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Perspective Matters: When Visual Perspective Reshapes Autobiographical Memories

Peggy L. St. Jacques

Department of Psychology, University of Alberta, Edmonton, Canada

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Dr. Peggy L. St. Jacques
Department of Psychology
University of Alberta
P-549 Biological Sciences Building
Edmonton, AB Canada T6G 2R3
Phone: 780-492-6542
Email: peggy.stjacques@ualberta.ca

Abstract

Memories are prone to distortions, which have been linked to our unique point-of-view. Not only do we experience events from a particular visual perspective, we can also retrieve events from one of two perspectives: 1) an own eyes perspective, from the same viewpoint where the event was initially experienced, and 2) an observer-like perspective, where we might "see" ourselves in the remembered event. The particular visual perspective adopted, as well as the ability to shift between perspectives, is associated with changes in the subjective and objective characteristics of memories, which has led to debate regarding whether the presence of novel perspectives reflects inaccuracies or distortions. In this target article I will provide an overview of research on visual perspective in memories for events by discussing the circumstances in which adopting an observer-like perspective signals changes in memories that impact their veridicality and the legal applications to eyewitness testimony.

Keywords: Episodic Memory, Visual Imagery, False Memories, Eyewitness Memory, Applied Cognition, Imagination

General Audience Statement

Much in the same way as we experience the world from our unique perspective, when we remember events from our personal past we do so from a particular visual perspective. The visual perspective we adopt is like the viewfinder in a camera, which can influence what we see in our mind's eye when retrieving memories. Although we experience the world through the perspective of our own eyes, when we remember we sometimes adopt an observer-like perspective—like looking at photograph of ourselves. The finding that we use visual perspectives during remembering that differ from how these events were experienced suggests that memories are not accurate records of the past, and instead are prone to distortions. Understanding whether visual perspective can be used to determine the malleability of our memories is relevant in situations in which accuracy is important, such as eyewitness testimony. The current review brings together research in memory to answer the question of whether observer-like perspectives reflect inaccuracies. By examining the origin of visual perspective in memories, the extant research indicates that observer-like perspectives can reflect authentic experiences in some circumstances. At the same time, the visual perspective people adopt during remembering can lead to subtle changes in the types of information reported, such as the visual and emotional details people recall. Still other research highlights that we can flexibly shift our perspective to adopt novel points of view, which makes our memories more like imagination. Based on this research, the main conclusion is that the presence of observer-like perspectives in memories does not imply that such memories are false, but that shifts in perspective may reflect inaccuracies. Recommendations to practitioners in the field are offered based on this evidence.

> An image experienced from a field perspective should not be assumed to be a more accurate recollection than an image experienced from an observer perspective. (British Psychological Society, 2008, p.20)

> [M]ost 3rd person memories are necessarily false memories. (Sutin & Robins, 2008, p. 1395)

Memories for events from our personal past, or autobiographical memories, can be retrieved differently from how they were originally experienced. This malleable aspect of memory is evident in the visual perspective adopted during remembering. Most people report adopting an own eyes perspective (aka field or 1st person perspective), in which they recall events from a vantage point as if they were back in their own shoes, and an observer-like perspective (aka 3rd person perspective), such that they are placed in a location within the mental scene in which they could see themselves (Nigro & Neisser, 1983). The flexibility of viewpoint during remembering has been ascribed to the reconstructive nature of memories (Harris, O'Connor, & Sutton, 2015; Robinson & Swanson, 1993), such that memory retrieval is not an exact reproduction of the viewpoint taken when experiencing the past. As exemplified in the quote above by Sutin and Robins (2008), the idea that the presence of observer-like perspectives reflects biases and other types of distortion in memory is evident in psychology (e.g., Schacter, 1996; Siedlecki, 2015), as well as philosophy (e.g., DeBrigard, 2014; Fernández, 2015) and lay people's intuitions about their memory (Dranseika et al., 2021). Yet, much debate remains concerning the origin of observer-like perspectives in memories and the consequences

for the authenticity of memory (McCarroll, 2018; Sutton, 2014). Emerging research highlights the role of constructive memory processes that contribute to the formation of observer-like perspectives in memories (e.g., Bergouignan et al., 2022; Iriye & St. Jacques, 2021), drawing into question whether all observer-like perspectives reflect the operation of biases or other distortions in memories. At the same time, individual differences related to visual perspective (e.g., Radvansky & Svob, 2018; St. Jacques, 2023) suggest that some people are less prone to reconstructive errors in memories associated with observer-like perspectives.

Understanding whether visual perspective signals memory distortion has wider implications as exemplified in the above quote from the British Psychological Society (2008) regarding the relationship between viewpoint and memory in legal applications. This review focuses on research on visual perspective in autobiographical memories and will highlight evidence regarding the factors that contribute to the formation and retrieval of visual perspective in memories, how visual perspective reshapes the characteristics of memories, and whether visual perspective is related to inaccuracies and distortions in memories. I will use these findings to offer recommendations for practitioners and researchers in the field of eyewitness testimony.

The Origin of Multiple Visual Perspectives in Memory

Given that we see the world through our own eyes, the presence of observer-like perspectives in memories has long intrigued researchers (e.g., Sutton 2010). Despite initial proposals that we can experience the world through both an own eyes and observer-like perspective (e.g., Nigro & Neisser, 1983), it is often assumed that observer-like perspectives reflect mnemonic changes as the result of *reconstructive* memory processes that influence how

events are recreated during retrieval (e.g., Akhtar et al., 2017; Sutin & Robins, 2008). However, other theory argues that *constructive* processes that operate during encoding, and which integrate the multiple internal and external features of our experiences, can sometimes lead to the creation of observer-like perspectives when memories are initially formed (e.g., McCarroll, 2018; Nigro & Neisser, 1983; Rice, 2010). According to constructive accounts, people can have "observer experiences" (Nigro & Neisser, 1983, p. 469) in which heightened self-awareness (e.g., feelings of being observed or evaluated), a sense of detachment (e.g., psychological distancing or a sense of dissociation) and/or observer imagery (e.g., imagining seeing oneself from an external perspective) shape the viewpoint experienced during memory encoding. Thus, observer-like perspectives can be experienced during encoding even if events are not directly seen from this vantage point (McCarroll, 2018). Supporting this proposal, people often use observer imagery in everyday life (e.g., Christian et al., 2013), and forming observer imagery during memory encoding contributes to an increased likelihood of adopting an observer-like perspective when recalling these experiences (e.g., Mooren et al., 2016). Other studies using mixed reality methods (e.g., virtual, and augmented reality) have further demonstrated that vantage point (e.g., Iriye & St. Jacques, 2021) and illusory out-of-body experiences (e.g., Bergouignan et al., 2022) can be readily manipulated during encoding and contribute to an increase in observer-like perspectives when recalling these events. Thus, visual perspective is a flexible and dynamic property of memories which can originate during both retrieval and encoding, such that multiple viewpoints can be experienced and manipulated within a single event (Boyacioglu & Akfirat, 2015; Iriye & St. Jacques, 2020; Rice & Rubin, 2009; Robinson & Swanson, 1993). Understanding the origin of own eyes and observer-like perspectives in

memories is critical for evaluating whether vantage point indicates inaccuracies or distortions, but the factors that contribute to adopting a particular visual perspective in memory are also multifaceted.

Memory Remoteness

As memories become more remote in time (i.e., objective temporal distance) there is shift from own eyes towards observer-like perspectives (e.g., Rice & Rubin, 2009; Nigro & Neisser, 1983), with approximately 75% of memories for events that occurred in the recent past (i.e., within the last five years) strongly associated with an own eyes perspective (St. Jacques et al., 2017; 2018; but see McDermott et al., 2015). Similar shifts from own eyes to observer-like perspectives have been demonstrated in research using prospective methods in which changes in visual perspective in memories are tracked over time (e.g., Talarico & Rubin, 2002; Wardell et al., 2023), suggesting that the pattern of effects is not simply due to retrospective memory biases. The relationship between memory remoteness and visual perspective could be partially explained by a loss of vividness, which also tends to occur as memories age (e.g., Janssen, Rubin, & St. Jacques, 2011). However, some studies have reported that remoteness remains a significant predictor of visual perspective even after controlling for changes in the vividness of events (D'Argembeau & Van der Linden, 2012). Other factors that change when reflecting upon more remote memories, such as incongruency between current and past conceptualizations of the self (e.g., Libby & Eibach, 2002), greater semantic aspects of memories (e.g., Crawley & French, 2005), increased accessibility of external representations of the self (Karylowski & Mrozinski, 2017), or fading of affect over time (e.g., Talarico & Rubin, 2003), could also contribute to the increased frequency of observer-like perspectives for more remote memories.

Vividness of Visual Imagery

Visual perspective is often linked to visual imagery processes that play a central role in autobiographical memory (e.g., Brewer, 1996; Rubin, 2005), and a lack of vivid visual information about the event during memory retrieval is thought to contribute to the reconstruction of memories from an observer-like perspective (e.g., Butler et al., 2016). Supporting this idea, several studies have shown that observer-like perspective are associated with reductions in subjective ratings of vividness (St. Jacques, 2022), perhaps reflecting the low resolution or lack of specificity of visual information within the mental scene (e.g., Bone et al., 2020; Cooper & Ritchey, 2022). Conversely, shifting to an observer-like perspective during retrieval reduces vividness ratings when compared to maintaining an own eyes perspective (for review see St. Jacques, 2019). Supporting these behavioral differences, neuroimaging studies have demonstrated that brain regions linked to visual imagery, such as the precuneus, are recruited to a greater extent when people adopt a novel viewpoint during remembering (e.g., Grol et al., 2017; St. Jacques et al., 2017; 2018). Moreover, other researchers have argued that shifting perspective during autobiographical memory retrieval leads to greater reliance on brain regions that support perceptual rather than conceptual modification of the personal past (e.g., Faul et al., 2020).

Much less is known whether differences in the quality of visual information encoded similarly contributes to the creation of observer-like perspectives in memories. One study tested this idea by manipulating the presence or absence of visual information during encoding and found higher observer ratings when recalling events in which participants were blindfolded during a naturalistic event in the lab (Rubin et al., 2003). Manipulating visual perspective during

memory encoding can also sometimes reduce vividness ratings during memory retrieval (e.g., Bergouignan et al., 2014; Mooren et al, 2016), although other studies have failed to replicate this finding (e.g., Iriye & St. Jacques, 2021; Bergouignan et al., 2022).

Emotional Arousal

Reexperiencing the original intensity of emotions evoked by events is thought to lead to a greater focus on internally oriented aspects of remembering that support the ability to recreate an own eyes perspective (Eich et al., 2009; Nigro & Neisser, 1983)—effectively stepping back into your own shoes. Supporting this idea, observer-like perspectives are associated with reductions in emotional intensity during memory retrieval (Küçüktaş & St. Jacques, 2022), and shifting to an observer-like perspective during retrieval is an effective cognitive reappraisal strategy to regulate emotional responses (Webb et al., 2012). In contrast, a lack of emotion during memory retrieval can lead people to adopt an observer-like perspective (D'Argembeau, et al., 2003) and further contribute to a sense of detachment or psychologically distancing from these memories (Tausen et al., 2020). In this way, adopting an observer-like perspective might serve as an avoidance strategy for reexperiencing intense emotions associated with highly negative and stressful memories—potentially explaining the increased prevalence of observer-like perspectives in individuals with post-traumatic stress disorder (PTSD; e.g., Kenny & Bryant, 2002, 2007; McIsaac & Eich, 2004).

According to some models, peritraumatic dissociation involving out-of-body sensations and feelings of detachment during and after the experience of an event could lead to the construction of observer-like perspectives as memories are initially formed (e.g., Brewin, et al., 2010; Cooper et al., 2002; McCarroll, 2017). Mooren et al. (2016) tested this idea by

manipulating whether participants adopted own eyes or observer-like perspective imagery during encoding of an auditory version of a trauma film. They found that the use of observer imagery during encoding led to higher observer perspective ratings when recalling these memories one week later. However, memories encoded in the observer imagery condition were also associated with reduced subjective ratings of vividness and sensory details, making it difficult to determine whether differences in visual perspective were related to how these events were initially formed or later recalled. In their mnemonic model of PTSD, Rubin et al., (2008) argued that observer-like perspectives in trauma reflect the operation of reconstructive memory processes rather than differences tied to the nature of the event itself. For example, they emphasized that highly arousing and stressful experiences often lead to tunnel memory, or a zooming in on central details of events to the deficit of peripheral details, and that impairments in the availability of these details contribute to the inability to reconstruct events from own eyes perspectives.

Type of Event

The type of event can also dictate the natural visual perspective people use during remembering (McDermott et al., 2015; Nigro & Neisser, 1983). For example, certain events are more likely to be recalled from an observer-like perspective (e.g., running from a threat, giving a presentation), despite little overlap with the ideal or preferred perspectives for viewing oneself in such events (Rice, 2007). According to some theories, events that involve a high degree of emotional self-awareness (e.g., being in the spotlight) can lead to the construction of observer perspectives in memories because these scenarios increase the likelihood of forming mental images of how others view us during encoding (McCarroll, 2017; Nigro & Neisser, 1983).

The use of observer imagery during social situations can heighten feelings of self-consciousness (e.g., Spurr & Stopa, 2003; Hirsch et al., 2003), and observer imagery "in the wild" is thought to underlie the increased prevalence of observer-like perspectives in autobiographical memories of social situations in individuals with social-phobia (D'Argembeau et al., 2006). Forming observer imagery during these types of events likely directs attention towards the self rather than the external situation, potentially impairing the availability of visual information for other aspects of the event (e.g., objects, other people, surroundings, etc.) when later reconstructing memories.

Retrieval Instructions

While some properties of memories influence the natural or spontaneous perspective that people adopt during remembering, viewpoint can also be manipulated and controlled during retrieval. Many people are readily able to adopt own eyes or observer-like or to shift to these alternative viewpoints when instructed—particularly when memories are more recent and vivid (Robinson & Swanson, 1993).

A few studies have shown that the type of retrieval instruction used to elicit memories influences visual perspective (Libby, 2003; Nigro & Neisser, 1983). For example, Nigro and Neisser (1983) asked different groups of participants to retrieve autobiographical memories while focusing on their feelings, the concrete and objective circumstances, or a neutral instruction to simply describe the experience. Focusing on feelings and neutral descriptions led to more own eyes than observer perspectives in memories. In contrast, focusing on the objective circumstances led participants to report more observer-like perspectives in memories. Another study by Libby (2003) asked participants to retrieve childhood memories using

language that emphasized performing actions (e.g., do you remember *doing* these things?) rather than knowledge that an event occurred (e.g., did this *happen* to you?). They found that own eyes perspectives were more frequent when events were framed based on performing actions, whereas observer perspectives were more frequent when events were framed based on knowledge of event occurrence. The level of abstraction used to describe events can also influence the visual perspective that people adopt when imagining these events. For example, Libby et al., (2009) found that presenting scenarios using more concrete descriptions (e.g., using simple words to talk to a child) or referring to the specific actions involved (e.g., how would you talk to a child?), increased the likelihood that participants would adopt an own eyes perspective. In contrast, more abstract descriptions (e.g., teaching a child) or referring to the special goal or outcome (e.g., why would you talk to a child?), increased observer-like perspectives in images. Thus, instructions to focus on some aspects of memories over others can bias the perspective adopted during recall.

Rehearsal

Prior research has suggested that the *amount* of rehearsal is equivalent in memories associated with own eyes and observer-like perspectives (e.g., Berntsen & Rubin, 2006), but that the *type* of rehearsal people engage in can lead to differences in the visual perspective of memories (Butler et al., 2016; Marcotti & St. Jacques, 2018; Tran et al., 2022). For example, Butler et al. (2016) asked people to repeatedly retrieve autobiographical memories and naturalistic events across a one-month period and found that adopting an own eyes versus an observer-like perspective during retrieval resulted in higher own eyes ratings coupled with lower observer ratings. They suggested that rehearsal of memories from an own eyes

perspective slowed the naturally occurring shift in perspective from own eyes to observer-like perspectives by preserving the quality of visual information in memories, as memories in this condition were also associated with higher subjective ratings of vividness. Other evidence has shown similar effects of rehearsal from own eyes versus observer-like perspectives within a single study session for both autobiographical memories (St. Jacques et al., 2017) and naturalistic events encoded in the lab (Marcotti & St. Jacques, 2018; 2021). Thus, rehearsal of memories from the same viewpoint people experienced during encoding might boost recollective qualities of memories that support the ability to reconstruct memories from this identical viewpoint.

People frequently use photographs to support memory rehearsal (e.g., Henkel, Nash, & Paton, 2021), which can depict the past from multiple visual perspectives. While photographic review of real-world events depicting a first-person perspective can be highly effective retrieval cues to elicit memories (Chow & Rissman, 2017), when photographs depict novel vantage points they are much less effective (St. Jacques & Schacter, 2013). Niese et al. (2023) showed that people use third-person perspectives in photographs to convey the broader meaning of events rather than the physical experience of these events, and suggested that differences in the act of taking photographs might influence the visual perspective in memories. King et al., (2023) examined how self-reported differences in having photographs of events influences the visual perspective that participants reported during autobiographical memory retrieval. Participants were asked to retrieve autobiographical memories and provided subjective ratings of visual perspective cued by event cues (e.g., attending a concert, first day of university). After retrieving all the memories, they were then presented with the same cues and asked to

indicate whether they had a photograph of the memory they had recalled and if they were pictured in it. Memories that people reported having photographs containing the self were more likely to be recalled from an observer-like perspective than if the self was not included in the photograph. These findings suggest that photographs of events potentially bias the visual perspective that people use when recalling these memories, presumably because people reviewed these photographs as reflected by an increase in the amount of rehearsal also reported for these same memories. One limitation of this approach is that it is correlational in nature and relies on retrospective report. Thus, participants might be more inclined to self-report they had photographs including themselves if they experienced an observer-like perspective when remembering the event. In contrast, Marcotti and St. Jacques (2022) directly manipulated whether people reviewed first-person or third-person photographs of naturalistic events they had formed in the lab (e.g., creating a guitar from a tissue box and elastic bands), and examined the impact of this rehearsal on a recall test a couple days later in which they were cued by titles of the events (e.g., “Making a Guitar”). They found that reviewing third-person photos increased observer-like perspectives on the final memory test, and participants were more likely to adopt an observer perspective that matched the one they saw in the photo. Other research has suggested that rehearsal involving drawing versus writing events can also lead people to adopt an observer-like perspective (Tran et al., 2022), perhaps because participants were more likely to draw themselves from an observer-like perspective as first-person perspectives that include how we view the world from our own body are rarely depicted in drawings and other visual forms of art (e.g., Pepperell, 2015). In sum, photographs and other

visual cues can bias the viewpoint that people use in memories—particularly when they depict events from an observer-like perspective.

Individual Differences

Visual perspective is a reliable individual difference variable (Berg et al., 2021; Siedlecki, 2014; Verhaeghen et al., 2018), such that the tendency to adopt a particular perspective is consistent across a variety of autobiographical memories. As already discussed above, observer-like perspectives are more frequent in some clinical populations, such as social phobia (e.g., Wells et al., 1998) and post-traumatic stress disorder (e.g., McIsaac & Eich, 2004). Relatedly, individuals who score higher on questionnaires assessing public self-consciousness (e.g., Robinson & Swanson, 1993), anxiety (e.g., Sutin & Robins, 2010), degree of worrying (e.g., Finnbogadóttir & Berntsen, 2014), or dissociative experiences (e.g., Sutin & Robins, 2010) are also more likely to recall autobiographical memories from an observer-like perspective. These findings suggest that some individuals might be more prone to adopting an observer-like perspective due to underlying trait differences related to emotional distress and/or other maladaptive thinking styles. In their theory of memory, Sutin and Robins (2008) emphasized that dispositional factors, such as differences in how individuals appraise the self-relevance of memories and other self-evaluative motives related to remembering, play a directive role in how visual perspective is reconstructed during retrieval. They further argued that these dispositional factors could explain why some individuals are prone to adopt an observer-like perspective, such as in psychological disorders (for review see Schwarz et al., 2020; Wallace-Hadrill & Kamboj, 2016). For example, Sutin and Robins (2008) suggest that clinically depressed individuals are more likely to recall both their negative and positive autobiographical memories

from an observer-like perspective (e.g., Lemogne et al., 2006) due to the different appraisals that individuals make about the self-relevance of these memories. According to their theory, negative memories activate an appraisal of self-threat and trigger self-enhancement processes to protect the self by dampening emotional experience through adopting an observer-like perspective. In contrast, positive memories in individuals with depression are appraised as incongruent with current conceptualizations of the self and trigger self-verification motives to reduce feelings of inauthenticity by distancing the current from the past self through adopting an observer-like perspective. Lemogne et al. (2009) found that genetic vulnerability predisposes some individuals to adopt own eyes or observer-like perspectives, although additional research is necessary to better understand this potential relationship (Sutin, 2009). In contrast, individual differences associated with personality traits do not appear to be reliably associated visual perspective during autobiographical memory retrieval (Siedlecki et al., 2014; Verhaeghen et al., 2018).

The propensity to adopt a dominant visual perspective in memories has also been associated with demographic characteristics such as gender and age. Some studies have reported higher observer-like perspectives in women compared to men (Rice & Rubin, 2009), a pattern which has been linked to gender differences in objectification of the physical body (Huebner & Fredrickson, 1999). However, other studies have failed to find gender related differences in visual perspective (Grysman & Fivush, 2016; Freton et al., 2014; Radvansky & Svob, 2018; Siedlecki et al., 2014), or have even reported higher own eyes perspectives in women than men (Siedlecki & Falzarano, 2016; also see Christian et al., 2013) perhaps due to

the increased vividness of autobiographical memories in women compared to men reported in these studies.

Several studies have reported age-related differences in the visual perspective of autobiographical memories (Haj et al, 2019; Kapsetaki et al., 2021; Piolino et al., 2016; Russell et al., 2019; Siedlecki et al., 2015). For example, Piolino et al., (2006) asked young and older adult participants to recall autobiographical memories from recent and remote periods and to provide own eyes and observer-like perspective ratings. They found that older adults had higher observer ratings across both recent and remote time periods. The researchers interpreted these findings through the lens of age-related decline in the episodic specificity of memories. In contrast, other studies have reported an increased likelihood of adopting an own eyes perspective in aging when more personally meaningful memories are elicited (Luchetti & Sutin, 2018; Siedlecki et al., 2015), which has been linked to the greater tendency for older adults to rehearse and share these memories with others when compared to young adults. However, aging might also lead to changes in how perspective related aspects of events are encoded in memories. For example, Russell et al (2019) asked young and older adults to encode real-world objects placed in a specific spatial configuration while wearing a head camera that took photos from a first-person perspective. During a recognition memory test, a couple of hours later, participants were shown pairs of photographs of the objects and asked to identify which one matched their encoding experience (i.e., from their camera). Older adults where impaired in choosing the correct photograph when there was a shift in perspective and these findings were replicated in another study using a similar paradigm (Kapsetki et al., 2021). Thus, extant research suggests that aging has complex effects on visual perspective in memory.

Despite an age-related increase in the tendency to adopt an observer-like perspective during autobiographical memory retrieval (Piolino et al., 2006), older adults are more likely to adopt an own eyes perspective when recalling more meaningful memories (e.g., Luchetti & Sutin, 2018). However, age-related differences in the perspective of naturalistic memories formed in the lab (e.g., Russell, 2019) suggest that further research is needed to tease apart the relationship between aging, visual perspective, and memory accuracy.

A growing number of studies have shown that culture influences the preferred visual perspective people adopt in memories for events (Suo & Wang, 2022; Cohen & Gunz, 2002; Martin & Jones, 2012; Sutin & Robins, 2007). While own eyes perspectives are dominant in Western cultures, observer-like perspectives are more frequent in Eastern cultures. For example, Cohen and Gunz (2002) asked participants born in Asia (Easterners) or North America (Westerners) to recall memories for events that involved situations in which they would be at the center of attention (e.g., being in an accident, having a conversation with a friend) or would not be at the center of attention (e.g., watching a horror movie, being in a group presentation), and then to rate the degree to which they adopted an own eyes or observer-like perspective. They found that Easterners compared to Westerners were more likely to report observer-like perspectives when remembering events in which they were at the center of attention. The researchers suggested that Easterners might see the social world more through an outsider perspective due to cultural differences related to interdependence, whereas Westerners who have a more independent view are more likely to adopt a self-centered and internalized perspective of the world. Martin and Jones (2012) tested this idea by investigating how differences in individualism among participants from different nationalities influenced the

visual perspective they reported in memory. Participants were asked to recall an important news events and rate their visual perspective, and then filled out a questionnaire evaluating individualism. The results indicated that participants with higher scores of cultural individualism were more likely to adopt an own eyes perspective. Given other research demonstrating the multiple ways that culture influences memory by changing how people perceive the world and direct their attention (e.g., Gutchess & Indeck, 2019), culture might lead to similar differences in how viewpoint is constructed in autobiographical memories as people experience the world through an outsider perspective (e.g., Cohen et al., 2007). Of course, culture has long been known to influence memory reconstruction (Bartlett, 1932), and recalling memories from specific perspective could similarly reflect cultural orientations related to independence versus interdependence (e.g., Wang, 2021). Related research has demonstrated differences in autobiographical memory in other cultures such as indigenous peoples (e.g., Bohn & Bundgaard-Nielson, 2021), leaving open the question of the generalizability of findings regarding the origin of visual perspective in memory within more diverse groups (e.g., Gutchess & Rajaram, 2022).

Other research has investigated whether individual differences in cognitive ability influence visual perspective in memory. Although visual perspective enables mental images to be reconstructed within the mind's eye (e.g., Bryne et al., 2007; Libby & Eibach, 2011), previous studies have failed to find a significant relationship between visual perspective ratings during autobiographical memory and visual imagery ability. In contrast, some studies have reported that the propensity to adopt an own eyes perspective is associated with greater spatial visualization ability (Abelson, 1975; Lorenz & Neisser, 1985; Sutin et al., 2021), consistent with

the centrality of scenes and visual perspective in event memory (Rubin & Umanath, 2007). Neuroimaging studies have also reported that the volume of the precuneus, a brain region linked to egocentric based visual imagery and a wider network crucial for scene-based imagery (Bryne et al., 2007), is larger in individuals who recall a greater number of autobiographical memories from an own eyes perspective (Freton et al., 2014; Hebscher et al., 2018).

A main assumption in the field is that all individuals experience own eyes and observer-like perspectives. Yet, anecdotal evidence indicates that some people do not spontaneously adopt observer-like perspectives and instead solely recall memories from an own eyes perspective (e.g., Verhaeghen et al., 2018). For example, in studies in our lab (e.g., St. Jacques et al., 2017; St. Jacques et al., 2018) roughly 10% of participants reported during debriefing that they lacked observer-like perspectives. Recent empirical evidence has supported these claims by demonstrating that a small proportion of participants report that they never experience observer-like perspectives when reflecting upon the viewpoint they generally adopt during AM retrieval (Radvansky & Svob, 2018). St. Jacques (2023) identified individuals who self-reported a lack of observer-like perspectives in their memories and found that such individuals did not have the typical shift in perspective with memory remoteness. These findings were unrelated to memory vividness, but instead where linked to better scene-related aspects of memories. That is, people with an absence of observer-like perspectives reported a better ability to identify the setting in which the event took place, as well as to recall a scenario of the event depicting the location of objects, people, and actions, as well as their location within the memory. If the presence of observer-like perspectives arises due to reconstructive memory errors, such findings draw into question whether all individuals alter their memories to the same degree.

How Visual Perspective Reshapes Memories

Visual perspective is a required feature of remembering (Rubin & Umanath, 2015), such that event memories do not simply involve isolated knowledge or facts, but the creation of a scene in the which the rememberer's viewpoint provides a central focus to the setting, objects, other people, and actions that occur. In this way, visual perspective can be considered a type of retrieval orientation, which biases how memories are reconstructed (Küçüktaş & St. Jacques, 2022; Robinson & Swanson, 1993). Consistent with this idea, both behavioral (Harris et al., 2015) and functional neuroimaging (Iriye & St. Jacques, 2020) evidence points to the role of early retrieval processes that distinguish own eyes and observer-like perspectives and impact how the contents of memories are elaborated upon. Thus, visual perspective is like a window from which we view the past, and the location of this window influences what we see in our minds eye and how memory content is organized (Bryne et al., 2007; Rubin & Umanath, 2015). Much research has examined how the viewpoint adopted influences how people remember and describe their memories (for reviews see Eich et al., 2011; Rice, 2010; St. Jacques, 2021). Moreover, manipulating visual perspective during retrieval can also reshape memories by leaving residual changes that alter the way memories are subsequently remembered (St. Jacques, 2019), consistent with theories of memory that emphasize that retrieval is an active process that makes memories vulnerable to modification (Nadel et al., 2012; Nader et al., 2010). Below I describe some of the main ways that visual perspective reshapes memories.

Visual perspective is linked to qualitative differences in memory retrieval such as the subjective sense of reliving associated with autonoetic consciousness or mental time travel (for review see Zaman & Russell, 2021). For example, Crawley and French (2005) asked participants

to retrieve childhood events that varied in their subjective sense of re-experience, by contrasting memories that were merely *known* to the participants through external sources such as photos or stories from family or others, memories that were *remembered* such that the participant could subjectively recollect the event, and memories that they were *uncertain* of whether they were remembered or known. They found that own eyes perspectives were higher for childhood events that participants reported they remembered, observer-like perspectives were higher for childhood events that were merely known, and a mix of both perspectives was reported for events they were uncertain about. Supporting the qualitative differences between these memories, remembered events were also rated higher on sensory details and emotions. Additionally, these findings remained stable when participants were tested on their memories one week later. Similarly, Harris et al., (2015) found a relationship between visual perspective and recollective experience in memories that included more recent events, with own eyes perspectives higher in memories judged to be remembered versus known and the opposite pattern for observer-like perspectives. Related research has demonstrated that inducing illusory out-of-body experience during memory encoding leads to a reduction in subjective reports of remembering (Bergouignan et al., 2014). These findings suggest that own eyes perspectives are privileged in terms of their ability to evoke a high degree of reliving during memory retrieval (e.g., Newen & Vogeley, 2003) because they place the rememberer back within the typical location from which the world is experienced, thereby supporting the ability to re-experience the personal past.

Qualitative changes that occur in memories due to visual perspective are also reflected in other phenomenological characteristics of memories. As reviewed above, adopting an own eyes

perspective is frequently associated with higher subjective ratings of vividness (for review see St. Jacques, 2021) and emotional intensity (Küçüktaş & St. Jacques, 2022) during autobiographical memory retrieval. However, adopting an observer-like can sometimes increase the affect people report for more complex and/or self-conscious emotional experiences (e.g., shame, pride; Moran & Eyal, 2022; Hung & Mukhopadhyay, 2012). Such findings might reflect differences in how people evaluate different types of emotional experience in terms of their self-relevance (Sutin & Robins, 2008) or the concrete or abstract appraisals they engender (Libby & Eibach, 2011; Niese et al., 2021). A growing number of studies have shown that shifting from an own eyes to an observer-like perspective also leads to persistent reductions in both subjective ratings of vividness (e.g., Butler et al., 2016; Marcotti & St. Jacques, 2018) and emotional intensity (e.g., King et al., 2022; Sekiguchi & Nonaka, 2013). For example, Sekiguchi and Nonaka (2013) asked participants to recall autobiographical memories from their natural perspective and to provide subjective ratings of visual perspective and emotional intensity. A few days later, they were asked to adopt the same perspective again or to shift to a novel perspective, adopting a novel own eyes or observer-like perspectives. A few weeks later, participants recalled all the memories again from their natural point-of-view. The data revealed that shifting from an own eyes to an observer-like perspective reduced subjective ratings of emotional intensity from the initial to the final retrieval sessions. In contrast, shifting from an observer to an own eyes perspective did not impact emotional intensity. Similarly, other studies have shown that shifting from an own eyes to an observer-like perspective reduces the vividness of subsequent memory recall, but when participants are asked to shift back to their original own eyes perspective they do not recover the vividness of

these memories (Butler et al., 2016). Functional neuroimaging research has demonstrated that changes in subjective characteristics of memories as the result of shifting to an observer-like perspective are supported by neural recruitment in the precuneus (St. Jacques et al., 2017), suggesting that perspective influences behavior by altering the brain networks that support perceptual aspects of remembering (Küçüktaş & St. Jacques, 2022). Together these findings support the idea that shifting perspective can lead to plastic and potentially long-lasting changes in the phenomenology of memory, and that these changes are reflected by differences in the brain regions recruited during remembering.

Visual perspective also impacts the number of number and nature of details that people report when describing their memories. A handful of studies have reported an increase of episodic details in autobiographical narratives recalled from an own eyes perspective (Akhtar et al., 2017; Irish et al., 2008; King et al., 2022). For example, Akhtar et al. (2017) examined how shifting perspective influenced episodic details in narratives of autobiographical memories. They controlled for the dominant perspective of memories by asking participants to write a narrative of the memory from their natural perspective and to provide subjective ratings of visual perspective. Then, one week later, participants were asked to provide a narrative of the memories again but to recall it from the opposite perspective they originally reported. The results indicated that shifting from an own eyes to an observer-like perspective reduced the number of episodic details that participants reported. In contrast, shifting from an observer to an own eyes perspective did not affect the number of episodic details reported in the narratives. Akhtar et al. (2017) interpreted these findings as reflecting differences in the origin of naturally occurring observer-like perspectives in memories. They proposed that memories

with a dominant observer perspective involve a type of forgetting in memory or "recoding" of memories from their original own eyes perspective. Thus, shifting from an observer to an own eyes perspective would be ineffective in eliciting episodic details that are have already faded from memories. This could also explain why shifting from an observer to an own eyes perspective does not boost vividness and emotional intensity ratings in memories (e.g., Berntsen & Rubin, 2006; Butler et al., 2016), as this information might no longer be available in memories associated an observer perspective. Shifting from an own eyes to an observer-like perspective can also sometimes increase the number of episodic details people report. King et al. (2022) found that shifting from an own eyes to an observer-like perspective decreased episodic details associated with emotions and thoughts, but increased episodic details related to perceptual details about the self (e.g., I change expressions, I see myself hurt). Similarly, research examining shifts in perspective during retrieval of lab-based events reported that adopting an observer perspective increased the recall of self-related information (McIsaac & Eich, 2002). Other research has suggested that visual perspective can influence whether people include more concrete or abstract information when recalling memories. For example, Kross and Ayduk (2009) found that when participants are instructed to adopt a distanced perspective (e.g., watching events as if happening to them) when recalling negative autobiographical memories they included fewer details recounting what happened and more details reconstruing it by including statements indicating insight and closure about the event, when compared to participants who adopted an immersive perspective (e.g., re-experience the event again). Together these findings paint a complex picture whereby adopting an observer-like emphasizes some details to the detriment of others during recall.

In sum, many studies have reported that visual perspective is linked to changes in the subjective nature of remembering along with the amount and types of information reported in narratives describing these events. However, this does not in necessarily imply that such memories are inaccurate. In the next section, I discuss evidence regarding the role of visual perspective in memory accuracy.

The Relationship Between Visual Perspective and Memory Accuracy

Given that observer-like perspectives do not typically correspond to our original experience, they are often thought to indicate that memories are less accurate. In a recent study, Dranseika et al. (2021) examined how such intuitions about visual perspective impact people's beliefs about the nature of memory accuracy. Participants were asked to read descriptions of another person's memory that were visualized from different vantage points, and then to rate the degree to which the memory was accurate. Across a series of studies, they generally found that participants gave higher ratings of accuracy when descriptions were presented from an own eyes than an observer-like perspective. However, the effects were smaller than the authors expected based on philosophical arguments that observer perspectives imply that memories are false (e.g., Fernández, 2015). Other studies have examined how visual perspective influences how people view the accuracy of their own memories. Despite involving a high degree of recollection and vividness, some autobiographical memories are believed to reflect events that did not really occur (Mazzoni et al., 2010). These nonbelieved memories are more likely to be retrieved from an observer-like than own eyes perspectives (Brédart & Bouffier, 2016; Vanootighem et al., 2018). Visual perspective during autobiographical memory retrieval also influences belief in the accuracy of past events that

participants voluntary retrieve in the lab (Berntsen & Rubin, 2006; Rubin, Deffler, & Umanath, 2019). For example, Berntsen and Rubin (2006) asked people to retrieve autobiographical memories associated with various emotional cues. They found that memories in which participants naturally adopted a stronger observer-like perspective were rated lower on belief in accuracy than memories associated with a stronger own eyes perspective. Thus, visual perspective is associated with both how we and others evaluate the accuracy of memories.

Few studies have examined whether these assumptions about the relationship between visual perspective and memory accuracy are supported by empirical evidence. A handful of studies have examined this question using naturalistic events encoded in the laboratory (Marcotti & St. Jacques, 2018; Marcotti & St. Jacques, 2022; McIsaac & Eich, 2002). For example, Marcotti and St. Jacques (2018) asked participants to engage in a series of hands-on multisensory mini-events (e.g., shaping a figure out of playdough), and then two days later they were asked to retrieve the same events while either maintaining their original perspective (own eyes) or shifting to an observer-like perspective. Shifting to an observer-like perspective compared to maintaining the original own eyes perspective reduced the percentage of correct responses participants provided on a final memory test two days later in which participants were asked to answer specific questions about mini-events (e.g., what color was the playdough?). Using a similar mini-events paradigm, Marcotti and St. Jacques (2022) found that shifting to an observer-like perspective reduced the percentage of correct responses on a test of spatial memory accuracy in which participants were asked to place objects in their original locations. Other research has suggested that memories formed from own eyes and observer-like perspectives within an immersive virtual reality paradigm are equally accurate (Iriye & St.

Jacques, 2021), suggesting that the shift to a novel viewpoint is the key factor that can impact memory accuracy. Together these findings lend some support for the idea that adopting a novel perspective can impact memory accuracy, but they also raise other questions regarding whether viewpoint differentially impacts some categories of information over others.

Understanding how visual perspective impacts the accuracy of autobiographical memories is more challenging given that the veracity of personally experienced events is typically unknown, and thus, prior research has instead used the consistency of details across successive recall attempts as a proxy of memory accuracy. In one study, Talarico and Rubin (2003) examined changes in the consistency of details recalled across retrieval attempts for a flashbulb memory for the 911 terrorist attacks compared to an everyday event occurring around the same time. Participants were asked a series of questions about each event (e.g., who, what, where, when) during an initial recall attempt occurring mere days after each type of event and provided subjective ratings of visual perspective. The consistency of recall and subjective ratings was then tracked at different retention intervals in separate groups of participants. They found that both types of events were associated with reductions in consistency of details over a one-year period. For everyday events, subjective ratings of visual perspective also mirrored these changes in consistency with a shift from own eyes ratings to observer-like perspectives over time. Flashbulb memories did not show this pattern and instead own eyes ratings remained high irrespective of the retention interval. However, flashbulb memories were also associated with heightened vividness, emotion, and rehearsal, when compared to everyday events, which might have contributed the relative maintenance of own eyes perspectives in these events. These findings demonstrate that shifts in perspective across

time at least for everyday events may parallel changes in memory consistency. An important question, however, is whether changes in visual perspective can predict the degree of consistency for individual memories. Wardell et al. (2023) examined this question by asking participants to write descriptions for recent events and to provide subjective ratings of own eyes and observer perspectives across a 10-week period. They coded the narrative descriptions based on the number of spatiotemporally specific details (i.e., episodic information) and then applied a coding scheme to characterize the consistency across the recall sessions based on the autobiographical interview (Levine et al., 2002). Using a multilevel analysis approach, they found that variability in either own eyes or observer-like perspectives across the recall sessions predicted poorer consistency of episodic details. Further inspection of the nature of these inconsistencies revealed that they reflected errors of omission and the addition of new details, rather than contradictions in the details participants provided. These findings suggest that the viewpoint adopted during remembering is related to the fidelity with which people recall their memories over time.

Together these findings suggest that visual perspective generally influences the quantity of information that people report, such that novel perspectives in memories are related to errors of omission. Although new information can be included and lead to inconsistencies in how people describe the past over multiple retrieval attempts (e.g., Wardell et al., 2023), it is still unknown whether such details correspond accurately with the past (e.g., Koriat et al., 2000). Niese et al. (2021) argued that the narrow focus on measuring accuracy based on specific details may impede our understanding about the relationship between visual

perspective because people may use observer-like imagery to "form a coherent representation of the event, rather than store specific details" (p. 4).

Visual Perspective, Imagination, and False Memories

In many ways, adopting a novel perspective aligns memory more towards imagination than veridical recall of the past. Shifts in perspective during remembering recruit similar neural mechanisms as imagining how the past could have occurred differently or episodic counterfactual simulation (St. Jacques et al., 2018; also see Faul et al., 2020), and behavioral research has demonstrated parallel effects of visual perspective when imagining future events (e.g., McDermott et al., 2015). According to constructive simulation accounts, remembering and imagining rely on the same constructive mechanisms (Schacter & Addis, 2007) such that both types of tasks reflect mental simulations of experience (Addis, 2018). It is this dynamic and flexible nature of our memory system that can enable us to recall the past from novel perspectives and enable us to imagine hypothetical events (Buckner & Carroll, 2007), but which can also contribute distortions and errors (Schacter et al., 2011).

Few studies have examined whether the visual perspective people report differs between memories that were personally experienced compared to imagined past events. Imagined events can be distinguished from memories because they are associated with reduced sensory and perceptual details (e.g., Johnson et al., 1988), which might lead people to construct these events from an observer-like perspective. Justice and colleagues (2013, 2018) examined this question and found that fabricated memories, in which participants were asked to describe an imagined event in order to convince another person it was true, were less likely to be retrieved from an own eyes perspective. Related research has shown that people are also more likely to

adopt an own eyes perspective when recalling autobiographical memories they personally experienced compared to vicarious memories in which they imagine past events that happened to other people (Pillemer et al., 2015). Across both of these studies, imagined events were also less vivid than memories, in line with the idea that own eyes perspectives in event memories are recreated when qualitatively richer visual imagery is available.

Other research has shown that the type of visual perspective participants adopt when imagining autobiographical memories influences the likelihood that they endorse these events as real. Marsh et al., (2014) asked people to report the likelihood of occurrence of past events, and then to either imagine these events while taking an own eyes or observer-like perspective. They found that imagining childhood events from an observer-like perspective increased likelihood ratings for childhood but not for recent events, suggesting that participants are more likely to endorse a potentially false memory as real when it is like the viewpoint expected in memory. Similarly, Libby et al. (2003) found that visual perspective during imagination affected the likelihood that participants endorsed an event as really happening, but only when it was like the viewpoint they initially adopted when evaluating the realness of the memory. These findings can be explained based on a source memory error mechanism, in which the evaluation of the similarity between real and imagined events is what drives imagination inflation effects (e.g., Garry & Polaschek, 2000).

Only two studies to my knowledge have examined visual perspective in false memories created in the lab (Heaps & Nash, 2001; Porter et al., 1999). Heaps and Nash (2001) examined visual perspective in true childhood memories and false memories of implanted childhood events. They found that true memories were associated with own eyes perspectives, whereas

false memories were more frequently recalled from an observer-like perspective. Additionally, false memories were also associated with reduced clarity of the visual images produced when compared to true memories. Porter et al., (1999) compared the frequency of own eyes and observer-like perspectives in real, implanted, and fabricated childhood memories. Real childhood memories showed the typical pattern of shift from own eyes to observer-like perspectives with memory remoteness, such that a greater percentage of memories were recalled from an observer-like perspective than an own eyes perspective. In contrast, implanted and fabricated childhood memories were more likely to be recalled from own eyes than an observer-like perspectives. These conflicting findings might be explained by differences in the instructions used to imagine false memories and how they biased the visual perspective adopted. Porter et al. (1999) used guided imagery process that emphasized aspects of memory linked to adopting an own eyes perspective (e.g., visual details, feelings, and thoughts), whereas Heaps and Nash (2001) used instructions that emphasized reporting the objective circumstances of the events. These different retrieval orientations could thus have biased participants to use own eyes or observer-like perspectives when imagining events in the false memory conditions (e.g., Nigro & Neisser, 1983).

Together the findings suggest that observer-like perspectives in imagined events and false memories originate through similar processes as in true memories. Related research has also demonstrated that the visual perspective adopted during episodic simulation of future events is similarly affected by the remoteness and vividness of imagination (St. Jacques, 2019), reflecting that novel viewpoints in memories arise due to similar processes that support both remembering and imagining.

Recommendations and Implications for Forensic Settings

Supporting the suggestions made by the British Psychological Association, empirical research supports the idea that the mere presence of an observer-like perspective does not necessarily signal that memories are false. However, the findings reviewed here suggest that in certain contexts the visual perspective adopted can reflect changes in memories that differ from how these events were encoded and potentially impact the truthfulness of how the past is recalled. A primary factor that could signal changes in the fidelity of memories is the occurrence of shifts in visual perspective across repeated recall attempts, irrespective of the direction in which these changes in viewpoint occur. Conversely, maintaining the original perspective during memory rehearsal could mitigate changes in consistency. The studies reviewed here also highlight the importance of understanding the origin of observer-like perspectives in memories when evaluating their relationship with memory accuracy. Counter to intuitions about the relationship between visual perspective and memory accuracy, in some contexts observer-like perspectives can reflect true memories and own eyes perspectives can be false memories. Below I offer recommendations for practitioners in legal and other applied settings in which the accuracy of memory is at issue, and I also discuss some of the limitations of current research in generalizing to applied settings.

1. *Visual perspective should be assessed during the initial interview and close in time to the occurrence of the event.*

Shifts in visual perspective in memories can occur within weeks from the date of the event and capturing the initial perspective is useful for tracking changes that occur naturally over time and with repeated retrieval. Eyewitnesses who continue to maintain the same viewpoint they

used during the initial interview are more likely to report consistency in the episodic details of their memories (e.g., Wardell et al., 2023). Furthermore, shifts from own eyes to observer-like perspectives across repeated recall attempts could reflect reductions in the amount and/or resolution of visual information, the intensity of emotions experienced, and the number of emotions and thoughts recalled in memories. Understanding the initial viewpoint adopted is also important for determining the origin of observer-like perspectives in memories to evaluate their correspondence to the past. Nonetheless, even if observer-like perspectives are faithful to how the past was experienced, they could still impact the details that people report.

2. *Neutral instructions should be used to elicit memories during interviewing, such as open-ended procedures that ask people to describe everything.*

Visual perspective is influenced by retrieval instructions (e.g., Nigro & Neisser, 1983) and other factors of rehearsal (e.g., Butler et al., 2016). Thus, caution is warranted during the interview process in unduly influencing retrieval orientation processes that could alter how viewpoint is used to direct attention towards some memory details over others. Instructions that on surface would seem to elicit more accurate recall, such as focussing on the objective circumstances of events, could have the unexpected consequence of leading people to adopt an observer-like perspective (e.g., Nigro & Neisser, 1983).

The influence of visual perspective on memory can also inform the use of the Cognitive Interview, which has been shown to be effective in increasing memory accuracy while producing relatively few errors (for review see Memon et al., 2010). The Cognitive Interview includes several components such as instructions to report everything, encouraging mental reinstatement of the context of events, as well as recalling the event in different ways such as

using a variety of perspectives and drawing a sketch of the event (Fisher & Geiselman, 1992). Recent research has highlighted that some of the aspects of the Cognitive Interview can bias people to the use a retrieval style to generate additional details rather than focusing on accuracy (e.g., LaPaglia et al., 2014; Thakral et al., 2019) and potentially contribute to distortions. Considering this research through the lens of visual perspective in memory provides novel insight regarding the circumstances in which the Cognitive Interview is likely to promote more accurate memory recall.

First, mental reinstatement is likely to increase the prevalence of own eyes perspectives in memories (e.g., St. Jacques, 2023), and thus, can promote memory processes that aid the accurate recall of the past in order to preserve the original perspective of memories. However, mental reinstatement could backfire in cases in which the original experience aligns more with an observer-like perspective if people attempt to generate new information that enables them to adopt a novel own eyes viewpoint. Alternative instructions that direct people to reinstate the scene while adopting the identical perspective they experienced the event from could mitigate potential differences in the effectiveness of mental reinstatement. Recent research has highlighted how virtual reality can be used to support context reinstatement effects by immersing people back within the scene of the crime (Timmer et al., 2023). The potential to mimic observer-like perspectives within virtual reality settings (e.g., Iriye & St. Jacques, 2021), could be a useful approach for harnessing the power of context reinstatement effects on accurate recall when this matches the original viewpoint adopted in memory.

Second, the change in perspective component seems to encourage a generative retrieval style and should be used with caution or avoided. Adopting novel perspectives during memory

retrieval can bias the types of details that people report (e.g., King et al., 2022) and influence the broader meaning or interpretation of the event (e.g., Kross & Ayduk, 2009), which could potentially contribute to reductions in memory accuracy (e.g., Marcotti & St. Jacques, 2018). Relatedly, asking people to draw or sketch the scene (Tran et al., 2022), or to review photographs taken from a novel viewpoint (Marcotti & St. Jacques, 2018), can similarly alter the vantage point of memories and potentially impact their accuracy. These findings are consistent with research highlighting that the change in perspective component is the least effective in boosting accurate memory recall (e.g., Boon & Noon, 1994; Davis et al., 2005) and rarely used in applied settings (Clifford & George, 1996).

3. *The nature of the event and individual difference factors should be considered when determining the origin of visual perspective in memory and its relationship to memory accuracy.*

Both the type of event and the individual remembering can influence the visual perspective adopted during memory. In cases involving remote memories, the presence of observer-like perspectives is more likely to reflect the operation of reconstructive changes in memories that occur due to fading of the vividness of visual information and emotional aspects of events that make it difficult to recreate own eyes perspectives. Witnesses to emotionally traumatic events may also be more prone to using an observer-like perspective during their initial interview, reflecting an accurate representation of how these events were originally experienced. Given that observer-like perspectives are related to a lack of available visual information they may also be more frequent in some cases of witness memory, such as earwitnesses who are privy to verbal information only (e.g., Campos & Alonso-Quecuty, 2006).

Individual differences related to psychological disorders, culture, and spatial ability can also influence the dominant perspective used during remembering. For example, people from collectivist cultures might be more likely to describe events from an observer-like perspective, which could lead to cultural misunderstandings in how jurors interpret the trustworthiness of their testimony. Promoting awareness of these potential cultural differences could help jurors to better evaluate the testimony from people based on their cultural background and/or help eyewitnesses to avoid using observer-like language to prevent potential biases.

4. *Legal professionals and jurors should be educated on the inherent biases in evaluating the relationship between visual perspective and memory.*

Visual perspective not only impacts how people remember but also how we appraise memories and other people, which has important implications for how jurors might evaluate the accuracy of eyewitness testimony. Descriptions of eyewitness memories that use language reflecting an own eyes (e.g., "I see the perpetrator next to me in the car") rather than an observer-like (e.g., "I can see myself in the car sitting next to the perpetrator") perspective might be considered as more persuasive evidence in legal settings. In a similar vein, other research has examined how perspective can bias the evaluation of video-based evidence (for review see Granot et al., 2018). Viewpoint can also influence the causal attributions people make about their own and other people's behavior (Frank & Gilovich, 1989). For example, Libby and Eibach (2011) reported that when people pictured hypothetical events from a third-person perspective compared to a first-person perspective (i.e., seeing through the main character's eyes) they were more likely to account for situational effects and use this information to evaluate the morality of cheating behavior in others. Turner and colleagues (2018) examined

how surveillance video from body cams (i.e., first-person perspective) and dash cams (i.e., third-person perspectives) influenced how people evaluated the intentions of police officers (e.g., the officer intentionally shot the suscept). They found that body cams reduced judgements of intention, which they linked to the visual salience of the officer within the event. Visual perspective is also closely related to our ability to view the world from another person's perspective to understand their thoughts and feelings, which can influence the degree to which we empathize with others (Decety & Jackson, 2004). For example, first-person perspectives when used in fiction increase the degree to which people engage in fantasy empathy, in which they put themselves in the place of the main protagonist in the story (Gander & Gander, 2022). Other research has demonstrated that embodying a first-person perspective can evoke greater feelings of pain (Christian et al., 2015).

Future research developing systematic approaches to understand how biases about visual perspective in memory can be altered is needed (e.g., Cooper et al., 2002). Such efforts would help in providing clearer guidelines to translate empirical evidence from the lab to applied settings—like other ongoing efforts to improve how jurors and other legal professionals assess eyewitness testimony (e.g., Wells et al., 2020; Wise & Kehn, 2020).

Limitations. Empirical research examining visual perspective in memory has focused primarily on autobiographical memories or naturalistic lab-based events in university samples, rather than examining the types of events that real eyewitnesses might encounter or through examining memory of real eyewitness memory in situ. While such research can be informative as a starting point for understanding how visual perspective influences memories it might not generalize to real cases of eyewitness memory (e.g., Yuille & Cutshall, 1986). Except for

research specifically examining traumatic memories (e.g., Cooper et al., 2002; McIsaac & Eich, 2004), studies investigating the relationship between visual perspective and memory have not focused on the types of stressful or traumatic experiences that some witnesses who are victims to crime might experience during the event or when retrieving their memory in subsequent legal contexts (e.g., Marr et al., 2021). Field or archival research would be useful for understanding the complexities of how visual perspective impacts memory in real cases of eyewitness testimony. Conversely, taking a more applied approach when designing lab-based studies of visual perspective in memory could be fruitful for developing novel questions to understand how viewpoint influences accuracy.

Conclusion

Our unique point-of-view impacts how we create memories based on our experiences. People can adopt both own eyes and observer-like perspectives during remembering, and either of these perspectives can reflect authentic experiences that correspond accurately to the past. Nonetheless, in some circumstances the presence of observer-like perspectives or shifts to novel viewpoints can reflect changes in memories, which can impact the veridicality with which we recall the past. Although the flexible ability to see the past from novel perspectives serves many important functions, it can also lead us astray when accuracy is paramount.

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