Investigating the effects of age and gender on co-witness suggestibility during blame attribution.

Abstract

Despite a large body of research investigating the effects of age and gender on eyewitness suggestibility, the majority of studies have focussed on the impressionability of participants when attempting to recall the presence of items from an event. Very little research has attempted to investigate the effects of age and gender on the suggestibility of eyewitnesses when attempting to attribute blame. Participants (*N*=268) viewed and discussed a crime (video) with co-witnesses before giving individual statements. Confederates were used to expose the participants to misinformation during the discussion, suggesting that the wrong bystander was responsible for the offence. Findings indicated that participants who encountered the misinformation were more likely to make a false blame attribution and were more confident in their erroneous judgements. The results found no significant age or gender-related differences in blame conformity rates, however, male eyewitnesses showed greater levels of overconfidence in their false responses than female participants, after encountering co-witness misinformation.

Introduction

Survey-based evidence suggests that approximately 86% of crime eyewitnesses will discuss their incident with others, prior to giving their statements (Paterson & Kemp, 2006a). Post-event discussions are to be expected, as eyewitnesses will often choose to discuss the event with others as a means of validating their own account (Blank, 2009; Williamson, Weber, & Robertson, 2013). However, research has shown that post-event discussions can influence many witnesses into reporting unwitnessed information, learnt from other co-witnesses, into their own statements — a process commonly referred to as *memory conformity* (Carlucci, Kieckhaefer, Schwartz, Villalba, & Wright, 2010; Davis & Meade, 2013; Garry, French, Kinzett, & Mori, 2008; Paterson & Kemp, 2006b; Paterson, Kemp, & Forgas, 2009; Paterson, Kemp, & McIntyre, 2012; Roediger, Meade, & Bergman, 2001; Wright, Mathews, & Skagerberg, 2005).

Much of the research on memory conformity has typically shown that participants can be influenced into incorrectly reporting both peripheral details from an event (such as the colour of the offender's clothing; see Gabbert, Memon, Allan, & Wright, 2004), as well as information more central to the incident (such as the number of perpetrators involved; see Wright, Self, & Justice, 2000). More recent research has demonstrated that participants can also be influenced by their co-witnesses when attempting to attribute blame — a form of memory conformity, otherwise referred to as *blame conformity* (see Mojtahedi, Ioannou, & Hammond, 2017; Mojtahedi, Ioannou, & Hammond, 2018a; Mojtahedi, Ioannou, & Hammond, 2018b; Thorley, 2015; Thorley & Rushton-Woods, 2013). Thorley (2015) demonstrated the effects of blame conformity in a study which showed participants footage of a crime taking place, before providing them with a misleading statement from a previous witness which blamed an innocent bystander for committing the crime. The study found that many participants would later conform to the misleading co-witness when asked to indicate

who they believed committed the crime. Interestingly, the study found that participants only conformed to co-witnesses who were young adults and rejected misinformation from co-witnesses who were elderly, suggesting that blame conformity is somewhat of an intentional behaviour that witnesses may be conscious about. Whilst the study was seminal in demonstrating the risks of post-event information on blame attribution, the experiments presented the co-witness misinformation through hypothetical witness statements. Resultantly, the observed misinformation effect may not be a reliable representation of misinformation encountered through co-witness discussions. In an attempt to build on Thorley's research on blame conformity, the present study aimed to investigate whether age and gender differences existed in eyewitness suggestibility when attributing blame.

Exposure to co-witness misinformation can also influence the level of confidence a witness will have in their statement, which can consequently have an impact on their willingness to give evidence in court (Allwood, Knutsson, & Granhag, 2005; Luus & Wells, 1994; Semmler, Brewer, & Wells, 2004; Skagerberg & Wright, 2009). Research suggests that exposure to contradicting co-witness information can cause many witnesses to lose confidence in their own recollections (Gabbert, Memon, & Allan, 2003; Luus & Wells, 1994); conversely, studies have shown that exposure to confirmatory information from co-witnesses can cause witnesses to gain more confidence in their recollections (Allwood et al., 2006; Semmler et al., 2004).

Causes of co-witness influence.

Theories on co-witness influence suggest that individuals can conform to post-event information through both intentional and unintentional processes (Patterson et al., 2012). An eyewitness can intentionally conform to a co-witness's misinformation through informational influence, a process where the witness perceives the source of information as being more likely to be correct than their self and accepts their information as reality (Kaplan & Miller,

1987; French, Gary, & Mori, 2011; Wright, London, & Waechter, 2009). Eyewitnesses can also unintentionally incorporate misinformation from others into their statements through source monitoring errors, a process where post-event information from a co-witness is misattributed as being learnt during the incident and thus, is consequently included in the witness's statement (Belli, 1989; Cann & Katz, 2005; French, Garry, & Mori, 2008; Koriat, Goldsmith, & Panksy, 2000; Patterson et al., 2012; Tousignant, Hall, & Loftus, 1986). However, with regard to blame conformity, Thorley (2015) demonstrated that this process was more likely to be caused by informational influence rather than source monitoring errors, due to participants only choosing to conform to co-witnesses that they deemed as having good memory (non-elderly sources).

Age, gender and co-witness suggestibility.

The literature on eyewitness accuracy identifies age and gender as two variables that can have mediating effects on eyewitness performance (Areh, 2011; Megreya, Bindermann, & Havard, 2011; Memon, Bartlett, Rose, & Gray, 2003; Rehnman & Herlitz, 2007; Yarmey, 2004). These findings have led many researchers to question whether similar gender and age differences may also exist in an eyewitness's susceptibility to co-witness influence.

When attempting to investigate gender differences in memory conformity, the existing research can be inherently contradictory. Multiple studies have produced evidence indicating that male eyewitnesses are more susceptible to co-witness misinformation (Eck, Thoftne, Sponsor, & Vanvoorhis, 2008; Loftus, Levidow, & Duensing, 1992). Conflictingly, there is evidence which suggests that there are no gender differences in susceptibility to co-witness influence (Butts, Mixon, Mulekar, & Bringmann, 1995; McWilliam & Mojtahedi, 2018; Schwarz, 2013). The conflicting results can be attributed to each study incorporating varying visual stimuli and memory recall tasks — as the process of social influence is highly dependent on the task at hand (Baron, Vandello, & Brunsman, 1996; Suls & Wheeler, 2000).

The age of eyewitnesses has been found to have a moderating effect on their suggestibility to misleading questions, with elderly eyewitnesses displaying higher levels of suggestibility (Coxon & Valentine, 1997; Dodson & Krueger, 2006; Mitchell, Johnson, & Mather, 2002). However, with regards to suggestibility to misinformation from co-witnesses, the previous literature is once again incongruous. Gabbert et al. (2003) found no significant differences between young and elderly adults (18-30 vs. 60-80) in eyewitness suggestibility during memory recall. However, in a later study, Gabbert et al. (2004) found that younger adults (17-33 years) were more susceptible to incorporating their co-witness's misinformation into their own memory recall reports, compared to the older adults (58-80 years). The researchers attributed this to younger adults exhibiting greater levels of normative pressure due to their heightened need for social acceptance, relative to older adults. The discrepancy between the studies could be attributed to the slight differences in experimental designs. Gabbert et al., (2003) showed pairs of participants altered videos from each other to allow them to expose each other to unwitnessed information, whereas Gabbert et al., (2004) used trained confederates — who may have been more convincing than a participant— to expose participants to unwitnessed information. The potential increased level of influence from confederates may have evoked greater levels of normative pressures onto the participants.

Age, gender and blame conformity

To date, the majority of existing research on age and gender-related differences in co-witness suggestibility have only focused on the effects of co-witness influence relating to the recollection of salient items from a witnessed event (e.g. Gabbert et al., 2003; Gabbert et al., 2004; Hope, Ost, Gabbert, Healey, & Lenton, 2008). Although such designs can explain how eyewitnesses can erroneously report seeing false items during an incident, they fail to measure the effects of co-witness influence on blame attribution (blame conformity), leaving this area of research unaccounted for. Unlike a memory recall task, the process of attributing

blame is significantly more cognitively demanding. It is a decision-making process that not only requires the witness to recall the event, but also requires them to use cognitive reasoning to deliberate which potential suspect is guilty (Devine, 2012; Devine, Clayton, Dunford, Seying, & Pryce, 2001). Resultantly, there is gap within the research literature investigating the relationship between an eyewitness's age and gender and their susceptibility to blame conformity.

Present Study

To contribute to the existing literature on blame conformity, the aim of the current study was to determine whether age and gender differences existed in eyewitness suggestibility when attributing blame (blame conformity). Two research questions (RQ) were generated in an attempt to fulfil the aforementioned aim of the study.

RQ1: The first RQ asked *whether age and gender differences existed in the blame attribution of eyewitnesses after they had been exposed to misinformation from a co-witness.*

RQ2: It was also theorised that eyewitnesses could still be influenced by co-witnesses even if they rejected their misinformation; eyewitnesses could instead lose confidence in their own judgements rather than fully conforming to the misinformation (Semmler et al., 2004; Wright & Skagerberg, 2007). Additionally, participants who may have already held a false recollection of the event could gain overconfidence after encountering confirmatory misinformation from co-witnesses (Allwood et al., 2006; Semmler et al., 2004). Therefore, the second RQ asked *whether there were any significant age and gender differences in the confidence of eyewitnesses who were exposed to co-witness misinformation.*

Method

Participants

Four hundred and fifty-six participants (224 males; 232 females) from the United Kingdom were recruited through opportunity sampling. Of these, 188 participants (98 males; 90 females) were randomly selected to play the role of a confederate. The remaining sample consisted of 268 true participants; of which, 126 were male (*M* age= 31.31; *range*= 18-82; *SD* = 15.03) and 142 were female (*M* age= 29.95; *range*= 18-79; *SD* = 15.5). Preliminary tests were undertaken to ensure that no participants had any serious visual impairments that would affect their ability to watch the crime footage on a computer screen. The request for participation was advertised through online media and participants did not receive any monetary rewards for participation; however, student participants received course credit for taking part. Due to the researchers not recording each participant's educational status, the study is unable to confirm the what percentage of the final sample were current students.

The experiments were sequentially carried out, with the control studies being conducted at a prior date to the misinformation condition. The differing dates for the data collection had a mediating effect on participant availability, as a result, there were some discrepancies in sample sizes between the control and misinformation condition (see Table 1). Despite this level of variance, both conditions were still of sufficient size for statistical comparisons to be made through regression modelling (in accordance with Stevens, 2009). As Table 1 indicates, there were also a significant difference in the mean age of participants between the misinformation (*M*= 24.66, *SD*=7.7) and control condition (*M*=35.06, *SD*=17.58) [$t(266) = 94.06$, $p < .05$, *d*=-.76]. As a result, the main analyses controlled for the covariate of age.

Confederates

The study used confederates to expose participants to co-witness misinformation. Prior to starting the experiment, all participants were handed individual instruction sheets. Despite being told by the experimenter that the instruction sheets were identical, participants were handed one of two copies: the participants would either get a standard instruction sheet, which contained basic information about the researchers, or they would receive a confederate instruction sheet, which informed the participant that they had been chosen to be a confederate and provided further instructions on their role. Due to the study including different confederates between each trial, confederates were given specific information to state during the experimental process (see below), to avoid any individual differences in responses from having an extraneous effect on the true participants.

All of the confederates were instructed to falsely suggest that the man in the yellow t-shirt had thrown the first hit during the discussion (when in reality, another man had thrown the first hit). They were given the option to provide the post-event information when they deemed it appropriate, to allow their responses to seem less pre-meditated. They were advised to either present it before the participants (i.e. 'I remember seeing the man in the yellow top throw the first hit'.); after another participant had provided a correct report (i.e. 'No, I remember the man in the yellow top throwing the first hit'.); or after another participant had also provided the same incorrect report (i.e. 'Yes, I agree. I also remember seeing the man in the yellow top throwing the first hit'.). The confederates were explicitly instructed not to add any other details to the discussion. If they were questioned about their report, the confederates were instructed to say 'well, that's what I remember seeing from the video'. The confederates were instructed to provide all of their statements in a confident manner, but were advised not to be assertive or to try to be purposefully persuasive. The discussion scripts were designed in accordance with the scripts used by Paterson and Kemp (2006b) in a similarly designed study.

Materials

Closed circuit television (CCTV) footage of a bar fight erupting was used as the experimental stimulus. The footage lasted approximately one minute and thirty seconds and did not have an audio output. Within the footage two men in distinctively different clothing (one man is wearing a yellow t-shirt whilst the other is wearing a dark green t-shirt) can be seen conversing in a bar. The man in the dark green t-shirt assaults the man in the yellow t-shirt by punching him, causing a fight to break out between both men. The fighting lasts for forty seconds before the two men are separated by bystanders. The critical detail within the footage was the indication that the man in the dark green t-shirt had thrown the first punch.

Design

A mixed between-subjects design was employed by the study, with age, gender and the group condition acting as the independent variables within the study. Participants were randomly allocated to one of two independent conditions (control vs misinformation). Participants in the misinformation condition discussed the footage with two misleading confederates, after the footage had elapsed; whereas participants in the control group viewed the footage independently. The demographic details and distribution of the sample are presented in Table 1.

Two dependent variables were observed to measure co-witness suggestibility. The first dependent variable measured was the participants' blame attributions. This variable was measured to determine whether the participants had conformed to the confederate's erroneous judgement (blame conformity). All participants produced one of three responses when asked to identify which man had thrown the first hit; eyewitnesses who blamed the man in the yellow top (misinformation) were scored as being incorrect, participants who blamed the man in the dark green top were scored as being correct, and participants who stated that they were uncertain were scored as being unsure. The second dependent variable measured was the participants' confidence scores in their blame attributions. In line with previous research on

eyewitness confidence (see Mudd & Govern, 2004), confidence judgements were measured using a five-point scale (five meaning maximum confidence). Participants who answered 'unsure' were not asked to give a confidence rating due to their inability to identify an offender.

Insert Table 1

Procedure

Due to the ethical considerations of exposing participants to violent footage, participants were informed that they would be viewing CCTV footage that contained violence in order to gain informed consent from them. Other details relating to the aims of the study were kept to a minimum. Participants either watched the footage simultaneously in a group of three (with two confederates) or on their own (control), on a monitor screen.

After the footage had finished, the participants in the confederate condition were allocated one minute to discuss with their co-witnesses who they believed had thrown the first hit. Confederates were used to expose the participants to co-witness misinformation by suggesting that the wrong man had started the fight (yellow t-shirt). The group discussions were capped at one minute to ensure that no participant could question the confederates for a significantly longer period than another participant from a different trial. The experimenter left the room during the group discussion to prevent their presence from influencing the participant's behaviour. Participants in the control groups were not permitted to discuss the footage with co-witnesses; instead, they were asked to sit silently (for one minute) until they were called to leave the room for questioning.

The final experimental phase was the eyewitness statement process, participants were individually taken into a private room and asked to identify who they believed had thrown the first hit. The interviewer advised all participants to only report information that they remembered seeing. A potential risk that the present study had to minimise was the tendency for participants to make a guess when attributing blame. By doing so, the participants would

have a 50% chance of being correct and this would significantly reduce the internal validity of the present study. As a result, all participants were directly advised by the interviewer to avoid making any responses through guessing. Instead, participants were given the option to state that they were 'uncertain' if they were unable attribute blame. In addition to making their response, participants were also asked to indicate how confident they were in their judgment, on a scale of one to five. Participants who answered "unsure" were not asked to give a confidence rating due to their inability to identify an offender. After the study had finished, all participants were debriefed and thanked fort their participation.

Results

The main results are presented in two sections. First, the relationships between age and gender with co-witness suggestibility are investigated through analyses of the participants' blame attribution responses (first dependant variable). The second section of the results investigates the relationship between age and gender with co-witness suggestibility, through analyses of eyewitness confidence (second dependant variable). The means and standard deviations for all variables are presented in Tables 2 and 3.

Insert Table 2

Insert Table 3

Blame attribution

First, the study wanted to establish whether the age and gender of participants had an effect on their susceptibility to blame conformity. Multinomial Logistic regression was used to analyse the effects of age and gender on eyewitness blame attribution, after a post-event discussion had occurred. The statements from participants were classified into three groups: those who blamed the man in the yellow top for starting the fight (incorrect response), those who blamed the man in the dark green top for starting the fight (correct response), and those who had said they were unsure on who had started the fight (unsure). Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, and homoscedasticity. Due to the dependent variable consisting of three outcomes, two regressions were conducted: one with incorrect response (yellow top) as the reference category, and one with the correct response (dark green top) as the reference category. The main interest of current analysis focused on the relationship between age and gender with blame attribution accuracy (3 categories) while controlling for the group condition. The analysis found that the model fit was significant [$\chi^2 (6) = 25.6$, $p < .001$], which indicated that the full model predicted significantly better, or more accurately, than the null model.

The first column in Table 4 has the outcome of 'correct response' compared to 'incorrect response' (reference category). The results suggested that age and gender had no significant effect on eyewitness blame attribution accuracy ($p > 0.05$). In relation to the group condition, the results suggested that participants who were exposed to the misinformation from the confederates ($OR = .22$), compared to participants from the control condition, were significant more likely to report the misinformation (incorrect response). The measure of association was large, in accordance to Cohen (1988) and Sawilowsky (2009). The effect sizes, calculated using Cohen's d, were -.83.

The second column in Table 4 has the outcome of 'unsure' compared to 'incorrect response' (Reference category). The results suggested that age and gender had no significant effect on eyewitness blame attribution accuracy ($p > 0.05$). In relation to the group condition, the results suggested that participants who were exposed to the misinformation from the confederates ($OR = .41$), compared to participants from the control condition, were significant more likely to report the misinformation (incorrect response). The measure of association was small, in accordance to Cohen (1988) and Sawilowsky (2009). The effect sizes, calculated using Cohen's d, were -.45.

The third column in Table 4 has the outcome of 'unsure' compared to 'correct response' (Reference category). The results suggested that none of the variables had a significant effect on eyewitness blame attribution accuracy ($p > 0.05$).

Insert Table 4

Eyewitness confidence in blame attribution

The second and third objectives of the study were to identify if there were any significant age and gender-related differences in the confidence of eyewitnesses who were exposed to contradicting misinformation (but provided correct responses) and to investigate

for possible age and gender differences in the confidence of participants who had made a false blame attribution, respectively.

Control group.

The self-reported confidence scores of the participants from the control condition were first analysed to determine whether age and gender had any inherent relationships with general confidence. Multiple regression was performed to investigate the ability of age and gender to predict eyewitness confidence in blame attribution. Since no priori hypotheses had been made to determine the order of entry of the predictor variables, a direct method was used for the multiple linear regression analysis. The two independent variables only explained 2.6% of variance in eyewitness confidence [F (2, 135) = 1.79, p > .05]. In the final model, neither of the predictor variables were statistically significant, indicating that there were no age or gender-related differences in eyewitness confidence, when a post-event discussion was not permitted.

Correct responses

Hierarchical multiple regression was performed to investigate the ability of the age and gender as predictors of eyewitness confidence (dependent variable), in participants who did not conform to the confederates. The variable of group condition was also controlled for. Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, and homoscedasticity. In the first step of hierarchical multiple regression, the controlled variable (group condition) was entered. This model was not statistically significant, [F(1, 96) = .39; p > .05], and explained .04% of variance in confidence scores, suggesting that group condition was not related to confidence scores. After entry of age and gender at Step 2, the total variance explained by the model as a whole was 1.2% [F(3, 96) = .49, p > .05]. The introduction of age and gender explained an additional 1.1% of variance in confidence [R2 Change = .01; F(2, 93) = .54; p > .05]. In the final adjusted model, none of the variables were statistically significant (see Table 5).

Insert Table 5

Hierarchical multiple regression was also performed to investigate the ability of the age and gender as predictors of eyewitness confidence (dependent variable), in participants who produced incorrect blame attributions (as suggested by the confederates). The variable of group condition was also controlled for. Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, and homoscedasticity. In the first step of hierarchical multiple regression, the controlled variable (group condition) was entered. This model was statistically significant [$F(1, 119) = 4.53$; $p < .05$], and explained 3.7% of variance in confidence scores, suggesting that group condition ($\beta = -.19$, $p < .05$) was related to confidence scores. The measure of association was small, in accordance with Cohen (1988). The effect sizes, calculated using Cohen's d, was $-.39$. After entry of age and gender at Step 2, the total variance explained by the model as a whole was 8.5% [$F(3, 117) = 3.6$, $p < .05$]. The introduction of age and gender explained an additional 4.8% of variance in confidence [$R2$ Change $= .05$; $F(2, 117) = 3.07$; $p < .05$]. In the final adjusted model, two of the three variables, group condition ($\beta = -.22$, $p < .05$) and gender ($\beta = -.21$, $p < .05$) were statistically significant (see Table 6). The measures of association were small, in accordance with Cohen (1988). The effect sizes, calculated using Cohen's d, was $-.42$ and $-.43$, respectively. The descriptive data (see Table 2) suggests that males ($M= 3.59$ $SD=.89$) were more confident in their erroneous responses than females ($M= 3.21$ $SD= 1.01$), after encountering the misinformation. Furthermore, participants who were exposed to the misinformation ($M= 3.38$ $SD= .97$) were more confident in their erroneous responses than participants from the control group ($M= 2.98$ $SD= 1.07$).

Insert Table 6

Discussion

Blame Conformity

The aim of the current research was to determine whether age and gender differences existed in eyewitness suggestibility when attributing blame. Results indicated that, compared to the control group, participants who discussed the event with misleading co-witnesses were significantly more likely to make the same false blame attribution as them. The findings are in line with previous research on blame conformity, which have found that participants will conform to their co-witness's misinformation when attempting to determine which person from an incident was at fault for the crime (e.g. Mojtahedi, et al, 2018a; Thorley, 2015). The increase in false blame attributions within the misinformation condition can be explained by the informational influence model. The descriptive data from control condition (Table 2) indicates that many participants (20.7%) will have been uncertain when making a blame attribution. Furthermore, the average confidence score of participants who attributed blame was 3.04 (SD=1.09; out of five). The current authors propose that the lack of confidence and certainty could have made many participants more susceptible to perceiving their co-witnesses as being more accurate, which could have consequently motivated them to conform to their misinformation. The use of the informational influence model to explain co-witness influence is supported by previous studies which found that participants conformed to co-witnesses that they believed had good memory, due to perceiving them as being more likely to be correct (see Thorley, 2015; Williamson et al., 2013). The results of the present study highlight the vulnerability of eyewitnesses to co-witness influence. The implications of such findings highlight the need for investigators to identify whether eyewitnesses to crime will have discussed the event with others prior to giving their statements— a procedure that has been recommended in previous research (see Kieckhaefer & Wright, 2014; Mojtahedi et al., 2018b).

The first RQ asked *whether age and gender differences existed in the blame attribution of eyewitnesses after they had been exposed to misinformation from a co-witness.* In relation to participants' gender, the results found no significant gender-related differences in blame attribution accuracy within both the misinformation and control conditions, suggesting that men and women display similar levels of accuracy when attributing blame and are equally susceptible to co-witness influence when exposed to misinformation. The present findings, provide further support to previous studies which suggested that no gender-based differences existed within eyewitness suggestibility (Butts et al., 1995; Schwarz, 2013). Gender similarities in blame conformity could be due to male and female participants possessing similar source monitoring abilities in short term memory (Smeets, Jelicic, & Merckelbach, 2006). As a result, male and female participants within the present study would have been as equally likely to misattribute their co-witnesses' misinformation as witnessed information.

The present study did however, contradict with multiple previous studies which found that male eyewitnesses were more suggestible than their female counterparts when attempting to recall items from a video (e.g. Eck et al., 2008; Loftus et al., 1992). These differences might suggest that gender differences in eyewitness suggestibility only exist for tasks that involve item recall and not for tasks that require participants to explicitly determine who is at fault. This could be attributed to different cognitive processes required to complete the differing tasks. When asked to recall items from an event, participants will rely on their memory retrieval abilities to produce the correct answer — a process in which females possess superior capabilities (Seidlitz & Diener, 1998). However, when faced with the task of attributing blame to the correct suspect, participants will be more reliant on their cognitive and moral reasoning abilities (Devine, 2012; Devine et al., 2001). Research has shown that,

on average, men and women perform similarly on such cognitive reasoning tasks (Blumenthal, 2005) and this could be seen in the present study, with male and female participants within the control conditions performing similarly and displaying relatively similar levels of confidence (See Table 2). Therefore, male and female witnesses may exhibit similar levels of informational influence when attempting to attribute blame.

In relation to age-related differences, the results indicated that age was not an accurate predictor of co-witness suggestibility in blame attribution, as observed by Gabbert et al. (2003). However, the present findings contradict those presented by numerous previous studies which found a relationship between an eyewitness's age and suggestibility to co-witness influence (e.g. Gabbert et al., 2004; Klein 1972). The discrepancies between the findings can be attributed to the different tasks that were incorporated into each study's experimental design, with the present study using a blame attribution task and the other studies using a memory recall task. As mentioned previously; the predominant cognitive functions required to correctly attribute blame (cognitive reasoning) differ significantly to the processes used when recalling miscellaneous items from an event (memory retrieval). Research indicates that the age of an eyewitness can have a mediating effect on how accurately they can recall items from an event (Dodson, Bawa, & Slotnick, 2007; Memon et al., 2003), which in turn would suggest that age-related differences will exist in an eyewitness's susceptibility to informational influence when faced with such tasks. However, research has failed to find any age differences in cognitive reasoning abilities (Kuhn, Weinstock, & Flaton, 1994; Weinstock & Cronin, 2003).

Previous research indicates that elderly eyewitnesses are significantly more likely to make source monitoring errors (Ferguson et al., 1992; Glisky, Rubin, & Davidson, 2001; Henkel, Johnson, & De Leonardis, 1998; Memon et al., 2003). However, the present study failed to find a significant relationship between eyewitness age and suggestibility when

attempting to attribute blame. As a result, it can be inferred that eyewitness suggestibility in blame attribution may be predominantly caused by informational influence rather than by source monitoring errors — an assertion that has been supported by previous research on blame conformity (Thorley, 2015). However, it is acknowledged that source monitoring errors could facilitate blame conformity in circumstances where the time between witnessing the event and giving a report would be significantly longer

Confidence

The results indicated that exposure to co-witness misinformation did not seem to have an effect on the confidence scores of participants who refrained from conforming to their co-witnesses. However, participants who made a false blame attribution after encountering the misinformation from their co-witnesses were significantly more confident in their response, in comparison to participants who made a false blame attribution within the control condition. The findings suggest that whilst eyewitnesses are not likely to lose confidence in their judgements after encountering contradictory information, those who receive confirmatory feedback from their co-witnesses are likely to gain more confidence. The findings suggest that crime witnesses are likely to exhibit confirmation biases — a tendency to favour information that favours one's own recollection over information that contradicts it (Klayman, 1995; Nickerson, 1998) — when engaging in post-event discussions with co-witnesses.

RQ2: Age and gender differences in confidence

The second RQ asked *whether there were any significant age and gender differences in the confidence of eyewitnesses who were exposed to co-witness misinformation*. The findings found that male participants gained a greater level of overconfidence in their false blame attributions than female participants, after encountering co-witness misinformation. The findings suggest that male witnesses may be more susceptible to confirmation bias than

female witnesses, an assertion that has been supported by previous research which argued that that male participants had a greater tendency to seek out information that supported their own judgements (Traut-Mattausch, Jonas, Frew, & Zanna, 2011). The implications of the present findings can suggest that erroneous statements from male witnesses could be more damaging to an investigation. This is because previous research has demonstrated that individuals have a propensity to perceive the confidence of witnesses as a measure statement accuracy (McFarlin & Blasovich, 1981; Skagerberg & Wright, 2009). As a result, jurors and police officers could be more inclined to accept inaccurate statements as reliable evidence— and witnesses may be more inclined to accept their co-witness's misinformation as an accurate account of the incident— if the witness presents their recollection confidently. However, it must be acknowledged that the present study's observed effects of gender and group condition on over-confidence yielded small effect sizes, thus the implications should be interpreted cautiously. Furthermore, the study only observed the effect of co-witness misinformation on eyewitness confidence and did not look at the effects of correct co-witness information on eyewitness confidence. Therefore, additional research is needed to determine whether the same effects of confirmation bias can be observed in witnesses who encounter accurate co-witness information and produce correct statements. The results also suggested that there was no significant relationship between age and eyewitness confidence in correct or incorrect blame attributions.

Limitations

Whilst the present study was the first to look at age and gender-related differences in blame conformity, there were some limitations. Despite the study's sample containing a large age range (18-82), a review of the means and standard deviations indicates that the majority of the participants will have been relatively young adults (M=30.63, SD= 15.8). Therefore, it could be argued that the age-related differences observed within the present study were more

representative of the differences in eyewitness suggestibility between young adults and middle-aged adults, rather than between adults of all ages. As a result, it can be suggested that age-related differences in co-witness suggestibility between elderly and relatively younger eyewitnesses may still exist despite the present findings failing to identify any significant differences. Further research, incorporating a more diverse sample size, is therefore needed to determine whether elderly eyewitnesses could be more susceptible to co-witness influence during blame attribution.

The study attempted to control for the confederates' age and gender by using a diverse selection of confederates randomly assigned to different groups. However, the study did not aim to investigate the effects of confederate characteristics on social influence. Future research should aim to identify whether own-sex biases exist between co-witnesses during co-witness discussions (i.e. whether individuals are more likely to conform to co-witnesses of the same sex).

Within the present study, blame conformity was measured through an individual blame attribution task. Although the task accurately simulated the process of blame attribution, there were only three possible responses that participants could give. As a result, some participants may have been motivated to produce a response through guessing. Therefore, future research should administrate a battery of blame attribution tasks per trial. The use of multiple tasks would allow future research to measure blame conformity more reliably.

Finally, the present study's methodology exposed the participants to the criminal incident using video footage, one of the most commonly used methods in eyewitness experiments (e.g. Garry et al., 2008; Paterson & Kemp, 2006b; Paterson et al., 2009; Paterson et al., 2012). Whilst this method allows researchers to present the experimental stimulus in a

time-efficient and controlled manner, one must acknowledge some of the caveats associated with this methodological design. Firstly, it is well documented that witnessing a crime via video does not induce the same physiological responses as witnessing a crime in person (Pozzulo, Crescini, Panton, 2008). Furthermore, the current study used a CCTV footage and the angle of the camera allowed participants to have a clear and unobstructed view of the incident — which is not always possible for real eyewitnesses. Thus, we must acknowledge that the current paradigm, whilst heavily relied upon by researchers, does not boast a high level of ecological validity. Resultantly, implications about current policing practices that are drawn from the findings of experimental research must always be considered with caution.

Despite the aforementioned limitations, the present study provides a step forward in understanding the complexities of co-witness suggestibility and more specifically, blame conformity. The researchers were able to build on the seminal findings of Thorley (2015) by implementing a paradigm which used live social interactions between confederates and participants to create a more realistic simulation of a post-event discussion amongst co-witnesses. Furthermore, the study's large sample allows for the findings to be confidently accepted as a reliable representation of potential witnesses. The researchers acknowledge the significance of narrative theory within Investigative Psychology research (see Ioannou, 2006; Ioannou, Canter, Youngs, & Synnott, 2015; Ioannou, Hammond & Simpson 2015; Ioannou, Canter & Youngs, 2017; Synnott, Ioannou, Coyne, & Hemingway, 2017; Yaneva, Ioannou, Hammond, & Synnott 2018; Ioannou, Synnott, Lowe, & Tzani-Pepelasi, 2018; Ioannou, Synnott, Reynolds & Pearson, 2018). Thus, the authors propose that a fruitful direction for future research, in relation to the current journal's scope, would be to explore whether the personal narratives that eyewitnesses apply to their roles can influence the nature of their statements.

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List of Tables

Table 1 Frequencies for group conditions (*N=268*)

Condition	*N*	Age		
		M	*Std Dev.*	*Range*
Control	174	35.06	17.58	18-82
Males	85	34.01	16.8	18-82
Females	89	36.05	18.34	18-79
Misinformation	94	24.66	7.7	18-67
Males	41	25.71	8.11	18-56
Females	53	23.85	7.34	18-67
Total	**268**	**31.41**	**15.67**	**18-82**

Table 2. Descriptive statistics for participant responses between conditions and genders.

		Blame attribution (%)			*Mean* confidence (*standard deviation*)	
		Correct	Incorrect	Unsure	Correct	Incorrect
Control	**174**	**78 (44.8%)**	**60 (34.5%)**	**36 (20.7%)**	**3.09 (1.12)**	**2.98 (1.07)**
Male	85	37 (43.5%)	29 (34.1%)	19 (22.4%)	3.14 (1.23)	3.24 (.99)
Female	89	41 (46.1%)	31 (34.8%)	17 (19.1%)	3.05 (1.02)	2.74 (1.09)
Misinformation	**94**	**19 (20.2%)**	**61 (64.9%)**	**14 (14.9%)**	**3.26 (.93)**	**3.38 (.97)**
Male	41	9 (22%)	27 (65.9%)	5 (12.2%)	3.22 (.83)	3.59 (.89)
Female	53	10 (18.9%)	34 (64.2%)	9 (17%)	3.3 (1.06)	3.21 (1.01)

Table 3. Means and standard deviations for participant age.

		Mean age (*standard deviation*)		
		Correct	Incorrect	Unsure
Control	174	33.23 (16.43)	36.15 (19.86)	37.19 (15.97)
Misinformation condition	94	25.79 (10.25)	24.13 (5.75)	25.43 (11.06)

Table 4.

Multinomial logistic regression predicting eyewitness blame attribution accuracy.

Variable	Correct response [a] (N=97)		Unsure [a] (N=50)		Unsure [b] (N=50)	
	SE	*OR (95% CI)*	*SE*	*OR (95% CI)*	*SE*	*OR (95% CI)*
Age	.01	.99 (.98/1.01)	.01	1.01 (.98/1.03)	.01	1.01(.99/1.03)
Gender						
Female		1		1		1
Male	.29	.97 (.55/1.71)	.34	1.03 (.53/2.01)	.35	1.06 (.53/2.1)
Condition						
Control		1		1		1
misinformation	.33	.22 (.12/.43)**	.39	.41 (.19/.87)*	.43	1.83. (.79/4.12)

Note. a= Reference group: 'incorrect response' (N=121); b= Reference group: 'correct response' (N=97).   *OR* = Odds Ratio. *SE* = Standard Error. *95% CI* = Confidence Interval. * $p<.05$. ** $p<0.001$.

Table 5. Hierarchical Regression Model of eyewitness confidence for correct responses.

	R	R^2	R^2 Change	B	SE	β	t
Step 1	.06	.004					
Condition				-.04	.07	-.06	-.62
Step 2	.13	.02	.01				
Age				.01	.01	.11	1.01
Gender				-.11	.23	-.05	-.48
Condition				-.06	.07	-.09	-.81

	R	R^2	R^2 Change	B	SE	β	t

Table 6. Hierarchical Regression Model of eyewitness confidence for incorrect responses.

	R	R^2	R^2 Change	B	SE	β	t
Step 1	.19	.04*					
Condition				-.1	.05	-.19*	-2.13
Step 2	.29	.09*	.05*				
Age				.003	.01	.05	.5
Gender				-.43	.19	-.21*	-2.33
Condition				-.11	.05	-.22*	-2.28

* *p*<.05