for their eyewitness memory reports.

There has been an increasing trend in migration globally (United Nations Population Division, 2019) which means there is an increasing chance that legal and investigative professionals will interview eyewitnesses who are migrants. No matter who the migrant is or where they have been born, they would have been socialized into a particular cultural context. When individuals migrate to new cultures, they move with the cultural norms

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and values of their native culture (Sam & Berry, 2010). With time, they may adapt to their new cultural environment, internalizing some of the norms of the host culture in the process (Arends-Tóth & Vijver, 2009; Triandis, 2001). The culture in which individuals have been socialized can impact the content of their memory reports (Gutchess & Boduroglu, 2019; Wang, 2009; Anakwah *et al.*, 2020). Given that migrants adapt to their new cultural environments, it is necessary to examine whether this adaptation process also shapes the content of their eyewitness memory reports. A lack of relevant knowledge about how migrants formulate their memory reports as a consequence of cultural or acculturation factors may impede efforts at eliciting eyewitness memory reports from migrants. In the current research, we examined whether the acculturation of migrants in their new cultural environment has any impact on their reports from memory about witnessed events.

Cross-cultural differences: Implications for memory reports

Cultural orientation is the predisposition for members of a cultural group to think, feel, and act in ways consistent with the norms of the cultural group (Hofstede, Hofstede, & Minkov, 2010). Cultural orientation has been argued to be the basis for cross-cultural differences in social relationships (Chioneso, 2008; Hofstede, 2011; Lalwani, Shavitt, & Johnson, 2006; Uchendu, 2007). In his model of national cultures, Hofstede (1983, 2011) proposed six cultural orientations (power distance, masculinity–femininity, individualism–collectivism, long-term orientation, indulgence–restraint, and uncertainty avoidance), with countries considered low or high on each of these dimensions. Among these cultural dimensions, the individualism–collectivism dimension has been argued as the most influential regarding social phenomena (Oyserman, Coon, & Kimmelmeier, 2002; Tassell, Flett, & Gavala, 2010; Triandis, 2001). Individualism refers to a cultural orientation where the relationships between individuals tend to be very loose, whereas in collectivism, the relationships between individuals tend to be very tight (Hofstede, 1983). In individualistic cultures, it is proposed that individual goals are prioritized above that of the group, whereas in collectivistic cultures the goals of the group and collective achievement are prioritized over that of the individual (Sharma, Zhan, & Su, 2016). Thus, in collectivistic cultures, individuals are thought to be embedded in a strong cohesive in-group and are expected to remain committed to the in-group (Hofstede, 2001). Countries in Western Europe, North America, and Australia are examples of individualistic cultures, whereas countries in sub-Saharan Africa, Asia, and Latin America are examples of collectivistic cultures (Gyekye, 2002; Hofstede, 2011; Minkov *et al.*, 2017).

The prevailing cultural orientation of the society in which an individual is socialized can shape the individual's cultural self-construal and cognition (Chasiotis, Bender, Kiessling, & Hofer, 2010; Gutchess & Boduroglu, 2019; Huang & Park, 2013; Markus & Kitayama, 1991, 2003; Wang, 2001). According to prevalent theories in this domain, individuals socialized in collectivistic cultures tend to develop an interdependent self-construal, whereby the self is viewed as more integrated with the social context (Gyekye, 2002; Markus & Kitayama, 1991, 2010). Interdependent self-construal has been argued to lead to more holistic perception, making individuals inclined to attend more to context in a visual field (Boduroglu, Priti, & Nisbett, 2009; Miyamoto, Nisbett, & Masuda, 2006; Nisbett & Miyamoto, 2005). On the contrary, individuals socialized in individualistic cultures tend to develop an independent self-construal, viewing the self more as containing unique dispositions (Markus & Kitayama, 1991, 2010). Independent self-construal has been argued to lead to analytic perception, making people socialized in such

cultures more inclined to attend to focal details in a visual field (Chua, Boland, & Nisbett, 2005; Gutchess & Indeck, 2009; Miyamoto *et al.*, 2006; Nisbett & Miyamoto, 2005). These purported cultural differences at the encoding stage have been argued to impact right through to the reporting stage (Istomin, Panáková, & Heady, 2014; Masuda & Nisbett, 2001). For example, Istomin *et al.* (2014) argue that cross-cultural difference in holistic–analytic cognition affects reporting norms of the respective cultures. Consistent with this perspective, some research suggests that individuals socialized in individualistic cultures report more information about focal details, while those socialized in collectivistic cultures report more information about contextual details (Istomin *et al.*, 2014; Masuda, Gonzalez, Kwan, & Nisbett, 2008; Masuda & Nisbett, 2001).

Independent–interdependent self-construal has also been argued to lead to cross-cultural differences in terms of tendency to provide enhanced or elaborate responses (Leal *et al.*, 2018; Wang, 2004). For example, it has been suggested that individuals from collectivistic cultures acquire a habitual modest response pattern through socialization (Markus & Kitayama, 1991). This pattern has been attributed to the tendency for individuals from collectivistic cultures to exercise more self-restraint, a phenomenon known as self-effacement (Yamagishi *et al.*, 2012). Conversely, in individualistic cultures where the self is viewed as more unique and as embodying significant dispositional attributes, there is a tendency to show less restraint and be less modest in individual responses, a phenomenon referred to as self-enhancement (Yamagishi *et al.*, 2012). Thus, whereas individuals from individualistic cultures tend towards self-expression, those from collectivistic cultures are likely to be more self-restrained. These cultural differences in self-presentation have been argued to reflect in the content of memory reports (Schwarz *et al.*, 2010). For example, previous research suggests cultural differences in self-presentation shape autobiographical memory reports, with individuals from individualistic cultures providing more explicit and detailed autobiographical memory reports (Wang, 2004).

Consistent with research on cultural self-construal and autobiographical memory, research has also demonstrated cultural differences in eyewitness memory reports. For example in research by Anakwah *et al.* (2020), participants from a collectivistic culture (Ghana) and an individualistic culture (The Netherlands) were shown stimuli scenes of crime scenarios in both countries and reported what they saw. Results showed that mock witnesses from individualistic cultures provided more detailed memory reports than mock witnesses from collectivistic cultures. Interestingly, irrespective of cultural background, mock witnesses reported more central details than background details. The authors also found that mock witnesses from both cultural groups reported more details when the crime was witnessed in their own-native setting than a non-native setting. These findings suggest that a person's cultural orientation and the cultural setting of the witnessed crime can impact the content of their memory reports. If the culture in which individuals are socialized shape their memory reports, does the content of such reports change when one migrates to a new cultural environment?

Acculturation: Implications for eyewitness memory reports

The phenomenon whereby individuals who have been socialized in their native culture migrate to a new culture and adapt to the norms of the host culture has been referred to as acculturation (Berry, 2003; Birman & Simon, 2013; Chudek, Cheung, & Heine, 2015; Kim, 2001). The acculturation process involves both cultural and psychological changes (Berry, 2003; Bhugra, 2004; Hedden, Ketay, Aron, Markus, & Gabrieli, 2008). For example, it has been shown that the traditional family values of immigrants with collectivistic

cultural orientation living in an individualistic culture decrease with time living in the new cultural environment (Rosenthal, Ranieri, & Klimidis, 1996). As cultural orientation systematically impacts cognition (Chasiotis *et al.*, 2010; Markus & Kitayama, 1991; Park & Huang, 2010), the shifting of the traditional cultural values of the immigrants could also systematically shape their behaviour and cognition. It is possible that when migrants adapt to a new cultural environment, the adaptation process systematically shapes their cultural self-construal and psychological processes. Consistent with this argument, research by Mesoudi, Magid, and Hussain (2016) suggests that migrants from collectivistic cultures now living in individualistic cultures do not differ from the indigenes of the host culture in terms of holistic–analytic cognition and self-enhancement, the individualistic cultural disposition to be self-expressive and less restrained. In that research, participants were groups of migrants with collectivistic cultural backgrounds living in the United Kingdom and groups of British non-migrants who completed measures of cultural orientation and cognitive styles (categorization and drawing tasks). The researchers also observed that migrants declined in collectivism the longer they lived in the host culture. Although no longitudinal or transitional data were available, such similarities are suggestive of an acculturation effect on the migrant's cultural orientation and psychological processes. As such, the content of eyewitness memory reports of migrants living in individualistic cultures may share similarities with that of eyewitnesses from the host culture.

Previous work suggests that the content of the autobiographical memory reports of migrants may be shaped by acculturation (Kim, 2013; Wang, 2013). For example, in a study by Wang (2013), Asian immigrants and Caucasians living in the United States received text messages three times within a week that asked them to record what was happening 30 min before they received the text message. At the end of the week, the participants were given surprise memory tests about what they had recorded. The Asian migrants and the indigenous Caucasians did not differ in their autobiographical memory reports. It was also observed that Asian migrants who moved to the USA at an earlier age identified more with American culture and provided elaborate details than those who migrated at an older age. Thus, while it is important that forensic interviews consider the cultural background of the interviewee, taking cultural background into account when interviewing eyewitnesses who are migrants, without an appreciation of whether acculturation factors might influence their memory reports, may be counterproductive.

The present study

Eyewitness evidence is crucial in legal proceedings. Criminal prosecutions, as well as legal decision-making, often rely on eyewitness accounts (Albright, 2017; Fisher, 2010; Wells *et al.*, 2020). To date, there is no research examining the impact of migrants' acculturation on their eyewitness memory reports. Also, studies on acculturation have usually compared migrants with participants from the host culture (Arends-Tóth & Vijver, 2009; Mesoudi, Magid, & Hussain, 2016). While that approach allows comparison of cultural values, it does not enable an assessment of potential divergence of cultural orientation within the same cultural group when some have migrated but others have not. An appropriate comparison group in this regard would be members of the same cultural group currently living in the native culture.

Individualistic cultures are usually the regions of destinations for most migrants, who mostly are from countries with collectivistic orientation (Birman & Simon, 2013; United Nations Population Division, 2019). In the current study, we compared the eyewitness memory reports of migrants with a collectivistic cultural background but living in an

individualistic culture, with that of those living in their native culture. We recruited sub-Saharan African migrants living in Western Europe, with sub-Saharan Africans living in Africa as a comparison control group. Based on previous findings (Rosenthal *et al.*, 1996), we expected that during the years in Western Europe, self-reported collectivism among sub-Saharan African migrants would decrease. We also expected that the self-reported individualism of sub-Saharan African migrants would increase during the years in Western Europe. Based on the findings of previous research (Anakwah *et al.*, 2020), we predicted that sub-Saharan Africans living in Western Europe would report more central and background details than sub-Saharan Africans living in Africa. Although previous research suggests that mock witnesses report more details for their own-native setting than a non-native setting (Anakwah *et al.*, 2020), in view of the hypothesized acculturation, we expected these migrants to report an equal amount of details for sub-Saharan African crime settings and Western European crime settings.

Methods

Participants and design

A total of 107 participants took part in the current study. Of these, 60 (10 females and 50 males; $M_{\text{age}} = 21.03$, $SD = 2.58$) were sub-Saharan Africans living in Africa and 47 (22 females and 25 males, $M_{\text{age}} = 25.38$, $SD = 4.96$) were sub-Saharan African migrants living in Western Europe. Sub-Saharan Africans in Western Europe were from Ghana ($n = 20$), Guineas Bissau ($n = 3$), Kenya ($n = 4$), Malawi ($n = 1$), Nigeria ($n = 11$), Tanzania ($n = 2$), Uganda ($n = 2$), and Zimbabwe ($n = 3$). One sub-Saharan African migrant did not specify the country of origin.¹ The migrants were sampled in The Netherlands and The United Kingdom. All the countries' migrants originated from are collectivistic in cultural orientation (Hofstede, 1983, 2011; Minkov *et al.*, 2017). Participants in this sample all had university-level education at either bachelors or post-graduate education level (see Appendix S1 for exploratory analyses with respect to education).² The average duration of residence of the migrants in Western Europe was 99.33 months ($SD = 101.89$; range: 2–288 months, equivalence of 0.17–24 years). Sub-Saharan Africans living in Africa were born and raised in Ghana. Participants who volunteered for compensation were given a €5 shopping voucher in Western Europe, or a GH¢10 credit card voucher in sub-Saharan Africa; some participants opted to take part without compensation. The design was a 2 (Group location: Africans living in Western Europe, Africans living in Africa) \times 2 (Crime setting: European setting, African setting) mixed factorial design. The between-group variable was cultural group, and the within-group variable was crime setting. Dependent variables were correct details, incorrect details, and unanswered questions (Don't know responses)³ for both central and background information.

Materials

Stimuli

Eight photographs with rich central and background details were used as stimuli. These photographs consisted of four different crime scenarios (a theft, assault, robbery, and an

¹ This participant was included in analysis as he fell within inclusion criteria specifying sub-Saharan African migrants.

² Only one of the sub-Saharan Africans living in Africa had primary education level. Excluding data for this participant did not change the pattern of results so it was included in the analysis.

³ This variable refers to situations where participants responded don't know or don't remember.

accident). Each of the depicted crime scenarios had a Ghanaian and a Dutch setting. The staged crimes in these settings were by actors from the respective countries. For example, actors for scenarios for Ghanaian settings were all from sub-Saharan Africa. Similarly, actors for scenarios for Dutch settings were from Western Europe. Also, the actors in the respective photos were different for each of the stimuli, for both Dutch and Ghanaian settings. This variation was introduced to limit the impact of any stimulus-specific effects. The stimuli were developed, piloted, and used in a previous study (Anakwah *et al.*, 2020). In that study, two of the stimuli were piloted (1 Ghanaian setting and 1 Dutch setting) in Ghana and the Netherlands to find out whether participants regard them as representing their respective settings, and also a crime setting. A total of 14 participants (9 males and 5 females, $M = 24.07$, $SD = 3.20$) from Ghana and 15 participants (4 males and 11 females, $M = 30.40$, $SD = 13.12$) from the Netherlands rated the extent to which the stimuli represented scenes in Western Europe and sub-Saharan Africa, using a five-point Likert scale. The mid-rating score was used as a criterion in determining whether the stimuli received an adequate rating, consistent with previous research (Paz-Alonso, Goodman, & Ibabe, 2013). Participants rated the stimuli to adequately represent setting in their respective countries (Ghanaian stimuli – $M = 3.79$, $SD = .97$; Dutch stimuli – $M = 3.33$, $SD = .62$) and also reflect plausible crime scenes (Ghanaian stimuli – $M = 3.43$, $SD = 1.28$; Dutch stimuli – $M = 3.47$, $SD = .83$). Consistent with previous studies, we operationalized centrality both in terms of importance to the plot and visual centrality (Boduroglu *et al.*, 2009; Mahé, Corson, Verrier, & Payoux, 2015; Masuda & Nisbett, 2006; Wong, Yin, Yang, Li, & Spaniol, 2017; Wyler & Oswald, 2016). To confirm what constituted central and background event(s), participants in the pilot test made centrality judgements. They were asked the following questions: (1) 'What do you regard as central event', and (2) 'What do you regard as background events'. Participants' judgement of central and background events was consistent with our operationalization, in line with previous research (Davidson & Vanegas, 2015). The stimuli are available at Open Science Framework via https://osf.io/t89hu/?view_only=59e038117b2d4d5588e00c804de3539a.

Cultural orientation scale

The cultural orientation scale (Triandis & Gelfand, 1998) was used to measure the self-reported cultural orientation of participants. The scale measures individualism and collectivism across 16 items and uses a nine-point Likert scale ranging from 1 (never or definitely no) to 9 (always or definitely yes). Sample items are '*Family members should stick together, no matter what sacrifices are required*' and '*My personal identity, independent of others, is very important to me*'. The cultural orientation scale has a reliability of .75 (Gelfand & Realo, 1999).

Procedures

After consenting to participation, participants completed the cultural orientation scale and provided demographic details (gender, education level, country of origin, and duration of residence in host country). They then viewed the first crime scenario for five seconds. This exposure duration is consistent with exposure durations used in previous studies using similar methodologies (e.g., Levy-Gigi & Vakil, 2014; Prull & Yockelson, 2013; Wang & Pomplun, 2012). Following this, participants completed a short distraction task (mathematical problem) for 5 min. After that, participants provided a free recall account of what they had seen in the crime scenario. They were

asked to provide as much information as possible in their own words and to be as accurate and detailed as possible. Participants had up to six minutes to provide this verbal-free recall and were informed they still had time to remember and report more if they finished their initial account before the six minutes had elapsed. This time limit was based on earlier pilot observations, and all participants completed their account before six minutes had elapsed. Following the free recall task, participants were asked a series of cued recall questions about the scenario. The cued recall task consisted of 20 questions about details of the stimulus event (10 questions each about central and background details). Cued recall questions alternated between central and background details. Participants then viewed the next crime scenario after which they completed a distraction task. Again, this was followed by free and cued recall tasks. The instructions and questions were in English, for all participants, who were all proficient in the language.⁴ The procedure continued, using exactly the same instructions for all groups until participants had finished viewing all four of the crime scenario stimuli. The presentation of the crime scenario stimuli was counterbalanced. The interviews were conducted by the first author and a research assistant, who were both trained on the study protocol and used the same script. The study protocol received ethical approval from the Ethics Review Committee Inner City faculties, Maastricht University, and the Ethics Committee for the Humanities, University of Ghana.

Coding

The coding protocol used by Anakwah *et al.* (2020) was used in coding the transcripts for the current experiment. The protocol categorizes the crime scenario details into central and background information, based on the stimulus centrality established in the pilot study. For both the free and cued recall tasks, information that was present in the stimuli and accurately described was scored as correct. Information that was present but described inaccurately was scored as incorrect. A response was also scored as incorrect if it was a detail mentioned by participants that was not actually present in the scene. 'Don't know' or 'Don't remember' responses to cued recall questions were coded as unanswered questions. Subjective (e.g, The car belonged to the woman lying on the floor) and vague responses (e.g, left or right arm) were not coded. Each detail that was scored as correct received 1 point. Similarly, each detail scored as incorrect received 1 point. This was same for both free and cued recall. Don't know responses under cued recall also received 1 point each. The scores were aggregated for the respective variables. The first author conducted the coding. A second coder who was also trained on the coding guide and blind to the hypothesis coded 17% of the transcripts for inter-coder reliability. There was high inter-rater reliability (intra-class correlation coefficient) for all variables (ranged from .72 to .99; see Appendix S1).

Results

The analysis was conducted using mixed ANOVA with group location as the between-subjects factor and crime setting as the within-subject factor. Pearson's *r* was used for analysis on the relationship between migrants' duration of residence and internalized

⁴ All migrant participants and participants in Ghana were proficient in English. The official language and medium of instruction in educational institutions, from basic to tertiary level in Ghana is English.

cultural norms, as well as analysis on the relationship between migrants' duration of residence and reported details.

Free recall

Central details

There was a significant main effect of group location on the number of correct central details reported, $F(1, 105) = 5.32, p = .02, \eta_p^2 = .05$. Sub-Saharan African migrant mock witnesses ($M = 12.81, SD = 6.31$) reported more correct central details than sub-Saharan African mock witnesses living in Africa ($M = 9.98, SD = 6.27$). See Table 1 for descriptive statistics. Crime setting did not have a significant main effect on the number of correct central details reported, $F(1, 105) = .48, p = .49, \eta_p^2 = .01$. The interaction between location and crime setting for the number of correct central details reported was also not significant, $F(1, 105) = .61, p = .44, \eta_p^2 = .01$.

Group location did not have a significant main effect on the number of incorrect central details reported, $F(1, 105) = 3.74, p = .06, \eta_p^2 = .03$. We proceeded with a Bayes analysis and found a Bayes factor of $BF_{01} = 1.09$, showing a weak evidence in favour of the null hypothesis (Raftery, 1995). Sub-Saharan African migrants in Western Europe ($M = .88, SD = .89$) reported more incorrect central details than sub-Saharan Africans located in Africa ($M = .55, SD = .85$). The setting of crime also did not have a significant main effect on the number of incorrect central details reported, $F(1, 105) = .00, p = .98, \eta_p^2 = .00$. The interaction between group location and crime setting was also not significant $F(1, 105) = 1.90, p = .17, \eta_p^2 = .02$.

Background details

Location of group did not have a significant main effect on the number of correct background details reported, $F(1, 105) = .96, p = .33, \eta_p^2 = .01$. Crime setting, however, had a significant main effect on the number of correct background details reported, $F(1, 105) = 4.19, p = .04, \eta_p^2 = .04$. Mock witnesses reported more correct background

Table 1. Mean (standard deviation) of correct details, incorrect details, and unanswered questions by groups

			Sub-Saharan African migrants	Sub-Saharan Africans in Africa
			<i>M (SD)</i>	<i>M (SD)</i>
Free Recall	Correct	Central	12.81 (6.31)	9.98 (6.27)
		Background	8.42 (4.52)	7.55 (4.57)
	Incorrect	Central	0.88 (0.89)	0.55 (0.85)
		Background	0.77 (0.82)	0.38 (0.77)
Cued Recall	Correct	Central	17.75 (4.80)	16.83 (4.80)
		Background	8.89 (4.18)	7.79 (4.18)
	Incorrect	Central	5.53 (2.19)	4.29 (2.25)
		Background	4.87 (2.54)	4.23 (2.56)
	Unanswered Questions	Central	5.00 (2.61)	5.23 (2.63)
		Background	8.65 (3.63)	9.23 (3.64)

details for Western European crime settings ($M = 8.59$, $SD = .47$) than they did for sub-Saharan African crime settings ($M = 7.38$, $SD = .59$). There was no interaction effect between crime setting and location of group on correct background details $F(1, 105) = .87$, $p = .35$, $\eta_p^2 = .01$.

There was a significant main effect of group location on the number of incorrect background details $F(1, 105) = 6.24$, $p = .01$, $\eta_p^2 = .06$. Sub-Saharan African migrant mock witnesses ($M = .77$, $SD = .82$) reported more incorrect background details than sub-Saharan Africans living in Africa ($M = .38$, $SD = .77$). See Table 1 for descriptive statistics. The setting of crime also had a significant main effect on the number of incorrect background details $F(1, 105) = 11.61$, $p = .001$, $\eta_p^2 = .10$. Mock witnesses reported more incorrect background details for Western European crime settings ($M = .72$, $SD = 1.10$) than they did for sub-Saharan African crime settings ($M = .37$, $SD = .81$). However, there was no interaction effect between group and crime setting on incorrect background details $F(1, 105) = 1.49$, $p = .23$, $\eta_p^2 = .01$.

Cued recall

Central details

Location had no significant main effect on correct central details reported under the cued recall task, $F(1, 105) = .97$, $p = .33$, $\eta_p^2 = .01$. Neither the main effect of crime, $F(1, 105) = .61$, $p = .44$, $\eta_p^2 = .01$, nor the interaction, $F(1, 105) = 2.70$, $p = .104$, $\eta_p^2 = .03$, was significant for the number of correct central details reported in response to cued recall questions.

There was a significant effect of group on incorrect central details reported in response to cued recall questions, $F(1, 105) = 8.29$, $p = .01$, $\eta_p^2 = .07$. Sub-Saharan African migrants ($M = 5.53$, $SD = 2.19$) provided more incorrect central details than sub-Saharan Africans living in Africa did ($M = 4.29$, $SD = 2.24$). Setting of crime did not have a significant main effect on incorrect central details reported, $F(1, 105) = .39$, $p = .54$, $\eta_p^2 = .00$. There was also no interaction effect between group and crime setting on incorrect central details reported, $F(1, 105) = 1.30$, $p = .26$, $\eta_p^2 = .01$.

The setting of crime had a significant effect on unanswered questions for central details, $F(1, 105) = 19.30$, $p < .001$, $\eta_p^2 = .16$. There were more unanswered questions about central details for Western European crime settings ($M = 5.66$, $SD = 2.90$) than there was for sub-Saharan African crime settings ($M = 4.58$, $SD = 2.90$). Neither the main effect of location, $F(1, 105) = .21$, $p = .65$, $\eta_p^2 = .00$, nor the interaction between location and crime setting, $F(1, 105) = 1.65$, $p = .20$, $\eta_p^2 = .02$ for unanswered questions about central details was significant.

Background details

The setting in which the crime was witnessed had a significant main effect on correct background details reported by mock witnesses in response to cued recall questions, $F(1, 105) = 44.11$, $p < .001$, $\eta_p^2 = .30$. Mock witnesses reported more correct background details if the crime was witnessed in a Dutch setting ($M = 9.91$, $SD = 5.20$) than if it was witnessed in a Ghanaian setting ($M = 6.64$, $SD = 4.63$). Neither the main effect of location, $F(1, 105) = 1.81$, $p = .18$, $\eta_p^2 = .02$, nor the interaction effect between location and setting of crime, $F(1, 105) = .17$, $p = .68$, $\eta_p^2 = .00$, on correct background details reported was significant.

Location had no significant main effect on incorrect background details reported, $F(1, 105) = 1.72, p = .19, \eta_p^2 = .02$. The setting of the crime, however, had a significant main effect on incorrect background details reported by the groups, $F(1, 105) = 12.71, p = .001, \eta_p^2 = .11$. Mock witnesses reported more incorrect background details for Western European crime settings ($M = 5.06, SD = 2.30$) than they did for sub-Saharan African crime settings ($M = 4.04, SD = 2.30$). Group location and crime setting had a significant interaction effect on incorrect background details reported, $F(1, 105) = 4.96, p = .03, \eta_p^2 = .05$. Sub-Saharan African migrant mock witnesses significantly reported more incorrect background details for Western European crime settings than they did for sub-Saharan African crime settings ($p = .001$). Sub-Saharan Africans located in Africa, however, did not differ in incorrect background details reported for both crime settings ($p = .30$). See Table 2 for descriptive statistics.

There was no significant main effect of group on unanswered questions about background details $F(1, 105) = .65, p = .42, \eta_p^2 = .01$. Setting of crime had a significant main effect on unanswered questions about background details $F(1, 105) = 10.75, p = .001, \eta_p^2 = .09$. There were more unanswered questions about background details for sub-Saharan African crime settings ($M = 9.62, SD = 4.45$) than Western European crime settings ($M = 8.25, SD = 4.14$). However, there was no interaction effect between group and crime setting on unanswered questions about background details $F(1, 105) = .20, p = .66, \eta_p^2 = .00$.

Prioritized details

A repeated-measures ANOVA was used to determine the type of detail that was mostly reported in the eyewitness memory reports of migrants. Sub-Saharan African migrants in Western Europe provided significantly more central details than background details in both free recall $F(1, 46) = 23.79, p < .001, \eta_p^2 = .34$, and cued recall tasks $F(1, 46) = 119.92, p < .001, \eta_p^2 = .72$. Similarly, sub-Saharan Africans in Africa also significantly reported more central details than they did for background details, also for both free

Table 2. Mean (standard deviation) of correct details, incorrect details, and unanswered questions for crime setting by groups

			Sub-Saharan African Migrants		Sub-Saharan Africans in Africa	
			Ghanaian setting M (SD)	Dutch setting M (SD)	Ghanaian setting M (SD)	Dutch setting M (SD)
Free Recall	Correct	Central	12.79 (7.58)	12.83 (8.85)	10.35 (5.44)	9.62 (5.35)
		Background	8.09 (7.11)	8.74 (4.78)	6.67 (5.11)	8.43 (4.77)
	Incorrect	Central	0.79 (1.06)	0.98 (1.38)	0.65 (1.33)	0.45 (.75)
		Background	0.66 (1.05)	0.87 (1.19)	0.15 (.44)	0.60 (1.01)
Cued Recall	Correct	Central	17.51 (6.01)	17.98 (6.72)	17.48 (4.70)	16.17 (4.91)
		Background	7.15 (5.81)	10.64 (5.92)	6.25 (3.44)	9.33 (4.54)
	Incorrect	Central	5.79 (3.49)	5.28 (2.56)	4.22 (2.31)	4.37 (2.31)
		Background	4.04 (3.58)	5.70 (3.44)	4.03 (2.30)	4.42 (2.47)
	Unanswered Questions	Central	4.62 (3.09)	5.38 (3.03)	4.53 (2.70)	5.93 (2.79)
		Background	9.43 (5.10)	7.87 (4.31)	9.82 (3.75)	8.63 (3.90)

Table 3. Mean (Standard Deviation) of amount of central vs background details for groups under free and cued recall

	Sub-Saharan African migrants		Sub-Saharan Africans in Africa	
	Central <i>M (SD)</i>	Background <i>M (SD)</i>	Central <i>M (SD)</i>	Background <i>M (SD)</i>
Free Recall	27.38 (16.41)	18.36 (11.22)	21.07 (10.80)	15.85 (8.48)
Cued Recall	46.55 (14.23)	27.53 (14.40)	42.23 (9.24)	24.03 (8.07)

recall $F(1, 59) = 17.05, p < .001, \eta_p^2 = .22$, and cued recall $F(1, 59) = 232.68, p < .001, \eta_p^2 = .80$. See Table 3 for descriptive statistics on prioritized details.

Duration of residence and memory reports

There was a small but significant relationship between the number of correct central details reported and duration of residence in Western Europe, for both free recall ($r(47) = .29, p = .048$) and cued recall ($r(47) = .30, p = .041$). There was, however, no significant relationship between migrants' duration of residence in individualistic culture and the number of correct background details reported for free recall ($r(47) = .12, p = .442$) and cued recall ($r(47) = .07, p = .624$).

Migrants and self-reported individualism/collectivism

There was a significant difference in self-reported individualism for the two groups, $t(105) = 2.43, p = .02, d = .47$. Sub-saharan Africans in Africa ($M = 51.35, SD = 9.55$) gave higher ratings on individualism than sub-Saharan Africans in Western Europe ($M = 46.96, SD = 8.91$). Self-reported collectivism between migrants in Western Europe and Africans located in Africa did not significantly differ, $t(105) = .77, p = .45, d = .15$. However, we found a significant negative correlation between sub-Saharan African migrants' duration of residence in Western Europe and their self-reported collectivism, $r(47) = -.56, p < .001$. Duration of residence in Western Europe was not related with self-reported individualism $r(47) = .01, p = .97$.

Discussion

In this study, we compared eyewitness memory reports provided by sub-Saharan African migrants with reports provided by sub-Saharan Africans located in Africa. We found that mock witnesses across groups reported central details more than they did for background details. We also found that sub-Saharan African migrants in Western Europe provided more correct central details in their free recall accounts than did sub-Saharan Africans in Africa. An exploratory correlation analysis suggested that the sub-Saharan African migrants reported more details the longer they lived in Western Europe.

Sub-Saharan African migrants reported more correct central details in their free recall than did sub-Saharan Africans living in Africa. This more elaborative reporting by sub-Saharan African migrant mock witnesses could be due to reporting norms in Western cultures that emphasize explicitness (Holtgraves, 1997). Previous research has reported a similar pattern of findings, with Western Europeans providing more detailed responses in their memory reports than sub-Saharan Africans living in Africa (Anakwah *et al.*, 2020).

Through childhood socialization, people from individualistic cultures tend to become more elaborate in communication than people from collectivistic cultures (Jobson, 2009). Wang and colleagues (Wang & Ross, 2005; Wang, Song, & Kim Koh, 2017) argued that such cultural differences in memory reports occur because each culture creates a model of what life narratives or personal storytelling should look like, resulting in response bias in memory narratives. The model for reporting life narratives in individualistic cultures tends to emphasize specificity and explicitness whereas in collectivistic cultures, reporting models tend to be more general and less explicit (Jobson, 2009; Wang, 2001). Hence, it is possible that through socialization in the new culture, the migrants become adapted to the reporting models of the individualistic culture overtime. That speculation is consistent with the finding that migrants reported more elaborate details the longer they have lived in their new culture. Living in the new cultural environment could facilitate cultural learning and socialization into the host cultural norms. Thus, socialization might occur not only when one migrates as a child or adolescent, but is also the case for adult migrants. That is because, although cultural norms have been suggested to be formalized in childhood and adolescence (Chua *et al.*, 2005; Nisbett & Masuda, 2003), cultural learning facilitates the adaptation of adult migrants to the new cultural environment (Hsu, 2010; Mesoudi, 2018). This adaptation, however, may be more rapid for those who migrated at a younger age (before age 15; Cheung *et al.*, 2011; Tsai, Ying, & Lee, 2000). Notwithstanding, research also shows sub-Saharan migrants who migrated as adults seem to adapt more quickly to the host culture overtime (Chudek *et al.*, 2015). Future research should explore differences in memory reports between those who migrated as children and those who migrated as adults.

It is possible that as migrants adapt to their new cultural environment, they also become predisposed to self-enhance, a cultural disposition identified among individualistic cultures (Takata, 2003; Yamagishi *et al.*, 2012). Research has shown cultural differences in self-expression, with self-enhancement identified as a characteristic of individualistic cultures whereas self-effacement is identified as a feature of collectivistic cultures (Suzuki, Davis, & Greenfield, 2008). Markus and Kitayama (1991) argued that the modest self-presentation among collectivistic cultures could lead to giving modest responses and providing descriptions that are abstract and lack informativeness. That tendency for cultures to differ at the level of description might be illustrated by contrasting American and Japanese proverbs, two cultures that reflect the individualistic and collectivistic dimensions, respectively. Markus and Kitayama (1991) note the difference between the American proverb 'the squeaky wheel gets the grease' and the Japanese proverb 'the nail that sticks out gets pounded' (p. 224). These proverbs in the respective cultures illustrate cultural differences in self-presentation. When migrants from a collectivistic culture move to an individualistic culture, it is likely that the demands of the new culture require migrants from collectivistic cultures to assert their uniqueness. It is possible that, in terms of self-presentation, they become less modest and instead, assert their unique traits and attributes as a way of adapting to the host culture. For example, Hsu (2010) argues that the communication traits of migrants become more similar to those of the host culture in an effort to meet the new cultural demands. The shift in self-presentation is consistent with studies that have found migrants from collectivistic cultures do not differ from the non-migrant individualistic cultural group in self-enhancement (Mesoudi *et al.*, 2016). It may be helpful to assess the cultural adaptation of the migrant witness (e.g., using a cultural adaptation inventory) to determine migrants' level of acculturation and tailor interviewing techniques accordingly. Thus, we recommend future research to examine this issue further in field settings.

Consistent with the acculturation effect, we found sub-Saharan African migrants' self-reported collectivism decreased with time living in Western Europe. This finding is consistent with studies showing that when people migrate to a different cultural environment, their cultural orientation is impacted as they adapt to the host culture (Bhugra, 2004; Rosenthal *et al.*, 1996). Research suggests such migrants can be primed to respond in a manner consistent with either the norms of the host culture or that of their home culture (Adair & Xiong, 2018; Mok & Morris, 2009; Peng & Knowles, 2003; Wang, 2008; Wang & Ross, 2005). Thus, it is possible the migrants adjust their cognitive style depending on the cultural context. In forensic and asylum seeker settings, priming migrants' self-construal might be beneficial for information elicitation. Research on cultural priming has demonstrated the content of memory reports reflects aspects of self-construal that is primed (Wang & Ross, 2005). Techniques employed in previous research to prime the independent self-construal included asking participants to describe themselves as unique individuals or listing personal attributes and beliefs about themselves, prior to recall (Wang & Ross, 2005). Such priming techniques have been shown to yield results consistent with the aspect of the self that is primed. Future research should examine whether cultural priming would facilitate memory reports consistent with the reporting norms of the primed culture.

There were similar amount of unanswered questions by sub-Saharan African migrant mock witnesses and sub-Saharan Africans living in Africa. In a previous study, more questions were left unanswered by mock witnesses from collectivistic cultures than mock witnesses from individualistic cultures (Anakwah *et al.*, 2020). The authors argued that mock witnesses from collectivistic cultural background used strict criterion for reporting, which resulted in leaving questions they were not certain or confident about the answer unanswered (Anakwah *et al.*, 2020). The findings of the current study suggest that when people from collectivistic cultures migrate to individualistic cultures, that tendency might persist in their memory reports. Thus, even though migrants adapt to their new cultural environment, this does not affect confidence in their memory reports. Hence, during investigative interviews with eyewitnesses who are migrants from collectivistic cultures, it may be appropriate to emphasize that they should report any detail they remember no matter how insignificant it might be. Future research should examine accuracy–confidence trade-offs in memory reports across different cultural groups, including migrants.

Both sub-Saharan African migrants and sub-Saharan Africans living in Africa reported central details more than background details. That finding is not consistent with research on self-construal and cognition suggesting individuals with collectivistic cultural orientation report more contextual than focal details (Istomin *et al.*, 2014; Masuda *et al.*, 2008). That could be attributed to the fact that previous research on self-construal and cognition used neutral and ordinary scenes as the to-be-remembered stimuli. The stimuli used in the current study, however, depicted crime scenarios. The threatening nature of a crime may draw more attention to the focal details and featured prominently in memory reports than other contextual details (Yegiyani & Lang, 2010). The current finding is consistent with previous research in which mock witnesses reported more central details (cf. background details) about a crime scenario, regardless of their cultural background (Anakwah *et al.*, 2020).

There are some limitations associated with the present research. The varied experiences when people migrate may limit the generalizability of the study findings. People migrate for different reasons, including to pursue education, to continue relationships, to benefit economically, and to seek asylum. Depending on their reasons for

migration, migrants are likely to have quite different experiences and exposure to the host culture (Orton, 2012). For example, people who migrated for education or economic reasons are more likely to come into contact with other members of the host culture. As most participants in our study had migrated for education and economic reasons, they are likely to have other members of the host culture within their social network, facilitating exposure to the host cultural norms. Conversely, some migrants may have minimal social contact with other members of the host culture. Research has shown minimal change in cultural norms among migrants whose social network is limited to migrant members of their home culture (Chioneso, 2008). Future research should examine the extent to which acculturation affects the eyewitness memory report among such migrants. A related limitation is that motivation to embrace the host culture among migrants may vary. For example, migrants who have migrated to Europe for the long-term might have a strong motivation to embrace and adapt to the host culture than migrants who are in Europe for a short period. Thus, it is likely that the effects of acculturation might differ depending on the motivation of migrants to engage with the host culture. Future research should examine whether motivation to engage with the host culture plays any role in the acculturation effect.

It is also possible that people who choose to migrate, share some idiosyncratic features that could be a confound in the current study. In other words, it may be the case that migrants are already different in some way from the population who stay in their native country. A longitudinal design tracking the nature of memory reports of migrants over time, from the period of arrival in the host country, may contribute to a fuller understanding of the extent of acculturation in the memory reports. That said, the comparison group of sub-Saharan Africans located in Africa was a first step in determining how the reporting norms of African migrants change as they adapt to their new culture. This approach is consistent with previous acculturation research where group differences and duration of residence in the host culture were used as a proxy for acculturation (e.g., Berry, Phinney, Sam, & Vedder, 2006; Cheung *et al.*, 2011; Chudek *et al.*, 2015; Wang, 2013; Wang & Ross, 2005).

We also acknowledge the possibility of cross-cultural factors to have accounted for the ratings on the Cultural Orientation Scale. For example, sub-Saharan Africans in Africa self-reported high individualism ratings, inconsistent with the individualism—collectivism model of national cultures. In our previous study comparing Africans with Western Europeans, we found a similar pattern (Anakwah *et al.*, 2020). Specifically, in that study, sub-Saharan Africans living in Africa self-reported higher individualism scores than Western Europeans. Also, sub-Saharan Africans in Africa in that study did not differ from Western Europeans on self-reported collectivism. Such unexpected responding has been shown to be attributable to a response process that is culturally grounded (Harzing, 2006) and concerns over such unexpected differences have been expressed in the cross-cultural research literature (Bou Malham & Saucier, 2016; Lalwani *et al.*, 2006). Previous research in cross-cultural psychology has shown that social desirability/ acquiescence response patterns are stronger among collectivistic cultural samples (de Bruïne, Vredeveldt, & van Koppen, 2018; He & Van de Vijver, 2016; Kim & Kim, 2016), and this issue has been highlighted as a major challenge in conducting cross-cultural surveys (Kemmelmeier, 2016). In view of such response bias in previous cross-cultural surveys, some have argued response bias in cross-cultural studies should be considered a cultural behaviour in themselves (Bou Malham & Saucier, 2016; Kemmelmeier, 2016).

Finally, we acknowledge the possibility of the instruction for participants to recall the event in six minutes to have created time pressure that may have impaired reporting. It is noteworthy, however, that previous verbal-free recall task with this kind of stimuli and piloting suggested this was an adequate amount of time to make available (Anakwah *et al.*, 2020). Indeed throughout the testing, none of the participants in any of the groups exhausted the six minutes in the free recall report tasks.

Conclusion

The main aim of the current research was to examine whether the eyewitness memory reports of migrants are impacted by their new cultural environment. We sampled mock witnesses who are sub-Saharan African migrants in Western Europe and sub-Saharan Africans living in Africa as a control group. Our results suggest that migrants originally from a collectivistic culture but now living in individualistic cultures provide more elaborate memory reports in free recall than individuals located in their native culture. This acculturation effect in eyewitness memory report is consistent with our finding that the self-reported collectivism of sub-Saharan African migrants attenuates with time living in Western Europe. Our findings provide some preliminary insights for investigative professionals with respect to how the eyewitness memory reports of migrants may be impacted as they adapt in their host culture.

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Author contributions

Nkansah Anakwah: Conceptualization; Data curation; Formal analysis; Investigation; Methodology; Project administration; Software; Validation; Visualization; Writing – original draft; Writing - review & editing; Robert Horselenberg: Conceptualization; Funding acquisition; Methodology; Supervision; Validation; Writing – review & editing; Lorraine Hope: Conceptualization; Funding acquisition; Methodology; Supervision; Validation; Writing – review & editing; Margaret Amankwah-Poku: Methodology; Project administration; Resources; Peter J. van Koppen: Funding acquisition; Conceptualisation; Methodology; Supervision; Writing – review & editing.

Conflicts of interest

All authors declare no conflict of interest.

Data availability statement

The data supporting the findings of this study are openly available at https://osf.io/yrdsd/?view_only=a7a432a8c6cb47ceba8472769592fe57.

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Supporting Information

The following supporting information may be found in the online edition of the article:

Appendix S1. Materials.