MEASURING VISUAL PERSPECTIVE IN AUTOBIOGRAPHICAL MEMORY ACROSS TIME PERIODS AND EVENTS

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Dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the Department of Psychology and Neuroscience in the Graduate School of Duke University

2007
ABSTRACT

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Abstract

Visual perspective in the context of autobiographical memory research refers to the point of view from which an individual constructs a visual image of a past event. While the number of studies focusing on this phenomenological aspect of retrieval has increased in the last decade, a basic understanding of the meaning of perspective and its fundamental characteristics has not been fully established. The current studies attempt to further this understanding. The first series of studies examine the role of memory age in perspective using continuous scales to measure self-reported perspective. These studies show memories change in a linear fashion, from first- to third-person perspective, as memories become more remote. Furthermore, individuals report more than one perspective during a single retrieval episode, females report more third-person perspective than do males, and individual differences in perspective use were observed. These individual differences were not accounted for by personality differences, such as levels of public self-consciousness. A second series of studies ask participants to describe the location of their visual perspective, rather than using continuous scales. These studies show visual perspective location varies greatly and consistently across space and for different events. For example, memories of giving a presentation were more likely to be visualized from in front of the individual, whereas memories of running from a threat were visualized from behind the individual. Although
perspective location varies across events and space, location did not affect other phenomenological aspects of retrieval, such as memory vividness, belief in the accuracy of one’s memory, or the degree of reliving experienced, nor did location map onto the ideal location for watching an event unfold or for watching one’s self complete a task. Together these studies further characterize visual perspective during retrieval, suggesting it is more complex than a simple, dichotomous distinction between first- and third-person perspective. Additionally, they highlight the importance of understanding the phenomenological experience of perspective in order to appreciate its significance in other domains.
To my parents, Lily and David Rice, for all of your love and support,
and for your unwavering confidence in me
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Chapter 1. Visual Perspective and Autobiographical Memory Retrieval

General Introduction

Autobiographical memory refers to the recollection of personally experienced past events (e.g., Brewer, 1986; Brewer, 1996; Rubin, 2005; Rubin & Greenberg, 1998). The ability to reconstruct these past events helps guide behavior and allows for the construction a coherent self-concept (Brewer, 1996; Neisser, 1988; Rubin, 1998; Wilson & Ross, 2003). Imagery, particularly visual imagery, is an important aspect of autobiographical memory, which allows us to re-experience details of past events (Brewer, 1986, 1996; Greenberg & Rubin, 2003; Wheeler, Stuss, & Tulving, 1997). These visual images can be transformed in order to reason and problem solve. For example, when arranging furniture, I might use visual imagery to determine whether a new chair will fit between a couch and table. Imagery in autobiographical memory can also be transformed, with visual perspective being one notable transformation. That is, when remembering a past event, images may originate from one’s original perspective (i.e., first-person perspective) or from a location outside of their original viewpoint (i.e., third-person perspective) (Nigro & Neisser, 1983). Although perspective is a salient characteristic of visual images, relatively little research has investigated its role during remembering. Therefore, the goal of this thesis is to more fully characterize the
experience of visual perspective during autobiographical retrieval in order to inform future research.

In the current chapter, I will review extant literature on visual perspective during autobiographical memory retrieval and discuss the importance of studying this domain. In Chapter 2, a series of experiments investigating visual perspective use across time are reviewed. These studies show perspective use changes reliably over time such that older memories are more often remembered using a third-person perspective. Furthermore, results indicate individuals often use more than one perspective when retrieving a memory and females tend to use third-person perspective more than males. Moreover, individuals show static differences in the way they use perspective, although these differences are not accounted for by personality differences, such as self-consciousness. In Chapter 3, a series of experiments investigating the use of perspective across events is described. These studies show that individuals experience many different types of third-person perspectives and the location of these perspectives varies in a reliable pattern across events. These locations replicate across studies, yet they do not map onto the ideal location for watching an event unfold or the location from which an individual would want to watch him- or herself complete a task. Phenomenological experiences during retrieval do not seem to vary across third-person perspective
locations. The final chapter discusses the general findings and proposes future directions for study.

**Autobiographical Memory and Visual Imagery**

To ask an individual on the street for a memory would likely produce an autobiographical memory, such as a conversation with a friend the night before or a walk on the beach the previous summer. Autobiographical memories are what individuals normally think of when they hear the term “memory.” That is, autobiographical memories are recollections of personally experienced past events.

Although the exact definition of autobiographical memory varies across several theories (e.g., Baddeley, 1992; Brewer, 1986, 1996; Conway, 1992, 2001; Conway & Pleydell-Pearce, 2000; Larsen, 1992; Rubin, 2005, 2006; Tulving, 1983; Wheeler et al., 1997), similarities across definitions mirror this common understanding. For example, Baddeley defines autobiographical memory as being “concerned with the capacity of people to recollect their lives” (1992, pg. 26). Similarly, Brewer describes autobiographical memory as when “an individual recalls a specific episode from their past experience” (1996, pg. 19). Rubin suggests “autobiographical memories are episodic memories: recollected events that belong to an individual’s past” (2005, pg. 79). Conway presents similar characterizations while stressing the importance of the reconstructive nature of autobiographical memory and its relation to one’s
conceptualization of the self (Conway, 1992, 2001; Conway, 2005; Conway & Pleydell-Pearce, 2000) as do others (e.g., Fitzgerald, 1992; Neisser, 1988; Wagenaar, 1992; Wilson & Ross, 2003).

However, disagreement exists over the relationship between autobiographical memory and other types of memory, such as episodic and semantic memory. Episodic memory refers to memories for events that occurred at a specific time and place and are accompanied by autonoetic consciousness, the ability to consciously re-experience past events (Tulving, 1972, 1983; Wheeler et al., 1997). This is contrasted with semantic memory, which stores information devoid of context, such as general knowledge and facts. As noted above, Rubin (2006) argues autobiographical and episodic memories are the same. Conflicting definitions include the suggestion that autobiographical memory is a special kind of episodic memory (e.g., Larsen, 1992), episodic memory is a component of autobiographical memory (e.g., Conway, 2001), episodic and autobiographical memory are related but separate (e.g., Wheeler et al., 1997), or autobiographical memory encompasses both episodic and semantic information related to one’s self (e.g., Brewer, 1986). While the intricacies of this debate, as well as distinctions between episodic and semantic memory, will not be discussed here it is important to note disagreement over the exact definition of autobiographical memory exists. A broad definition of the term will be used here. That is, autobiographical
memories are memories for personally experienced past events, similar in nature to episodic memories.

As mentioned above, a key component of autobiographical memory is one’s conscious experience during retrieval (e.g., Brewer, 1986, 1996; Conway, 2001; Conway, 2005; Conway & Pleydell-Pearce, 2000; Rubin, 1998, 2005, 2006; Rubin, Schrauf, & Greenberg, 2003). For example, when asked for an autobiographical memory, I might think back to sitting in the library writing the final pages of my dissertation. This memory might be accompanied by a visual image of the scene, including images of objects and people around me. This image might be incredibly vivid or very unclear. I might also re-experience the emotions I felt or the scents and sounds that surrounded me. It has been suggested that of these phenomenological experiences, visual imagery is the most integral to autobiographical memory (Greenberg & Rubin, 2003; Rubin & Greenberg, 1998). Several methodologies have shown visual imagery accompanies most autobiographical memories and these images are often very vivid (e.g., Brewer, 1988; Brewer & Pani, 1996; Galton, 1883; Kosslyn, Seger, Pani, & Hillger, 1990). Visual imagery also plays a central role in the characterization of “flashbulb memories” (Brown & Kulik, 1977), in which visual images are perceived as near-photographic representations of important past events (Conway, 1994; Neisser, 1982; Winograd & Neisser, 1992). Visual imagery also leads to greater reports of recollection compared to
simply knowing an event occurred (Rubin, Burt, & Fifield, 2003; Rubin, Schrauf et al., 2003) and leads individuals to judge an event as actually having occurred rather than being imagined (Johnson, Foley, Suengas, & Raye, 1988; Johnson, Hashtroudi, & Lindsay, 1993). Perhaps the most convincing support for visual imagery’s central role in autobiographical memory retrieval comes from evidence that individuals with damage to visual cortex develop amnesia for long-term autobiographical memories in addition to visual memory deficits (Rubin & Greenberg, 1998). A review of the neuropsychological literature suggests damage to visual cortex is unique in this aspect when considering brain regions beyond those known to support autobiographical memory, such as the medial temporal lobe and prefrontal cortex (Greenberg & Rubin, 2003).

Together these findings suggest visual imagery is an integral component of autobiographical memory. One aspect of visual imagery that has been largely ignored is the perspective of one’s visual imagery. This refers to the point of view from which an individual constructs a visual image of a past event. That is, when remembering a past event, images may originate from one’s original perspective (i.e., first-person) or from a location outside of their original viewpoint (i.e., third-person). There are several motivations for understanding visual perspective use during autobiographical memory retrieval. First, while variations in the use of visual perspective across memories were
first observed over 100 years ago (Freud, 1899/1953), relatively little research has examined perspective within the autobiographical memory literature. Of those studies, very few focus on visual perspective, but rather use it as one of many autobiographical memory measures. Moreover, visual perspective in autobiographical memory directly relates to several other research domains, such as the ability to take the perspectives of others, which has been studied extensively within developmental (see Newcombe, 1989 for review; Piaget & Inhelder, 1956) and social psychology literatures (e.g., Arriaga & Rusbult, 1998; Davis, Conklin, Smith, & Luce, 1996; Galinsky & Ku, 2004; Galinsky & Moskowitz, 2000; Storms, 1973; Watson, 1982), as well as the ability transform one’s perspective within a static array of objects within the more standard spatial memory literature (see Zacks & Michelon, 2005 for review). Understanding perspective use in autobiographical memory will not only increase our understanding of autobiographical memory, but also help relate these now disparate areas to one another.

Secondly, given the importance of visual imagery in autobiographical memory retrieval, it is important to understand a key attribute of this imagery. For example, does visual perspective affect the type of information retrieved about an event or other aspects of retrieval? Conversely, does the type of information available for retrieval affect the perspective one adopts? The answers to these questions have serious implications for both experimental design and more applied issues. For example, the
Cognitive Interview (Fisher & Geiselman, 1988), which is used by law enforcement officials to interview witnesses of crimes, asks individuals to recall events from multiple visual perspectives. The only study to examine the effect of using different perspectives in this interview technique, revealed individuals’ descriptions did not change significantly after freely recalling the event (Boon & Noon, 1994). However, further research is needed to ensure discrepancies do not emerge under alternative conditions.

Thirdly, differences in visual perspective use during retrieval have been observed in clinical populations, such as in patients with post-traumatic stress disorder, social phobia, agoraphobia, obsessive compulsive disorder, body dysmorphic disorder, and depression (Brewin, 1998; Coles, Turk, Heimberg, & Fresco, 2001; Day, Holmes, & Hackmann, 2004; Lemogne et al., 2006; Terry & Barwick, 1995, 1998/99; Wells, Clark, & Ahmad, 1998; Wells & Papageorgiou, 1999; Williams & Moulds, 2007). Understanding how visual perspective affects memory retrieval might further our understanding of such mental disorders and aid in their treatment (e.g., Wells & Papageorgiou, 2001).

**Autobiographical Memory and Visual Perspective**

Sigmund Freud (1899/1953) was one of the first to note differences in visual perspective during recall. He described several patients who reported seeing themselves in their memories from a disembodied perspective, particularly when recounting childhood events. Henri and Henri (1896, as cited by Freud, 1953) provided
similar reports from individuals asked to describe their earliest childhood memories. Because events are never originally perceived from this viewpoint (cf., Cooper, Yuille, & Kennedy, 2002; Nigro & Neisser, 1983), Freud posited childhood memories such as these must be inaccurate reconstructions of the original event. He further suggested these memories were “worked over” by individuals to protect themselves from inappropriate content. Thus, Freud asserted that the appearance of one’s self in memories is a tag of repression, calling such memories “screen memories.”

Following Freud’s description of screen memories, the topic of visual perspective in memory went unmentioned for nearly 100 years. Although a few philosophers described their own experiences of perspective when remembering during this time (see Brewer, 1986; Brewer, 1996 for review; Locke, 1971; Von Leyden, 1961), the experimental study of perspective was revived by debates over the accuracy of autobiographical memories. Because events are not typically experienced from a third-person perspective, seeing one’s self in a memory was thought to be a possible hallmark of reconstruction, thus drawing attention to visual perspective in autobiographical retrieval (see Rubin, 1998).

Signaling this revival, Nigro and Neisser (1983) empirically examined visual perspective during autobiographical memory retrieval in a series of experiments. Rather than adopting a psychoanalytic standpoint, these studies approached the use of
perspective as a cognitive strategy used by individuals during memory retrieval. Nigro and Neisser also provided terms to classify perspective during retrieval. “Field perspective” referred to remembering an event through one’s own eyes in “roughly the field of view that was available in the original situation” (p. 467). Conversely, “observer perspective” referred to visualizing the scene as an onlooker, or observer, witnessing the scene from an external, rather than internal, vantage point. The current paper will refer to these perspectives as first-person and third-person perspective, respectively.

In a series of experiments, Nigro and Neisser (1983) examined perspective use by asking individuals to recall several events varying systematically in emotion and self-awareness. A final experiment asked participants to focus on either the emotional or concrete details of past events and examined the effect on perspective use. These studies revealed several significant findings that continue to influence the study of perspective today, including: 1) third-person perspective memories tended to be older and less vivid than first-person memories, 2) memories for emotional events produced a larger proportion of first-person memories compared to less emotional events, 3) memories for highly self-aware, emotionally intense events were the only type of event to produce more third- than first-person memories, and 4) focusing on emotional details during retrieval produced more first-person perspective memories, while focusing on concrete details produced more third-person perspective memories. Thus, Nigro and Neisser
suggested a relationship between memory age and perspective, similar to Freud (1899/1953), positing perspective change may be a product of rehearsal or reconstructive processes. Furthermore, they suggested self-awareness at encoding influences perspective at retrieval. And finally, emotion affects perspective in that both retrieving emotional memories and focusing on the emotional aspects of an event produce more first-person perspective memories. These findings have led to several lines of inquiry, each of which will be reviewed in turn, in an attempt to draw conclusions from the existing literature regarding the relationship between visual perspective and autobiographical retrieval.

**Memory Age, Vividness, Constructive Processes, and Visual Perspective**

In their original study of visual perspective, Nigro and Neisser (1983) reported two related findings; third-person perspective memories were older and less vivid than first-person perspective memories. Similar findings have been reported in studies examining perspective across memory age, with more remote memories more often categorized as third-person and rated as less vivid than recent memories (Piolino et al., 2006; Robinson & Swanson, 1993). Nigro and Neisser, as well as others (Freud, 1899/1953; Robinson & Swanson, 1990), suggested this change might be due to reconstructive processes that have a greater chance of affecting memories as they
become more remote. However, it is difficult to disentangle the effects of these three different factors, memory age, vividness, and reconstructive processes, as they vary simultaneously within these studies.

A study investigating flashbulb and everyday memories (Talarico & Rubin, 2003) showed the same relationship between memory age, vividness and perspective, but only for everyday memories. Everyday memories were rated as more third-person and less vivid after a delay of 6 and 32 weeks. Vividness and perspective ratings did not change across time for flashbulb memories. A separate study investigating the mental imagery accompanying long-term memory cued both recent and remote autobiographical memories with scenarios that likely occurred in the last 24 hours or likely occurred at least one year prior (Brewer & Pani, 1996). The percentage of memories remembered using first-person perspective across recent and remote events did not differ; however, neither did vividness ratings. While these studies suggest there is a relationship between vividness, memory age, and perspective, it is unclear which memory attribute influences perspective more.

Individual differences in visual imagery and their relation to visual perspective have also been investigated, showing limited relationships between imagery abilities and perspective use. For example, one study examined the relationship between several visual and spatial imagery measures and perspective, finding a positive relationship
between measures loading onto a spatial manipulation factor\(^1\) and the tendency to use first-person perspective (Lorenz & Neisser, 1985). Yet, other studies examining visual imagery abilities, using the Betts Questionnaire Upon Mental Imagery and Gordon Imagery test (Gollnisch & Averill, 1993; Robinson & Swanson, 1993, respectively) found no significant differences in individuals’ scores across tendencies to use first- and third-person perspectives.

Evidence that visual imagery does play a role in perspective use comes from a study manipulating the sensory information available at encoding (Rubin, Burt et al., 2003). In this study, participants were shown a series of six videotaped events, but presented with only audio information for half of the events. For events presented without video, participants were encouraged to imagine taking part in the events they heard unfold. Events presented without video were more often remembered using third-person perspective compared to events presented with both audio and video, and were also rated as less vivid. This suggests vividness may play a role in perspective use. It is also possible constructive processes produced these results. Although the images associated with audio-only events were not necessarily re-constructed, as individuals

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\(^1\) Measures included Marks’ Vividness of Visual Imagery Questionnaire (VVIQ, Marks, 1973), two versions of Gordon’s Imagery-control Scale, the Space Relations Form Differential Aptitude Test (DAT, Bennett, Seashore, & Wesman, 1947), Barratt’s Visualization Form (Barratt, 1953), Bett’s Questionnaire upon mental imagery (Sheehan, 1967), the Cube Task (Richardson, 1977a), and Richardson’s Verbalizer-visualizer questionnaire (VQQ, Richardson, 1977b). The tests loaded onto three separate factors: Vividness and Control, Spatial Manipulation, and Spontaneous Elaboration.
never experienced the original visual input, the images they did experience were likely constructed from previous knowledge or experiences. For example, when asked to visualize taking part in a picnic scene, individuals might construct an image based on knowing what picnic scenes typically look like or based on past picnics they have experienced. Therefore, the need to construct one’s own visual imagery in the absence of visual input may have produced more third-person perspectives.

Similarly, false memories also tend to be recalled using third-person perspectives. Heaps and Nash (2001) showed that following an imagination inflation procedure (e.g., Loftus, Coan, & Pickrell, 1996 Garry, 1996 #91; Loftus & Pickrell, 1995), counterfactual childhood events judged as true were more likely to be recalled using third-person perspective compared to true childhood events. Heaps and Nash (2001) suggest several explanations for these results, which mirror the findings of Nigro and Neisser (1983). They suggest false memories may lead to third-person perspectives because the associated imagery is less vivid, because individuals focus on the concrete details of imagined events as emotional details are unavailable, or because of reconstructive processes.

A fourth possibility, not suggested by Heaps and Nash, is that false memories rely more on the use of semantic knowledge about one’s self and the world in order to construct a plausible false memory and this reliance on semantic memory may lead to
more third-person memories. In addition to being more third-person, false memories were rated as more typical of individuals’ general childhood behavior than were true memories, suggesting participants may have been drawing upon general autobiographical knowledge (Conway, 1996; Conway & Pleydell-Pearce, 2000) in order to construct a false memory. A similar notion was mentioned briefly by Robinson and Swanson (1990) who noted individuals often report “the image they experience [during third-person memories] is more like a template than an accurate depiction of themselves in the context of the remembered event.” They go on to suggest these memories may be composed of more “generic images, each tied to a particular period or condition in their lives” when compared to first-person memories (pg. 329). Similarly, studies have shown third-person perspective memories are rated as less recollected and more known compared to first-person perspective memories (Crawley & French, 2005; Piolino et al., 2006), suggesting the distinction between episodic and semantic memory may be key to perspective use.

To summarize, the relationship between memory age, vividness, and constructive processes is difficult to interpret as these variables often co-vary in studies of perspective. Third-person perspective memories tend to be less vivid, older, and possibly more constructed. Constructing images for events experienced in the absence of visual input tends to produce third-person perspective imagery, as do false memories.
These differences may be due to image vividness, constructive processes, or reliance on semantic memory. It is clear additional research is necessary to disentangle these possible alternatives.

**Emotional Intensity, Valence, and Visual Perspective**

Nigro and Neisser (1983) suggested emotional memories produce more first-person perspective memories than neutral memories, and focusing on the retrieval of emotional content produces more first-person perspective compared to recalling concrete details. Further evidence for a relationship between visual perspective and emotion comes from a study investigating the effects of perspective on retrieval content (McIsaac & Eich, 2002). Participants were asked to recall controlled, laboratory events from a particular perspective. First-person perspectives produced more emotional, physical, and psychological state information, whereas third-person perspectives produced more descriptions of concrete details, such as appearance and actions. This study suggests the relationship between perspective and the information retrieved from memory is bi-directional. That is, using a particular perspective constrains the type of information retrieved, while constraining the type of information one searches for affects the particular perspective used at retrieval (Nigro and Neisser, 1983).

Although emotional experience has long been described as being comprised of two dimensions, valence and intensity (e.g., Duffy, 1934, 1941; Dunlap, 1932), it is
unclear which of these properties produces the observed effects within the perspective literature. A study cuing memories with 12 emotional cue words produced predominantly first-person perspectives regardless of valence or intensity (Strongman & Kemp, 1991). Similarly an experiment comparing memories for positive, negative, and neutral events found emotional memories were more often remembered using first-person perspective than neutral memories, regardless of valence (D’Argembeau, Comblain, & Van Der Linden, 2003). This suggests intensity, rather than valence, may influence perspective. Additional support comes from a study showing emotional intensity, rather than valence, accounts for significant variance in phenomenological ratings, including ratings of visual perspective (Talarico, LaBar, & Rubin, 2004). Moreover, intensity and first-person perspective ratings were positively related. These studies suggest perspective is not influenced by valence; rather the observed effects may be due to differences in intensity.

However, other studies suggest valence does play an important role in perspective, particularly when examining negative memories. In one study, traumatic memories were rated as more third-person perspective compared to positive memories, but the effects may have been due to intensity differences as individuals with less severe traumas reported less third-person perspective memories (Porter & Birt, 2001). However, a study cuing memories with 10 emotional phrases, which varied in both
valence and intensity, found negative memories to be more third-person than positive memories and no difference in average intensity ratings across valence (Berntsen & Rubin, 2006).

Additional evidence for the effect of valence comes from investigations of clinical populations. For example, differences in perspective use in those with post-traumatic stress disorder (PTSD) or PTSD-like symptoms have been reported for traumatic events (Berntsen, Willert, & Rubin, 2003; McIsaac & Eich, 2004; Porter & Birt, 2001). These studies were motivated by reports of individuals with PTSD dissociating from traumatic events and experiencing them from a perspective outside the body (Cardena & Spiegel, 1993; Edna B. Foa & Rothbaum, 1998; Freinkel, Koopman, & Spiegel, 1994; Noyes & Kletti, 1976). This led some to suggest PTSD patients would be more likely to remember traumatic events from a third-person perspective (Berntsen et al., 2003; Brewin, 1998; Van der Hart, Van der Kolk, & Boon, 1998). Early studies showed individuals with PTSD often experience out-of-body experiences during recall (Cooper et al., 2002; Reynolds & Brewin, 1999) and a recent study found individuals with high scores on the

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2 It is unclear whether third-person perspectives in memory and out-of-body experiences (OBEs) are related. Neurological evidence suggests that similar brain regions in the temporoparietal junction may underlie the occurrence of out-of-body experiences (Blanke, Landis, Spinelli, & Seeck, 2004; Blanke et al., 2005; Blanke, Ortigue, Landis, & Seeck, 2002) and the ability to transform ones’ perspective around an array of objects (Zacks, Gilliam, & Ojemann, 2003; Zacks, Vettel, & Michelon, 2003). However, a unique attribute of OBEs is the sensation of being physically located outside the body, which is thought to be caused by a breakdown in individuals’ spatial representations across reference frames (Blackmore, 1984; Blanke et al., 2004) and does not occur when recalling memories from different perspectives. Therefore, while similar processes may
Posttraumatic Stress Diagnostic scale (PDS, E.B. Foa, 1995) reported more third-person and less first-person perspectives for traumatic memories than individuals with low scores (Berntsen et al., 2003). McIsaac and Eich (2004) found that while PTSD patients were not more likely to report third-person perspectives, those who used a third-person perspective rated their traumatic memories as less emotional, less anxiety-provoking, and contained fewer affective details than those reporting first-person memories. The authors suggest third-person perspective may be used as a cognitive avoidance strategy to reduce the emotional intensity of traumatic memories (see also Berntsen et al., 2003). Depressed individuals may use a similar mechanism to avoid intrusive memories (Williams & Moulds, 2007). Moreover, chronic pain sufferers report less associated pain when remembering events from a third-person perspective compared to first-person (P. M. McNamara, Benson, McGenny, Brown, & Albert, 2005).

Support for the use of perspective as an avoidance strategy comes from an interesting effect observed by Robinson and Swanson (1993). Participants were asked to recall several events, rate their perspective and then switch or maintain their perspective. Switching from first-person to third-person perspective decreased participants’ ratings of experienced affect, whereas switching from third- to first-person allow for the construction of perspectives in memories and OBEs, additional research is necessary to further elucidate the relationship between these two experiences.
did not produce a change. These findings were recently replicated using emotional cue words of varying emotional intensity and valence (Berntsen & Rubin, 2006).

Robinson and Swanson (1993) proposed a model to account for these results, in which they contrast two types of affective information: a cognitive code representing the causes of experienced affect, such as goals and beliefs, and an experiential code representing the actual feelings experienced during the event. They suggest when both codes are available memories will be accompanied by a first-person perspective, whereas when the experiential code has degraded or is no longer available, a third-person perspective is used. The model does not specify what occurs when the cognitive code is no longer available; however, one might assume this would lead to a first-person perspective as the experiential code is still available. The theory states when switching from third-person to first-person perspective, one will attempt to reinstate the experiential code (associated with first-person perspective), but finding it unavailable will rely on the cognitive code (e.g., goals, beliefs) to reconstruct affective information. Consequently, no change in affect intensity will be observed. Conversely, switching from first-person to third-person perspective inhibits the experiential code, leaving the cognitive code to define the affective components of the event. This results in the observed reduction of intensity. Therefore, individuals with PTSD, depression, or
chronic pain may inhibit the experiential code in attempt to prevent the re-experiencing of emotions or physical sensations from the traumatic, intrusive, or painful event.

Another hypothesis explaining the difference in emotional intensity ratings across perspectives focuses on the type of information individuals attend to during recall (Kross, Ayduk, & Mischel, 2005). This study showed that only when individuals both took a third-person perspective and focused on the reasons for past emotions (i.e., the why of their emotion), rather than focusing on past feelings and sensations (i.e., the what of their emotion), did participants report a drop in emotional intensity ratings. Therefore, rather than being dependent on the availability of particular codes, changes in intensity may be due to attention to particular types of emotional information at retrieval. Further experimentation is necessary in order to test these two accounts.

To summarize, it is unclear whether valence, intensity, or both factors affect perspective use. Some studies suggest emotionally intense memories lead to first-person perspectives, while other studies suggest recalling negative events, particularly traumatic events, leads to third-person perspectives. Using first-person perspective during recall produces more emotional details, while third-person perspectives produce more concrete details. Finally, individuals with PTSD-like symptoms are more likely to use third-person perspective while remembering traumatic memories than those without PTSD-like symptoms. Together these results suggest focusing on the emotional
components of a memory produces more first-person perspective memories. However, in some cases, such as traumatic memories, individuals may use third-person perspective as an emotion regulation strategy.

**Self-Awareness, Self-Concept, and Visual Perspective**

Nigro and Neisser (1983) suggested self-awareness is related to perspective by showing memories for self-aware, emotional events were more likely recalled from a third-person perspective. Robinson and Swanson (1993) presented support for this claim, showing individuals who scored high on a measure public self-consciousness (Fenigstein, Scheier, & Buss, 1975) recalled more memories using a third-person perspective. Additional support for this relationship comes from gender and cross-cultural studies.

Huebner and Fredrickson (1999) hypothesized females would use third-person perspective more often than males, due to being more self-aware of their bodies as a result of the sexual objectification females experience. When asked to think about which perspective they typically use when remembering events, females reported using third-person perspective more often. When asked to recall memories for several specific situations, females reported more third-person perspectives, but only for memories of attending a party. Females also rated these memories as more negative, less positive, and having higher levels of associated shame and anxiety than men. The authors argue
perspective differences were limited to this event because females only experienced a
greater degree of sexual objectification during this event. However, it is unclear from
these results whether the difference was due to the effects of emotion or self-awareness.

A cross-cultural study comparing Easterner and Westerners provides further
support that self-awareness affects perspective (Cohen & Gunz, 2002). The authors
hypothesized that because Eastern cultures emphasize the relation between self and
others, whereas Westerners emphasize independence and individualism (Heine,
Lehman, Markus, & Kitayama, 1999; Triandis, 1995), Easterners should attend more to
the relationship between their own and others’ behavior. Thus, Easterners would be
more likely to use a third-person perspective as a means of “regulating one’s actions to
make sure one is behaving appropriately” (pg., 55), particularly for events where they
are the center of attention. Their results supported this hypothesis; Easterners rated
memories in which they were the center of attention as more third-person than non-
center-of-attention memories and more third-person than Westerners regardless of the
type of situation.

The effect of self-awareness on perspective has also been investigated in clinical
populations, most frequently in patients with social phobia. One impetus for
investigating perspective use in this population is public self-consciousness, shown to
affect perspective as discussed above (Robinson & Swanson, 1993), has been shown to be
a strong predictor of social anxiety (Darvill, Johnson, & Danko, 1992). Furthermore, models of social phobia make specific predictions regarding the use of third-person perspective. These models suggest social phobics use spontaneous third-person perspective imagery as one source of evaluative information in social situations (Clark & Wells, 1995; Rapee & Heimberg, 1997). For example, social phobics report experiencing images in which they appear nervous or awkward during social situations, such as one patient who described his image as being “like a camera zooming in on a horrible, red, panicky face, just the face and neck and the top part of the body. I look really put-on-the-spot and nervous” (Hackmann, Surway, & Clark, 1998, pg. 9). It is thought these images, as well as individuals’ propensity to focus on their appearance, leads to greater use of third-person perspective at retrieval.

Several studies suggest social phobics use perspective differently than normal controls. For example, in one study social phobics and healthy controls were asked to recall a recent social and non-social situation during which they were “very anxious and uncomfortable” (Wells et al., 1998). Social phobics used third-person perspective to a greater degree than controls when recalling the social situation, but there was no difference across groups for the non-social situation. A study of controlled social events completed in the laboratory found social phobics rated these events as more third-person than controls both immediately and three weeks later (Coles, Turk, & Heimberg,
Social phobics also produce more third-person perspectives for more intense social memories, whereas this difference was not observed in controls (Coles et al., 2001). Social phobics have also been shown to produce more third-person perspective memories for both positive and negative social memories compared to controls (D’Argembeau, Van der Linden, d’Acremont, & Mayers, 2006). Holding negative self-images in mind during social interactions also increases social phobics’ use of third-person perspective at retrieval compared to holding a neutral self-image in mind (Hirsch, Clark, Mathews, & Williams, 2003). In this same study, observers blind to their condition rated these individuals’ performance more negatively. This suggests images constructed by social phobics during encoding may affect perspective at retrieval.

Wells and Papageorgiou (1999) suggest greater third-person perspective use during social situations should extend to all individuals with abnormal self-focused processing. Indeed they found both social phobics and agoraphobics rated their social memories as more third-person compared to blood/injury phobics and controls. Agoraphobics also rated their neutral memories as more third-person than all other groups. Day and colleagues (2004) compared recurrent imagery in agoraphobics and controls by asking them if they ever experience images in agoraphobic situations\(^3\) and to

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\(^3\) While agoraphobic individuals were readily able to produce images to this description, controls required additional prompting. They were then given a list of typical agoraphobic situations and asked to choose their most fearful situation from these alternatives.
rate these images as first-person, third-person, or alternating. Agoraphobic individuals reported more alternating images than controls. The authors suggest this represents a change in focus from the self to the situation. Individuals with body dysmorphic disorder also rate memories of being worried or anxious about their appearance as more third-person and being more negatively emotional than controls (Osman, Cooper, Hackmann, & Veale, 2004).

It has been proposed that third-person perspective imagery is critical to the development and maintenance of disorders such as social phobia and body dysmorphic disorder (Clark & Wells, 1995; Day et al., 2004; Osman et al., 2004; Rapee & Heimberg, 1997; Veale, 2004). In fact, evidence suggests manipulations affecting one’s visual perspective may ameliorate the anxiety experienced by social phobics (Wells & Papageorgiou, 2001). In one study, patients were instructed to attend to external information, rather than internally generated information such as heart rate, negative thoughts, and mental imagery, during controlled social situations. They were also later shown video footage of their performance in the social situation in order to disconfirm any negative impressions and provide positive third-person perspective imagery. These cognitive therapy techniques led to a significant reduction in social avoidance, self-consciousness, and negative belief, which continued for 6 months. Furthermore, giving social phobics an instruction to focus on external environmental information can


decrease individuals’ reliance on third-person perspective imagery, as well as reduce anxiety and belief in the catastrophic outcomes of social events (Wells & Papageorgiou, 1998). These studies suggest a more complete understanding of perspective use may improve treatment of clinical disorders such as PTSD and social phobia.

Studies by Libby and colleagues (Libby & Eibach, 2002; Libby, Eibach, & Gilovich, 2005) have also examined the relation of the self and perspective. However, their research focuses on self-concept, rather than self-awareness. Noting evidence that individuals who undergo large-scale transformations, such as religious conversions or recovery from drug addiction, often think of their previous self as a separate individual, Libby and Eibach (2002) hypothesized discrepancies between one’s current self-concept and past actions would produce more third-person perspective when remembering discrepant events. This hypothesis was borne out over a series of 5 experiments, all of which found greater incidence of third-person memories for events conflicting with the individuals’ current sense of self. For example, participants nominated personal attributes that had changed the most and least since high school, recalled memories related to each of these attributes, and then indicated the accompanying perspective. As expected, memories for the changed attribute were more likely to be remembered using third-person perspective than the stable attribute. The authors suggest third-person perspective use in these discrepant memories may be due to dispositional attributions at
retrieval, which has been shown to affect perspective (Frank & Gilovich, 1989). Because individuals’ current and past responses to the same remembered situation differ (e.g., choosing to take drugs in alleyway versus choosing not to), they suggest individuals assume situational variables cannot account for their actions. Instead, dispositional variables must account for their behavior. These past responses are then attributed to the past self, rather to the past situation. Libby and colleagues (2005) have also shown using a third-person perspective at retrieval can increase one’s perception of change from past to current self.

To conclude, self-awareness and self-concept seem to play a role in the use of visual perspective during recall. The existing research indicates self-aware events lead to more third-person than first-person perspective memories, particularly in individuals with abnormal self-focus, such as those with social phobia and agoraphobia. Memories of events that are less congruent with one’s current self-concept are also more likely to lead to third-person perspective. These studies also illustrate the potential value of understanding perspective in the treatment of clinical disorders.

**Summary**

It is clear from this review that research investigating the use of visual perspective in autobiographical memory is steadily growing after a long period of neglect. This research suggests perspective is affected by a range of things, including
memory age, image vividness, constructive processes, emotional intensity and valence, self-awareness, and self-concept. The type of information one attempts to retrieve also affects perspective. Conversely, using a particular perspective influences the type of information retrieved from memory. Individual suffering from several psychological disorders also seem to use third-person perspective differently than normal individuals, particularly when recalling events related to the etiology of their particular disorder.

Because visual perspective is related to such a large range of domains, both within the area of human memory and beyond, it is important to fully understand the meaning of perspective and individuals’ phenomenological experience of perspective. As mentioned above, visual perspective is not typically the focus of studies, but rather used as one of many measures to examine autobiographical memories. However, because of the far-reaching implications of visual perspective, studies specifically examining the phenomenological experience of perspective and its role in autobiographical memory are important and can only further our understanding of human memory processes. Therefore, the current set of studies aim to more fully to characterize the experience of visual perspective during autobiographical retrieval in order to inform future research.
Chapter 2: Measuring Visual Perspective Across Time

Introduction

As the perspective literature continues to grow, it is important to characterize perspective at a basic level before we can fully understand its role in autographical memory. The current investigation examines five questions fundamental to our conceptualization of perspective: 1) is perspective dichotomous or continuous, 2) how does perspective change with memory age, 3) how does perspective vary across genders, 4) how flexible is perspective within a single retrieval episode, and 5) are there individual differences in perspective use?

Dichotomous or Continuous Variable

In many studies of perspective, investigators limit participants to categorizing their memories as coming from either first- or third-person perspective (e.g., Libby et al., 2005; Nigro & Neisser, 1983; Robinson & Swanson, 1993; Rubin, Burt et al., 2003), with “neither” sometimes provided as an additional option. This type of measurement precludes the experience of multiple perspectives for a particular memory (cf., Day et al., 2004; Piolino et al., 2006 for alternative measurement techniques), perhaps mischaracterizing participants’ phenomenological experience. More recently, a continuous scale of measurement has been used, anchored at first-person and third-person at the two extremes. The specificity of these scales varies across studies, with
intermediate values often left unlabeled (e.g., Coles et al., 2002; Coles et al., 2001; Wells et al., 1998; Wells & Papageorgiou, 1999; Williams & Moulds, 2007) and sometimes indicating a mixture of two perspectives (e.g., Day et al., 2004; Huebner & Fredrickson, 1999; Osman et al., 2004). One benefit of using a continuous scale, rather than categorical measure, is they allow one to correlate perspective with other phenomenological characteristics, such as vividness or confidence, which are frequently measured continuously. However, not knowing what these intermediate values represent makes the interpretation of significant correlations, or significant prediction within the context of regression analyses, difficult. Moreover, it is unclear whether first- and third-person perspectives necessarily exist on the same continuum or whether there are fundamental differences between the two, such that a memory being “more first-person” is not equivalent to it being “less third-person.” As the number of studies investigating perspective grows, it is imperative to step back and understand the ramifications of different measurement techniques in order to accurately interpret our findings.

This seemingly methodological issue also has theoretical implications. If it is possible for individuals to construct more than one perspective during a single retrieval episode explanations of perspective use must be modified, as they tend to focus on a dichotomous characterization. Some descriptions of perspective use suggest third-
person perspective is a sign of additional reconstruction. If this is the case, does this mean memories for which an individual experiences both a first- and third-person perspective are more or less reconstructed than memories for which they experience only a third-person perspective?

In addition, results showing differences across perspectives would need to be reassessed if perspective is not dichotomous or is not captured by a single scale. If memories can switch from first- to third- person perspective within one retrieval episode, how were these memories categorized in previous investigations and how does this affect previous results? Is it possible that patterns found in previous investigations can be accounted for not by the difference between first- and third-person perspectives, but in the difference between more or less static images (e.g., Day et al., 2004)? For example, Robinson and Swanson (1993) found third-person memories were rated as less vivid than first-person memories using a dichotomous measure. If perspective is not dichotomous, does this relationship still hold? Is it possible that one perspective drives this effect? These possibilities would drastically affect the interpretation of perspective use in memory, making questions of measurement not only of practical, but also theoretical importance.

**Perspective and Memory Age**
One consistent finding within the perspective memory literature is that third-person perspective memories tend to be older than first-person perspective memories (e.g., Frank & Gilovich, 1989; Kihlstrom & Harackiewicz, 1982; Nigro & Neisser, 1983; Robinson & Swanson, 1993). Using unspecified time periods, Robinson and Swanson (1993), revealed memories from remote time periods were more likely to be categorized as third-person compared to recent time periods. Similar results were shown using a three-category (i.e., first-person, third-person, mixture) rating scheme in young and older adults (Piolino, Desgranges, Clarys, et al., 2006). However, both of these studies used categorical measures, whereas it is becoming more common to use a single-continuous scale to measure perspective.

Several explanations for the change in perspective across memory age have been suggested (see section in Chapter 1 for full review). These include reconstructive processes (Freud, 1899/1953; Heaps & Nash, 2001) and discrepancies in vividness (Heaps & Nash, 2001; Nigro & Neisser, 1983). The current study examines the relationship between perspective and imagery using different measurement methods in order to further elucidate the relationship between these two memory attributes.

**Perspective and Gender**

Huebner and Frederickson (1999) reported a gender difference in perspective use. Women reported using third-person perspectives more often than men when asked
to assess their normative perspective use. In addition, when asked to recall specific events, women reported more third-person perspective memories, but only for one event type, attendance at a college party. Motivation for their study comes from feminist theories, which posit women construct third-person perspectives of themselves as they become socialized due to the objectification of the female body (e.g., Fredrickson & Roberts, 1997; McKinley & Hyde, 1996). The authors suggest that because women experience more shame than men when in sexually objectifying situations (Fredrickson, Roberts, Noll, Quinn, & Twenge, 1998) and because shame is characterized by high levels of self-awareness (Lewis, 1992), women would recall memories for sexually objectifying events from a third-person perspective more than males. Yet, females only reported more third-person perspectives for memories of a college party and not for other events thought to produce some level of sexual objectification, such as eating a meal with a mix of males and females and giving a public presentation. However, the authors note that ratings of affect only varied across genders for the college party situation, with females rating the event as more negative, less positive, and having greater feelings of shame than males. Because of this Huebner and Fredrickson (1999) posit that only the college party event produced high enough levels of sexual objectification to induce third-person perspectives.
The current study further examined gender differences by examining perspective use across gender regardless of event type. It was expected that females would rate their memories as more third-person perspective than men.

**Flexibility of Perspective**

Another important theoretical issue is whether perspective is a static attribute of a particular memory or whether perspective is a product of reconstruction. Several studies suggest the latter, showing manipulating retrieval focus can produce changes in perspective use (e.g., Libby & Eibach, 2002; Libby, et al., 2005; Nigro & Neisser, 1983) and that participants can shift their perspective after initial retrieval (Robinson & Swanson, 1993). However, the majority of experiments providing evidence that perspective is a flexible characteristic have used dichotomous scales of measurement making it important to replicate these results using other techniques.

The ability to change perspective is not only theoretically interesting, but has practical applications as well. It has been shown that individuals with clinical disorders such as PTSD, depression, obsessive compulsive disorder, and social phobia use perspective differently from normal controls (Brewin, 1998; Coles et al., 2001; Day et al., 2004; Lemogne et al., 2006; Terry & Barwick, 1995, 1998/99; Wells et al., 1998; Wells & Papageorgiou, 1999; Williams & Moulds, 2007). There is some evidence to suggest changing one’s visual perspective may help the treatment of some of these disorders
(Wells & Papageorgiou, 2001). If certain attributes of memories make them more or less difficult to change, this could have potential impact on cognitive treatments. Knowing what affects the flexibility of one’s visual perspective will also help characterize the general phenomenon more accurately. To test this, individuals were asked to change their perspective from first-person to third-person perspective in Experiment 1 to examine the effects of memory age on perspective flexibility.

**Individual Differences in Perspective Use**

Several investigators have noted differences in perspective use among individual such as individuals who tend to recall all memories in a study using first- or third-person perspective. However, few studies have further examined these differences in relation to other measures or without limiting their investigation to clinical populations or specific types of events (cf., Gollnisch & Averill, 1993; Lorenz & Neisser, 1985; Robinson & Swanson, 1993). If there are individual differences in perspective use, how might they relate to other characteristics thought to relate to perspective use, such as self-consciousness and self-monitoring? The current study examines whether individual differences exist regardless of the type of event being recalled.

To investigate these issues, we used two different methods of measurement to examine perspective in Experiments 1 and 2. Individuals were asked to either rate their perspective using a single continuous scale anchored at first- and third-person
perspectives or using two continuous scales, one first-person and another third-person scale. We examined the effect of these different measurement types on reported perspective for memories from five different lifetime periods (i.e., before first grade, during elementary school, during middle school, during high school, and during college). Time periods were used in an attempt to replicate the relationship between time and perspective found by many others, such that third-person memories are older than first-person memories. However, we used specific time periods, rather than comparing the average age of first- and third-person memories (e.g., Nigro & Neisser, 1983) or asking participants to determine their own time periods (Robinson & Swanson, 1993) in order to get a more evenly distributed sample of time. Also, in Experiment 1 and 2 we examined the effect of gender on perspective use, as others have hinted at this effect (e.g., Huebner & Frederickson, 1999). Finally, in Experiment 3 we examined individual differences in perspective use and their relation to personality measures. Specifically, we were interested in whether measures of characteristics such self-consciousness, self-monitoring, and depressive symptoms predicted individuals’ overall use of perspective.

**Experiment 1: Changes in Perspective Over Time Using A Single Continuous Scale**
To examine changes in perspective across time using a single continuous scale, individuals were asked to recall memories from five specific time periods and rate the perspective they experienced.

**Methods**

**Participants**

1236 Duke University undergraduates (713 females; mean age = 18.87) were tested in large group settings for partial class credit. 144 participants were excluded due to 2 or more missing data points.

**Procedures**

Participants first read a description of the distinction between imaging an event through one’s own eyes (field) or from an observer’s perspective (see Appendix A). They were then asked to recall one event from each of the following five time periods: before first grade, during elementary school, during middle school/junior high, during high school, during college. Approximately half of the participants (n = 640) were asked to recall the events in chronological order (i.e., before first grade to during college), while the remaining participants recalled the events in the reverse order (i.e., during college to before first grade). Participants indicated the perspective they used when imaging the event using the following scale, “When remembering the event, do you see the event through your own eyes or as an outside observer?” Responses were anchored
at “own eyes” and “observer” (1 = own eyes; 7 = observer). This is referred to as the Single-Scale Visual Perspective Questionnaire (VPQ-1S).

After recalling all five events and rating their perspective, participants were then asked to try to change their perspective as much as possible and re-rate their perspective. Participants were given the following instructions: “If you previously rated your memory as 1-4, try to change your perspective closer to rating it as a 7. If you previously rated your memory as 5-7, try to change your perspective closer to rating it as a 1. Then rate the actual perspective that you now have when remembering.”

**Results**

**Original Perspective Ratings**

A total of 5,460 memories were used in analyses. Of these memories, 56% were endorsed as being first-person perspective (i.e., rated from 1-3), 36% were rated as third-person (i.e., rated from 5-7), and 7% rated as a 4 on the 7-point scale. Simply examining the effect of time period to determine whether the current scale replicates previous results reveals a clear pattern in which remote memories are rated as more third-person than recent memories (see Figure 1). Participants’ perspective ratings were subjected to a 5 (time period: before first grade, elementary school, middle school, high school and college) x 2 (questionnaire order: chronological or reverse chronological) x 2 (gender: female or male) mixed model ANOVA treating time period as a within subject factor.
and all other variables as between subjects factors. Unless otherwise stated, statistical significance was set at $p < .05$.

Figure 1: Visual Perspective Changes Across Time and Gender
Panel A shows more remote memories are rated as more third-person (higher scores). Panel B shows females rate their memories as more third-person regardless of time period. Error bars depict +/- 1 standard error of the mean (SEM).

As expected from previous literature, there was a main effect of time period, $F(4,4352) = 126.45$, with post-hoc comparisons indicating all time periods were significantly different from one another, smallest $t(1088) = 11.10$ (see Figure 1). There was a significant main effect of questionnaire order, $F(1,1088) = 37.61$, such that thinking of a college memory first (i.e., reverse chronological order) led to a greater experience of third-person perspective. There was a significant effect of gender, $F(1,1088) = 10.28$,
with females rating their memories as more third-person than males (see Table 1 for summary). Higher-order interactions were all non-significant.

Table 1: Visual Perspective Use By Gender and Questionnaire Order Across Time

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<tr>
<td>Before first grade</td>
<td>4.19 (2.27)</td>
<td>4.46 (2.31)</td>
<td>3.82 (2.25)</td>
<td>4.31 (2.29)</td>
</tr>
<tr>
<td>Elementary school</td>
<td>3.71 (2.05)</td>
<td>4.10 (2.13)</td>
<td>3.39 (2.11)</td>
<td>3.77 (1.96)</td>
</tr>
<tr>
<td>Middle school</td>
<td>3.35 (1.99)</td>
<td>4.01 (2.09)</td>
<td>3.02 (2.00)</td>
<td>3.67 (1.93)</td>
</tr>
<tr>
<td>High school</td>
<td>2.76 (1.94)</td>
<td>3.45 (2.12)</td>
<td>2.68 (1.91)</td>
<td>3.18 (2.09)</td>
</tr>
<tr>
<td>College</td>
<td>2.36 (1.83)</td>
<td>3.02 (2.16)</td>
<td>2.32 (1.89)</td>
<td>2.64 (1.94)</td>
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Note: Significant main effects of gender and questionnaire order were observed. Chron. = Questionnaire order beginning at “Before first grade”; Reverse = Questionnaire order beginning at “College.” Standard deviations (SD) presented in parentheses.

Change Perspective Ratings

Rather than examine the raw change ratings provided by each individual, we were interested in whether participants were able to change the maximum amount allowed by their initial rating. For example, if a participant first rated his/her perspective as a 7 and then changed to a 1 the overall change of 6 would be considered larger than an individual changing from a 6 to a 1. However, in both cases participants changed their perspective the maximum amount allowable based on their initial rating. To examine whether participants changed the maximum amount possible, a proportion
change score was calculated (i.e., actual change/maximum possible change) to examine perspective change normalized by the total change possible. Memories initially rated as a 4 were omitted from further analyses. Analyses were then limited to participants with both original and change ratings for all five time periods (n = 711, females = 433).

First, to examine the effect of time period, questionnaire order, and gender on proportion change data were subjected to a 5x2x2 ANOVA. There was a significant main effect of time period, \( F(4,2828) = 57.31 \). Post-hoc \( t \)-tests revealed a significant difference between all time periods, smallest \( t(707) = 6.74 \), except for during high school and college, \( t(707) = 0.25 \). There was also a main effect of questionnaire order, \( F(1,707) = 5.12 \), with memories from the chronological questionnaire order showing more overall change. There was no effect of gender, \( F(1,707) = 0.96 \). Higher order interactions were not significant. Table 2 contains a summary of means.

Table 2: Normalized Change Scores By Questionnaire Order Across Five Time Periods

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Chronological</th>
<th>Reverse Chronological</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before first grade</td>
<td>0.52 (0.30)</td>
<td>0.45 (0.32)</td>
</tr>
<tr>
<td>Elementary school</td>
<td>0.61 (0.29)</td>
<td>0.55 (0.29)</td>
</tr>
<tr>
<td>Middle school</td>
<td>0.63 (0.29)</td>
<td>0.61 (0.28)</td>
</tr>
<tr>
<td>High school</td>
<td>0.67 (0.30)</td>
<td>0.66 (0.29)</td>
</tr>
<tr>
<td>College</td>
<td>0.67 (0.32)</td>
<td>0.62 (0.28)</td>
</tr>
</tbody>
</table>

*Note: A main effect of time period and questionnaire were observed. Chron. = Questionnaire order beginning at “Before first grade”; Reverse = Questionnaire order beginning at “College.” SD presented in parentheses.*
In addition to examining the overall amount of change, we were interested in whether the amount of change would depend on whether the memory was initially experienced as a first- or third-person perspective. However, original perspective (first- or third-person) could not be included as a within-subject factor in the above analysis as individuals did not provide a first- and third-person perspective memory for each time period. Moreover, it could be not entered as a between-subject factor because most individuals did not provide only first-person or only third-person perspective memories across all five time periods. To investigate this issue, each individual was randomly assigned to one of 5 groups corresponding to the 5 time periods of interest. Therefore, time period served as a grouping variable in this analysis, rather than a within-subjects variable.

Proportion change scores were then examined as a function of whether an individual initially rated a memory as first- or third-person perspective. To do this, two groups were created based on an individual’s initial ratings: 1) memories initially rated 1, 2, or 3 (i.e., memories rated as first-person); 2) memories initially rated 5, 6, or 7 (i.e., memories rated as third-person). Proportion change scores were then submitted to a 5 (time period) x 2 (original perspective: first-person or third-person) between-subjects ANOVA. This analysis revealed a significant main effect of time period, $F(4,701) = 7.28$. Post-hoc comparisons indicated “before first grade” change scores were different from
all other time periods except “during elementary school,” smallest $t(184) = 3.29$, and “during elementary school” change scores were different from all time periods except “before first grade,” smallest $t(184) = 2.34$. The main effect of original perspective was not significant, $F(1,701) = 2.26$. Yet, the interaction between time period group and initial rating group was significant, $F(4,701) = 3.83$ (see Figure 2). Subsequent analyses revealed a simple effect of time period for the initial third-person group, $F(4,701) = 9.05$. As Figure 2, Panel A shows, early time periods were more difficult to change when they began as third-person. Specifically, individuals were less able to change “before first grade” memories compared to memories from middle school through college, and memories “during elementary school” were changed less than memories from high school and college. The simple effect for the change ratings was not significant for the initial first-person group, $F(4,701) = 0.81$. In this case, only memories from before elementary school changed less than memories from high school. Similar patterns are seen when using alternate random assignments of participants to the five time period groups.

A less conservative analysis of this effect was performed using all of the available data rather than one-fifth of the data. Each data point was treated as independent and from separate individuals. Using this method, a similar pattern emerged. Specifically, there was a significant main effect of group ($F(1,3545) = 19.98$) and of time period
Figure 2: Normalized Change Scores Across Time as a Function of Initial Perspective

Panel A presents a conservative analysis in which individuals were randomly assigned to separate groups and time periods to prevent data points from one person contributing more than once. Panel B presents a liberal analysis in which all data points were treated as independent. Both analyses show significant interaction between time and initial perspective. Error bars represent +/- 1 standard error of the mean (SEM).

\[ F(4,3545) = 34.72 \]. In addition, the interaction between time period and initial rating group (i.e., began as first-person versus began as third-person) was significant, \( F(4,3545) = 10.37 \). Again, memories that began as third-person changed less when they were more remote, but changed more when more recent. Simple effects analysis revealed a simple effect of time period for the initial third-person group, \( F(4, 3545) = 38.07 \), as well as a simple effect for the initial first-person group, \( F(4, 3545) = 7.00 \). Panel B of Figure 2 shows a similar pattern to the previous analysis, with memories beginning as third-person showing a steady increase in change over time and memories beginning as first-
person showing a general increase in early memories, but less change in more recent memories.

**Discussion**

Using a single continuous scale, we were able to show a distinct change in perspective use across memory age. While many others have reported that third-person perspective memories are older on average than first-person perspective memories (e.g., Frank & Gilovich, 1989; Kihlstrom & Harackiewicz, 1982, p. nigro; Nigro & Neisser, 1983; Robinson & Swanson, 1993) and that memories for undefined older time periods where more often third-person perspective than memories for undefined recent time periods (Robinson and Swanson, 1993), this is the first demonstration of a gradual change from first- to third-person perspective over time using clearly defined time periods. While there were main effects of gender and questionnaire order, the same general pattern of a linear decrease in third-person ratings for more recent memories was observed regardless of gender or questionnaire order. This suggests that the tendency to use a third-person perspective slowly increases in a linear fashion as a memory becomes more remote. Some have suggested that older memories may require more reconstruction than recent memories and that this constructive process leads to more third-person perspective memories (Freud, 1899/1953; Nigro & Neisser, 1983;
Terry & Barwick, 1995, 1998/99), which may explain the observed change across memory age.

In addition, an effect of gender was observed such that females experienced memories as being more third-person perspective regardless of memory age. Huebner and Fredrickson (1999) also found females were more likely to use a third-person perspective during recall suggesting women are more self-aware during certain situations and greater levels of self-awareness lead to third-person perspective memories (Nigro & Neisser, 1983). The current study is the first to show females rate their memories more third-person regardless of event type. There are several possible interpretations of these findings. First, women may tend to recall more self-aware events when given non-specific memory cues. Second, women may use perspective differently than men. While there is evidence to suggest gender differences in spatial abilities (see Halpern, 2000; Spelke, 2005 for reviews), gender differences in perspective-taking abilities have not been reported. These questions will require additional study to fully determine why a gender difference exists in perspective use. For example, asking males and females to both recall several self-aware events, and asking them to rate this aspect of the event as well as perspective would help determine whether this event attribute leads to the observed difference across genders. Even though the gender effect replicates across experiments, it should be noted the size of the gender effect is smaller
than the effect of memory age. That is, across the five time periods, perspective ratings change was 1.63 points, whereas the largest difference at any time point between males and females was 0.32 points. Therefore, the gender effect does not seem as robust as the effect of memory age effect observed here.

In addition to the gender effect, there was an effect of questionnaire order. When asked to think of memories beginning from “during college,” individuals rated their memories as more third-person perspective than when individuals were asked to think of memories beginning from “before first grade.” This difference is likely due to measurement factors and may be explained by participants’ contrasting later responses with previous responses. Importantly there was no interaction between questionnaire order and time period, suggesting this difference is not something of great concern. However, one question that arises from this finding is how perspective within one memory might affect perspective use in subsequent memories. For example, is there carry-over in perspective from one memory to another or are there contrast effects across memories? Further studies are needed to answer these questions.

Finally, individuals were able to change their perspective within individual memories, replicating the findings of Robinson and Swanson (1993). Interestingly, the degree to which individuals could change their perspective depended on both the starting perspective and the age of the memory, in contrast to Robinson and Swanson
who only observed difficulties in changing perspective across time periods. This discrepancy may be due to differences in measurement techniques, as Robinson and Swanson used a dichotomous distinction and difficulty was rated by individuals rather than examining movement on a continuous scale.

One possible explanation for the interactive effects of memory age and initial perspective may be that individuals have a richer, more detailed visual and spatial representation of recent events. Because of this, individuals can switch between a first and third person perspective, changing their perspective with little difficulty. As events become more distant these representations become more sparse, making it more difficult to change perspective. In this case, individuals may rely on more schematic representations of spatial and visual details (Brewer & Treyens, 1981; Moscovitch et al., 2005; Tversky, 2003; Tversky, Morrison, Franklin, & Bryant, 1999). It may be that constructing a first-person perspective memory requires richer, more detailed representations, which would explain the difficulty in changing from a third-person to first-person perspective as memories become more remote. This explanation is similar to a theory posited by Robinson and Swanson (1993) to account for differences in emotional intensity when switching perspectives. They found that when switching from first- to third-person perspective, ratings of emotional intensity decreased, whereas shifts from third to first did not affect emotional intensity ratings. The authors
suggested that in third-person perspective memories, emotional information is missing from the memory trace. Thus, when asked to switch from third to first there is no change in emotional intensity as the information is no longer available and cannot be reconstructed to the same degree at retrieval. However, when asked to switch from first to third, emotional information is suppressed, which leads to the drop in emotional intensity ratings. A similar sort of mechanism may account for the difficulty in changing older third-person memories. While this provides a useful framework to explain the current findings, further experimentation is necessary to rule out alternative accounts.

**Experiment 2: Changes in Perspective Over Time Using Continuous First- and Third-Person Scales**

One fundamental question emerged from Experiment 1; what does an intermediate value on the 7-point scale represent? For example, does a 4 indicate that the individual experiences a mixture of first and third-person perspectives? Or is it that they experience no perspective? Does a 5 indicate a mixture of perspectives or a less vivid third-person perspective? To answer these questions, we adapted our single-scale perspective questionnaire to two separate scales, one measuring first-person perspective and the other third-person perspective. Again, individuals were asked again asked to recall memories from the same five specific time periods. In addition, participants were
asked to rate the vividness of their perspective to explore the relationship between perspective ratings and vividness.

**Methods**

**Participants**

222 Duke University undergraduates (144 females; mean age = 18.64) were tested in large group settings for partial class credit. 17 participants were excluded due to missing 2 or more data points.

**Procedures**

Participants first read a description of the distinction between first- and third-person perspectives in memory and recalled an event from five time periods as in Experiment 1 (see Appendix B for exact instructions). All participants recalled the events in chronological order and were asked to rate each memory on three scales. First, participants rated the vividness of each memory on a 7-point scale (1 = not vivid at all, 7 = as vivid as if it were happening now). They also rated perspective using two separate 7-point scales. One scale referred to the degree the participant experienced the memory from their own eyes (1 = not at all, 7 = completely) and the other to the experience of an observer’s perspective (1 = not at all, 7 = completely). This is referred to as the Two-Scale Visual Perspective Questionnaire (VPQ-2S).
Results

A total of 1,025 memories were used in analyses. To investigate changes in perspective and vividness across time, participants’ ratings of first- and third-person perspectives and vividness were subjected to three separate 5 (time period: before first grade, elementary school, middle school, high school and college) x 2 (gender: female or male) ANOVAs with time period treated as a within subject factor. Unless otherwise stated, statistical significance was set at $p < .05$. Means from the three ANOVAs are summarized in Figure 3.

![Figure 3: Time Period and Gender Affect First-person, Third-person and Vividness Ratings](image)

First- (grey) and third-person (light grey) perspective ratings on a two continuous scales and vividness (black) by gender (Male = dashed, Female = solid) across five time periods. A main effect of time period for all three measures was observed, as well as a main effect of gender for first- and third-person ratings. Error bars represent +/- 1 SEM.
First-person perspective ratings showed a significant main effect of time period, \(F(4,812) = 41.29\), with post-hoc comparisons revealing all time periods different from one another, smallest \(t(203) = 5.33\), except for high school and college memories, \(t(203) = 4.07\). In addition, there was a main effect of gender, \(F(1, 203) = 8.58\), such that females rated their memories as less first-person than males. The interaction between time period and gender was nonsignificant, \(F(4,812) = 0.58\). There was also a significant main effect of time period for third-person perspective ratings, \(F(4,812) = 14.97\). Post-hoc comparisons revealed all time periods were different from each other, smallest \(t(203) = 5.92\), except for the following comparisons: “elementary school” and “middle school,” “middle school” and “high school,” and “high school” and college” ratings, \(t(203) = 0.90, 2.89, 3.62\), respectively. The effect of gender was also significant, \(F(1,203) = 5.62\), such that females rated their memories as more third-person perspective than males. The interaction was nonsignificant, \(F(4,812) = 0.34\). Vividness ratings showed a significant main effect of time period, \(F(4,812) = 190.40\). Post-hoc comparisons reveal all time periods were different from each other, \(t(203) = 6.40\). The main effect of gender was nonsignificant, \(F(1, 203) = 5.14\), as was the interaction of time period and gender, \(F(4,812) = 0.38\).

To address whether individuals experienced more than one perspective per memory, first- and third-person perspective ratings for each individual memory were
examined, plotting the total number of memories given all combination of these two ratings (see Figure 4).

### Figure 4: Number of Memories Given All Combination of First- and Third-person Perspective Ratings
Panel A shows the hypothetical location of memory counts based on whether perspective is dichotomous (D), captured by a single-scale (S), or requires the option to rate above (+) or below (-) the single scale location. Panel B shows the actual memory counts provided by participants.

In Figure 4, Panel A depicts the meaning of different response types, while Panel B presents the total number of memories for any response combination. If perspective is dichotomous, ratings should be limited to two, possibly three, response types: 1-7 (i.e., not at all first-person and completely third-person), 7-1 (i.e., completely first-person and not at all third-person), and possibly 1-1 if individuals experience no perspective (labeled as “D” in panel A). If first- and third-person perspective are the opposite of one another and can be captured on a single scale, responses should fall on the rightward
leaning diagonal (cells labeled “S” and “D” in panel A). For example, if the two perspectives are experienced in opposition to one another, a rating 3 on the first-person scale should result in a rating of 5 on the third-person scale (i.e., the reverse coding of 5 would be 8-5, or 3).

Examining the data, only 28.78% of the data are accounted for by using a dichotomous rating, suggesting when given the opportunity, individuals commonly report much finer distinctions in perspective than simply “either first-person, third-person, or neither.” In addition, approximately 25% of all memories were rated as at least a 4 on either scale, suggesting a substantial number of memories are accompanied by some degree of both perspectives. Turning to the diagonal, 56.39% of the data are accounted for by a single-scale approach. Although this increases the amount of data accounted for, approximately half of the data lie outside of this area. Examining the overall distribution of memories, much of the data fall near the diagonal or below with the majority of memories falling in a somewhat Gaussian distribution around the main diagonal. If we extend our area of interest to one cell above and below the diagonal, 79.40% of the data are accounted for; two cells above and below accounts for 88.60% of the data.

While this accounts for much of the data, it is clear that a substantial amount lies below the diagonal in the area representing the experience of more than one perspective.
To ensure data points below the diagonal were not due to individuals simply nominating high values for every questionnaire item, the number of individuals contributing to each cell below the diagonal was examined. No single individual rated all items the same. One individual rated their three most recent memories as “7” on every scale, but rated more remote memories (“before 1st grade” and “during elementary school”) using the full range of the scales. Three individuals rated their most recent two memories as “7” on every scale, but again remote memories were rated using the entire scale. The same pattern was true of individuals providing “6” ratings for an individual memory on both first- and third-person scales; it was uncommon for individuals to provide two “6” ratings for more than one memory and when they did it was for more recent memories. Thus, when looking at these individual responses, we see a pattern of older memories being more third-person and less first-person, but more recent memories more likely to be experienced with more than one perspective.

Given that these data points do not seem to be due to response problems and are fairly common, we believe they accurately represent the individuals’ phenomenological experience and should be accounted for. Therefore, the most accommodating model is not to characterize perspective as dichotomous or as two opposing forces, in which a memory would necessarily be considered more first-person and less third-person (i.e., a single continuous scale). Rather, it seems the two characteristics are strongly related to
one another as evidenced by the large number of memories that fall on or near the diagonal. However, more than one perspective is often experienced within a single retrieval episode. This precludes the use of scales that do not address this type of phenomenological experience. Using this framework leads us to consider data points in Figure 4 coming from one cell above the single-scale diagonal and all cells below, which accounts for 96.98% of the data. Thus, there are few memories that don’t have at least one perspective associated with them, even if only to a moderate degree.

Examining the correlations among the perspective and vividness ratings further supports this framework. Correlation coefficients were calculated across the three rating types for each time period separately, which revealed an interesting pattern summarized in Table 3. Across all five time periods first- and third-person perspective ratings were highly negatively correlated \( r(203) = -.81, -.83, -.76, -.67, -.60, \text{all } p < .0001 \). First-person ratings were also positively correlated with vividness ratings \( r(203) = .21, .32, .25, .22, .25, \text{all } p < .004 \). However, third-person perspective ratings did not correlate with vividness ratings in any of the time periods \( r(203) = -.05, -.13, -.11, -.10, -.01, \text{all } p > .07 \).

The probability of finding this same pattern of correlations (i.e., large negative correlation between first- and third-person ratings, moderate positive correlation between first-person and vividness ratings, and no correlation between third-person and vividness ratings) independently across the five time periods is incredibly small. Thus,
we consider this pattern highly robust. These findings emphasize the importance of considering one’s methods of measurement when studying perspective in memory.

These data advocate the use of separate first- and third-person scales, which provide correlated yet independent information when considered in relation to other phenomenological properties.

Table 3: Correlations Between Perspective Vividness Ratings Across Time

<table>
<thead>
<tr>
<th></th>
<th>Bef. First</th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Elem. Sch.</td>
<td>Middle Sch.</td>
<td>High Sch.</td>
<td>College</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>First</td>
<td>Third</td>
<td>First</td>
<td>Third</td>
<td>First</td>
<td>Third</td>
<td>First</td>
</tr>
<tr>
<td>Third</td>
<td>-.81**</td>
<td>-.83**</td>
<td>-.76**</td>
<td>-.67**</td>
<td>-.60**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vivid</td>
<td>.21*</td>
<td>-.05</td>
<td>.32**</td>
<td>-.13</td>
<td>.25**</td>
<td>-.11</td>
<td>.22*</td>
</tr>
<tr>
<td></td>
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<td></td>
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<td></td>
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</tr>
</tbody>
</table>

Note: * p < .05, ** p < .001. First = first-person perspective rating, Third = third-person perspective rating, Vivid = vividness rating

An important question arising from the finding that memories can be experienced with more than one perspective is, are these memories fundamentally different from memories accompanied by a single perspective? To probe this question within the current data set, we examined whether average vividness ratings varied as a function of whether a memory was rated as primarily first-person (i.e., greater than 4 on first-person scale and less than 4 on third-person scale), primarily third-person (i.e., greater than 4 on third-person scale and less than 4 on first-person scale), or a strong mixture of both
perspectives (i.e., greater than 4 on both scales). This was examined within each time period separately. Therefore, five separate between-subjects ANOVAs were completed with 3 levels of the grouping variable (primarily first-person, primarily third-person, mixture of two perspective) and vividness rating as the dependent variable.

These analyses revealed no significant differences in vividness ratings across group, except for the “during elementary school” time period, $F(2,191) = 4.24$. Within this time period, memories experienced as primarily first-person or a mixture of two perspectives were rated as more vivid than memories experienced as primarily third-person, smallest $t(191) = 2.02$ (see Table 4). These results must be tempered by the fact that there are very different cell sizes across comparison. For example, recent memories were less often experienced as primarily third-person, necessarily contributing fewer individuals to that cell (see Table 4 for cell sizes). However, the general pattern seems to be that memories experienced as primarily third-person perspective are less vivid than other memories, particularly for older memories. This general pattern is similar to that seen when asking individuals to change their memories in Experiment 1, in which older memories rated as third-person perspective were more difficult to change than those rated as first-person perspective, particularly for older memories.
Table 4: Vividness Ratings for Memories Rated Primarily One Perspective or a Mixture of Perspectives

<table>
<thead>
<tr>
<th></th>
<th>Before first</th>
<th>Elem. Sch.</th>
<th>Middle Sch.</th>
<th>High School</th>
<th>College</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>4.11 (1.40)</td>
<td>5.15 (1.18)*</td>
<td>5.63 (1.09)</td>
<td>6.39 (0.83)</td>
<td>6.56 (0.82)</td>
</tr>
<tr>
<td>N</td>
<td>71</td>
<td>96</td>
<td>95</td>
<td>113</td>
<td>127</td>
</tr>
<tr>
<td>Third</td>
<td>3.70 (1.50)</td>
<td>4.58 (1.19)*</td>
<td>5.29 (1.12)</td>
<td>6.14 (1.27)</td>
<td>6.23 (1.21)</td>
</tr>
<tr>
<td>N</td>
<td>88</td>
<td>57</td>
<td>45</td>
<td>29</td>
<td>26</td>
</tr>
<tr>
<td>Mixture</td>
<td>4.18 (1.71)</td>
<td>5.07 (1.23)*</td>
<td>5.44 (1.10)</td>
<td>6.21 (0.89)</td>
<td>6.64 (64)</td>
</tr>
<tr>
<td>N</td>
<td>34</td>
<td>41</td>
<td>57</td>
<td>58</td>
<td>47</td>
</tr>
</tbody>
</table>

Note: * p < .05. First = Memories rated as primarily first-person; Third = Memories rated as primarily third-person; Mixture = Memories rated as a mixture of both first- and third-person perspectives. SD presented in parentheses.

Discussion

Using a two-scale version of our perspective questionnaire (VPQ-2S) we were able to replicate the effect of memory age observed using our single-scale version (VPQ-1S). Specifically, remote memories were rated as more third-person, less first-person, and less vivid than recent memories. Ratings on all three scales (i.e., first-person, third-person, and vividness) showed a gradual linear change across memory age. Replicating this effect of memory age using two different measurement methods suggests the effect is reliable and robust. Theoretical explanations for these results are discussed in the General Discussion section.
Additionally, an effect of gender was replicated, showing females rated their memories as more third-person and less first-person regardless of memory age. There was no difference in vividness ratings across genders. This replicates the gender effect observed in Experiment 1, providing additional evidence that perspective use varies across genders. However, the current study does not address whether this difference is due to the type of events being recalled or because females use perspective differently regardless of the event. For example, is it that when given nonspecific cues, are women more likely to retrieve self-aware memories? Supporting the idea that men and women use perspective differently is the fact that vividness ratings do not differ across genders. Therefore, it may not be that phenomenological differences drive the observed gender difference. Further experimentation is necessary to determine the underlying cause of these gender differences.

In addition to effects of time and gender on perspective use, the current study revealed individuals do, in fact, use more than one perspective during a single retrieval episode and this experience is relatively common with approximately 25% of memories receiving ratings on the high end of both perspective scales. In addition, only 29% of the data acquired using two-scales was accounted for by a dichotomous characterization of perspective. Therefore, using a dichotomous measurement mischaracterizes the true experience of perspective. Approximately 55% of memories were accounted for by an
exact single-scale characterization and 79% accounted for by using a single-scale plus or minus one cell. This provides a more accurate characterization of perspective, but not when memories have 2 fairly strong perspectives. However, using two separate scales, which allow for graded responses for both perspectives, provides a more accurate characterization of perspective. Although there is a strong relationship between first- and third-person perspectives, one must also allow for responses expressing more than one perspective.

This characterization, and the necessity of using two scales, was supported by correlational analyses, which revealed differential relationships between first-person and third-person ratings with vividness. This was somewhat surprising, as studies including measures of vividness have found third-person memories to be less vivid than first-person memories (Heaps & Nash, 2001; Nigro & Neisser, 1983; Robinson & Swanson, 1993; cf., Talarico & Rubin, 2003). Therefore, one might expect first-person ratings would be positively correlated and third-person perspective negatively correlated with vividness. Yet, only first-person perspectives were related to vividness. This suggests while first- and third-person perspectives are related to one another, they may fundamentally differ in their relationships with other phenomenological properties of retrieval. The current findings shed new light on previous findings and may require reanalysis of previous findings.
For example, if first-person, but not third-person, perspective is correlated to vividness, is it possible similar relationships would hold for other phenomenological properties? Would ratings of emotional intensity correlate with first-person perspective and not third-person, or vice versa? Answers to questions such as these are crucial to understanding the role of perspective in memory. Differences such as these may help explain the findings from Experiment 1, which suggests the ability to change perspectives varies as a function of whether a memory is initially retrieved as predominantly first- or third-person perspective. However, in the previous study a single continuous scale was used and it is unclear how, and whether, this would transfer to the two-scale questionnaire. To investigate these possibilities investigators could examine extant data sets, splitting continuous scales in half to create first-person and third-person ratings, reverse code third-person perspective ratings, and correlate these ratings with other phenomenological properties. For example, if a −3 (third-person) to +3 (first-person) scale was used, researchers could correlate +3 through +1 ratings (i.e., first-person) and reverse coded −3 through −1 ratings with phenomenological properties as a preliminary step toward understanding the relationship of first- and third-person perspective with other memory properties.
Experiment 3: Individual Differences in Perspective Use

The replication of a gender effect, along with previous findings showing differences in perspective use across clinical populations, suggest there may be individual differences in perspective use. For example, if females were more likely to use third-person perspective due in part to differences in self-awareness, would individuals who are more self-conscious be more likely to use a third-person perspective regardless of memory age? While differences in perspective use have been reported in several clinical populations these findings often examine circumscribed events, such as anxiety-provoking events, ruminated events, or traumatic events (e.g., Berntsen et al., 2003; Coles et al., 2002; Coles et al., 2001; Day et al., 2004; Watkins & Teasdale, 2001; cf., Wells & Papageorgiou, 1999). However, a few studies examining individual differences, suggest there may be differences in public self-consciousness and other personality variables (Gollnisch & Averill, 1993; Robinson & Swanson, 1993). Therefore, our aim was to determine whether there are large-scale differences in perspective use such that individuals with high or low ratings on several measures of clinical symptoms and personality use perspective differently than individuals with normative scores.

Our hypotheses were that scores on measures of self-monitoring and self-consciousness would predict individuals’ use of perspective regardless of time period with higher scores predicting greater use of third-person. In addition, as individuals
with depression have been shown to use perspective differentially and third-person perspective has been likened to out-of-body experiences, we expected higher scores on the Beck Depression Inventory and Dissociative Events Scale to also predict greater use of third-person perspective. These hypotheses were interrogated using both the single-scale and two-scale versions of the perspective questionnaire. Individual differences in perspective use were investigated by averaging individuals’ perspective ratings across the same five time periods used in Experiments 1 and 2, creating a visual perspective score. The relationship of this score with measures of personality and clinical symptoms were examined, as well as the stability of these ratings across time.

Methods

Participants

A subset of participants from Experiments 1 and 2 were given additional measures in a large group setting. 311 participants from Experiment 1 participated (159 females; mean age = 18.7), as well as 226 participants from Experiment 2 (147 females; mean age = 18.6). Participants were excluded from both experiments due to missing data (Experiment 1: 48 individuals; Experiment 2: 54 individuals).

Procedure
Participants from Experiments 1 and 2 completed a version of the visual perspective questionnaire and self-report measures self-consciousness, self-monitoring behavior, dissociative experiences, and depressive symptoms.

Materials

*VPQ-1S and VPQ-2S.* Participants from Experiment 1 completed the one-scale visual perspective questionnaire (VPQ-1S) and those from Experiment 2 completed the two-scale visual perspective questionnaire (VPQ-2S). For the VPQ-1S, ratings were obtained for each time period and averaged to create a mean VPQ-1S score for each individual. Cronbach’s α for the VPQ-1S was .64. For the VPQ-2S, separate first- and third-person ratings were obtained to create a mean first-person and mean third-person score for each individual. The Cronbach’s α was .73 for first-person rating questions and .79 for third-person rating questions.

*Self-Consciousness Scale (SCS).* Participants answered the Self-Consciousness Scale (Fenigstein et al., 1975) as a measure of dispositional self-awareness. This 23-item self-report measure includes items such as “I’m self-conscious about the way I look” and “I reflect about myself a lot.” Participants responded to each item using a 5-point Likert scale anchored by “Not at all like me” and “Completely like me.” This scale measures three related factors, public self-consciousness, private self-consciousness, and anxiety. Scores were computed for each of the three factors by summing the scores on
related items. Cronbach’s α for the entire questionnaire was .76 across both samples, .76 for the VPQ-1S and .75 for the VPQ-2S. Cronbach’s α for the public self-consciousness subscale were .76, .76, and .75, for the private self-consciousness scale were .63, .61, and .65, and for the anxiety subscale were .77, .76, and .78, for both questionnaires, the VPQ-1S, and the VPQ-2S, respectively. Extant literature suggests individuals high in public self-awareness will be more likely to recall memories using third-person perspective (Robinson & Swanson, 1993).

Self-Monitoring Scale (SMS). The Self-Monitoring Scale (Snyder, 1974) was administered as a measure of one’s ability to evaluate and adapt one’s own behavior to the present context. An 18-item self-report scale was used (Hoyle & Lennox, 1991) containing items such as, “I guess I put on a show to impress or entertain people” and “I feel a bit awkward in company and do not show up quite as well as I should” (reverse coded for agreement). Participants responded using a 5-point Likert scale with extremes anchored by “Extremely uncharacteristic” and “Extremely characteristic.” Cronbach’s α within our sample was .74, .71 for the VPQ-1S and .78 for the VPQ-2S. It is hypothesized that individuals scoring high on the SMS will be more likely to recall events using a third-person perspective, as monitoring one’s own behavior may require an individual to imagine what he or she looks like to others.
Dissociative Experiences Scale (DES). Participants completed the Dissociative Experiences Scale (Bernstein & Putnam) as a measure of dissociation. Dissociation is thought to be a risk factor for the development of PTSD and may lead to more third-person perspectives (Blackmore, 1984, 1987; Ozer, Best, Lipsey, & Weiss, 2003; Ozer & Weiss, 2004). This 28-item self-report scale asks participants to determine the percentage of time certain events occur when not under the influence of drugs. Sample events include finding one’s self in a location and having no idea how they got there, having the experience of watching one’s self do something as though they were another person, and becoming so absorbed in a task one loses awareness of the outside world. Participants are asked to make a response ranging from 0-100% in increments of 10%. Composite scores were created from the mean response across all items. Cronbach’s α within our sample was .95, .93 for the VPQ-1S and .94 for the VPQ-2S. It is expected that individuals scoring high on the DES will use third-person perspective more often than those low on the DES.

Beck Depression Inventory (BDI). Participants were administered the Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) as a measure of depressive symptom severity. It is a 21-item multiple choice survey which asks about depressive symptoms, cognitions, and physical symptoms in the past two weeks. Composite scores were created by summing the responses across all items. Cronbach’s
α within our sample was .89, .91 for the VPQ-1S and .88 for the VPQ-2S. It is expected from previous work that individuals scoring high on the BDI will use third-person perspective more (Kuyken & Howell, 2006; Lemogne et al., 2006; Williams & Moulds, 2007). However, this may be limited to negative or intrusive memories, which we cannot determine using the VPQ. Therefore, there may be no relationship between BDI and VPQ scores.

Demographics. Participants also indicated their gender and age. For the gender variable, males were coded as 1 and females were coded as 0.

Method of analysis

To examine individual differences in perspective use, a composite perspective score was created for each individual. For participants from Experiment 1, this was the mean of each participant’s perspective ratings across the five time periods. For participants from Experiment 2, this was calculated in two ways. First, separate average first-person and average third-person scores were created across the five time periods. Second, a collapsed score was created for each time period to capture both first- and third-person perspective ratings using a single value. This was calculated by first reverse coding third-person perspective ratings (8 – third-person rating). This reverse coded third-person score was added to the first-person rating and then divided by two (i.e., (first-person + (8 – third-person))/2).
The general relationship between these average perspective ratings and self-report measures were examined via zero-order correlations between all variables of interest. Following this, regression equations were constructed predicting the four types of perspective ratings listed above (i.e., average score on VPQ-1S from Experiment 1, average first- and third-person scores and average composite scores VPQ-2S from Experiment 2). Each model consisted of two steps. For VPQ-1S data, the first step included gender and questionnaire order, which both affected perspective scores in Experiment 1. For VPQ-2S data, the first step included gender, which affected perspective in Experiment 2. The second step contained all personality measures and measures of clinical symptomology.4

Results

Zero-order correlations revealed small, but significant relationships between average perspective ratings and a few self-report measures (see Table 5). The hierarchical analysis for the VPQ-1S revealed a significant effect of questionnaire order at the first step ($\beta = .14, t = 2.29; F(2,262) = 2.96$; see Table 6). Although significant, the variance accounted for by the model at this step is .06, suggesting this variable does not

4 Limiting analyses only to those significantly or marginally related to VPQ scores did not affect the results.
explain a large amount of variance in average perspective scores. Step 2 revealed no significant increase in the $R^2$ accounted for by the model ($R^2 = .06; F(6,254) = 1.59$).

Table 5: Correlations Between Perspective Ratings and Self-Report Personality Measures

<table>
<thead>
<tr>
<th></th>
<th>VPQ-1S</th>
<th>First-person</th>
<th>VPQ-2S</th>
<th>Third-person</th>
<th>Composite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean perspective</td>
<td></td>
<td></td>
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<tr>
<td>Standard deviation</td>
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<table>
<thead>
<tr>
<th>Correlation coefficients</th>
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<th></th>
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<td>.18*</td>
<td>-.14</td>
<td>.17</td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>.08</td>
<td>-.20*</td>
<td>.11</td>
<td>-.17</td>
<td></td>
</tr>
<tr>
<td>Private</td>
<td>.15*</td>
<td>.05</td>
<td>-.06</td>
<td>.06</td>
<td></td>
</tr>
<tr>
<td>Public</td>
<td>.09</td>
<td>-.01</td>
<td>.04</td>
<td>-.03</td>
<td></td>
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<tr>
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<td>.14*</td>
<td>.03</td>
<td>.02</td>
<td>.01</td>
<td></td>
</tr>
<tr>
<td>SMS</td>
<td>-.02</td>
<td>.10</td>
<td>-.07</td>
<td>.09</td>
<td></td>
</tr>
<tr>
<td>BDI</td>
<td>.08</td>
<td>.00</td>
<td>.03</td>
<td>-.01</td>
<td></td>
</tr>
<tr>
<td>Questionnaire order</td>
<td>.17*</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

* = $p < .05$. Anxiety = Anxiety subscale of Self-Consciousness Scale (SCS), Private = Private self-consciousness subscale of SCS, Public = Public self-consciousness subscale of SCS, DES = Dissociative Experiences Scale, SMS = Self-Monitoring Scale, BDI = Beck Depression Inventory.

Hierarchical analysis of the first-person perspective average revealed a significant effect of gender at the first step ($\beta = .18, t = 2.34; F(1,171) = 5.45$). Again, the overall $R^2$ accounted for by the model at this step was very small, $R^2 = .03$. Adding the self-report measures did not significantly increase the variance accounted for by the model ($R^2 = .07; F(6,164) = 1.17$). Examining third-person perspective ratings revealed a
Table 6: Stepwise Regression Equations Predicting Perspective Ratings with Self-Reports of Personality Variables and Clinical Symptoms

<table>
<thead>
<tr>
<th>Variables</th>
<th>B(SE)</th>
<th>β</th>
<th>sr</th>
<th>ΔR²</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VPQ-1S</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>.23 (.17)</td>
<td>.08</td>
<td>.00</td>
<td></td>
</tr>
<tr>
<td>Questionnaire order</td>
<td>.44 (19)*</td>
<td>.05</td>
<td>.00</td>
<td></td>
</tr>
<tr>
<td>Step ΔR²</td>
<td></td>
<td></td>
<td></td>
<td>.02*</td>
</tr>
<tr>
<td>Step 2:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>.01 (.02)</td>
<td>.05</td>
<td>.00</td>
<td></td>
</tr>
<tr>
<td>Private</td>
<td>.04 (.02)</td>
<td>.13</td>
<td>.02</td>
<td></td>
</tr>
<tr>
<td>Public</td>
<td>.00 (.02)</td>
<td>.01</td>
<td>.00</td>
<td></td>
</tr>
<tr>
<td>DES</td>
<td>.01 (.01)</td>
<td>.09</td>
<td>.01</td>
<td></td>
</tr>
<tr>
<td>SMS</td>
<td>.00 (.01)</td>
<td>.02</td>
<td>.00</td>
<td></td>
</tr>
<tr>
<td>BDI</td>
<td>-.00 (.01)</td>
<td>-.00</td>
<td>.00</td>
<td></td>
</tr>
<tr>
<td>Step ΔR²</td>
<td></td>
<td></td>
<td></td>
<td>.06</td>
</tr>
<tr>
<td><strong>VPQ-2S – First-person rating</strong></td>
<td></td>
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<tr>
<td>Step 1:</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Gender</td>
<td>.48 (.21)</td>
<td>.18</td>
<td>.03</td>
<td></td>
</tr>
<tr>
<td>Step ΔR²</td>
<td></td>
<td></td>
<td></td>
<td>.03</td>
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<tr>
<td>Step 2:</td>
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</tr>
<tr>
<td>Anxiety</td>
<td>-.06 (.02)</td>
<td>.02</td>
<td>.03</td>
<td></td>
</tr>
<tr>
<td>Private</td>
<td>.01 (.02)</td>
<td>.02</td>
<td>.03</td>
<td></td>
</tr>
<tr>
<td>Public</td>
<td>.02 (.03)</td>
<td>.03</td>
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<tr>
<td>DES</td>
<td>.01 (.01)</td>
<td>.01</td>
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<tr>
<td>SMS</td>
<td>-.01 (.01)</td>
<td>.01</td>
<td>.00</td>
<td></td>
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<tr>
<td>BDI</td>
<td>.00 (.01)</td>
<td>.01</td>
<td>.00</td>
<td></td>
</tr>
<tr>
<td>Step ΔR²</td>
<td></td>
<td></td>
<td></td>
<td>.07</td>
</tr>
<tr>
<td><strong>VPQ-2S – Third-person rating</strong></td>
<td></td>
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<tr>
<td>Step 1:</td>
<td></td>
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<tr>
<td>Gender</td>
<td>-.44 (.23)</td>
<td>-.14</td>
<td>.03</td>
<td></td>
</tr>
<tr>
<td>Step ΔR²</td>
<td></td>
<td></td>
<td></td>
<td>.02</td>
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<tr>
<td>Step 2:</td>
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<tr>
<td>Anxiety</td>
<td>.03 (.03)</td>
<td>.09</td>
<td>.01</td>
<td></td>
</tr>
<tr>
<td>Private</td>
<td>-.02 (.03)</td>
<td>-.06</td>
<td>.00</td>
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<td>Public</td>
<td>.00 (.03)</td>
<td>.01</td>
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<tr>
<td>DES</td>
<td>.00 (.01)</td>
<td>.01</td>
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<tr>
<td>SMS</td>
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<td>.01</td>
<td>.00</td>
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<tr>
<td>BDI</td>
<td>.00 (.02)</td>
<td>.01</td>
<td>.00</td>
<td></td>
</tr>
<tr>
<td>Step ΔR²</td>
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<td></td>
<td></td>
<td>.03</td>
</tr>
<tr>
<td><strong>VPQ-2S – Collapsed rating</strong></td>
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<tr>
<td>Step 1:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>.46 (.20)</td>
<td>.17</td>
<td>.03</td>
<td></td>
</tr>
<tr>
<td>Step ΔR²</td>
<td></td>
<td></td>
<td></td>
<td>.03*</td>
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<tr>
<td>Step 2:</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>-.04 (.02)</td>
<td>-.16</td>
<td>.03</td>
<td></td>
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<tr>
<td>Private</td>
<td>.01 (.02)</td>
<td>.05</td>
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<td>.01 (.03)</td>
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<td>DES</td>
<td>.00 (.01)</td>
<td>.03</td>
<td>.00</td>
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<tr>
<td>SMS</td>
<td>-.00 (.01)</td>
<td>-.03</td>
<td>.00</td>
<td></td>
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<tr>
<td>BDI</td>
<td>-.00 (.02)</td>
<td>.01</td>
<td>-.00</td>
<td></td>
</tr>
<tr>
<td>Step ΔR²</td>
<td></td>
<td></td>
<td></td>
<td>.05</td>
</tr>
</tbody>
</table>

*Note: *p < .05 Anxiety = Anxiety subscale of Self-Consciousness Scale (SCS), Private = Private self-consciousness subscale of SCS, Public = Public self-consciousness subscale of SCS, DES = Dissociative Experiences Scale, SMS = Self-Monitoring Scale, BDI = Beck Depression Inventory.*
non-significant effect at both step 1 ($R^2 = .02; F(1,171) = 3.56$) and step 2 ($R^2 = .03; F(6,164) = .93$). Similar to first-person ratings, the collapsed perspective scores (representing both first- and third-person ratings using a single value) revealed a significant effect of gender at step 1 ($\beta = .17, t = 2.28; F(1,170) = 5.18$), but no significant effects at step 2 ($R^2 = .05; F(6,164) = .68$).

Because of the small relationships between perspective and measures hypothesized to be related to perspective, a small subset of participants were asked to return to the lab in order to determine whether there are indeed individual differences in perspective use. High and low responders on the VPQ-1S and VPQ-2S were asked to return to the laboratory and complete a second VPQ. Participants were considered high responders, or primarily third-person perspective, if their average perspective rating across the five time periods was greater than 5. Participants were considered low responders, or primarily first-person perspective, if their average perspective rating was less than 3. Thirty-eight third-person (mean rating = 5.68, $SD = 0.07$) and thirty-five first-person individuals participated (mean rating = 1.93, $SD = 0.10$). Both groups showed some regression toward the mean at the second testing (third-person group mean rating = 4.72, $SD = 0.20$; first-person group mean rating = 2.49, $SD = 0.18$) with ratings at the two time periods being significantly different from one another with in each group (first-person: $t(34) = 4.19$; third-person: $t(37) = 4.36$). Change in perspective ratings across time
were approximately twice as large for the third-person group compared to the first-person group. Participants ratings were also highly correlated across the first and second testing, $r(76) = .69$. However, examining the correlation across test days within a particular group revealed a significant correlation within the first-person preferring group, $r(33) = .44$, but no significant correlation within the third-person preferring group, $r(35) = -.07$. This suggests that although there may be individual differences in perspective use, they are likely limited to a tendency to use primarily first-person perspective versus the ability to construct a third-person perspective. In other words, constructing a third-person perspective may be a cognitive skill that some individuals are capable of engaging in, while others use first-person perspective regardless of time period, event type, etc.

**Discussion**

The current study examined the relationship between perspective use and measures of personality traits and clinical symptoms. Small but significant correlations were found between the single-scale version of the questionnaire and private self-consciousness, Dissociative Events Scale scores, and questionnaire order. Small but significant correlations were also found between first-person ratings on the two-scale version of the questionnaire with gender and anxiety on the self-consciousness scale. However, only gender and questionnaire order significantly accounted for variance in
perspective ratings using multiple regression. Using both a single-scale and two-scale version of perspective revealed little association between self-report measures and perspective use, when perspective use was measured as average perspective ratings for memories from five time periods.

While there are many possible ways to measure individual differences in perspective use, the current method is thought to be an effective measure. This is because results from Experiments 1 and 2 show, on average, recent memories are rated as first-person and remote memories rated as third-person; therefore, perspective use should normatively vary across time in this manner and individuals rating memories from all five time periods as primarily one perspective or the other were thought to vary from this norm, showing a predisposition to use a particular perspective. Using this technique, however, revealed only small relationships between perspective and self-report measures, even with substantial power to detect effects; with 226 participants, 7 predictors, and a p-value of .05 the power to detect an $R^2$ of 0.10 is 0.97. These results suggest the relationships between general perspective use, self-consciousness, dissociation, self-monitoring, and depression symptoms are limited. This may be because differences in perspective use are limited to particular types of memories, rather than generalized differences. For example, several investigators have shown individuals with anxiety disorders have been shown to use third-person perspectives more than
non-anxious controls, particularly when recalling anxiety-provoking events (e.g., Coles et al., 2001; Spurr & Stopa, 2002; Stopa & Bryant, 2004; Wells & Papageorgiou, 1999). Thus, differences in perspective use across self-conscious individuals may apply only to events that induce self-consciousness. Moreover, greater use of third-person perspective seems to be limited to traumatic memories for those with PTSD (Cardena & Spiegel, 1993; Cooper et al., 2002; Freinkel et al., 1994; Porter & Birt, 2001; Reynolds & Brewin, 1999). Therefore, it may be individual differences in generalized perspective use are not largely related to personality differences or clinical symptomology.

Individuals scoring on the high and low extremes of our visual perspective scale showed a tendency to rate memories similarly to their scores in a second session. Thus, perspective may be a stable individual difference variable. Although there was regression to the mean in both groups, third-person preferring individuals showed approximately 1-point change from Session 1 to Session 2, compared to the .5-point change exhibited by the first-person group. Moreover, ratings across time were more correlated in the first-person preferring group than the third-person preferring group. Although there may be static differences in perspective use across time, similarities seem to be more pronounced in individuals tending to use first-person perspective. These results suggest certain individuals may be more likely to use first-person perspective regardless of the time period of the event they are recalling. However, the tendency to
use a third-person perspective is less consistent across time and may be a flexible cognitive strategy or skill some individuals are more likely to use than others. Additional testing is necessary to determine whether these differences are due to predispositions to use a particular perspective, or whether when given a nonspecific cue, some individuals are more likely to recall particular types of events, which then lead to a particular perspective.

**General Discussion**

As visual perspective in autobiographical memory becomes a more popular area of study, it is important to clearly define what we mean by perspective and how our measurement techniques affect our understanding of perspective. The current study makes several contributions toward answering these fundamental questions. Results related to five issues outlined in the Introduction are discussed separately.

**Dichotomous or Continuous Variable**

In contrast to most previous studies of perspective, the present study suggests individuals commonly experience more than one perspective during a single retrieval episode (see also Day et al., 2004; Huebner & Fredrickson, 1999; Piolino et al., 2006). Studies using dichotomous responses or a single-scale, as used in Experiment 1, may have captured these data by forcing participants to label their memories based on the predominant perspective or using intermediate values to indicate a mix of perspectives.
However, this sort of accommodation does not capture the phenomenological experience of perspective and, in fact, may mischaracterize the relationship between perspective and other phenomenological properties.

More specifically, using a two-scale version of our perspective questionnaire revealed no relationship between third-person perspective and vividness ratings, whereas there was a positive correlation between first-person perspective and vividness ratings. Had participants been asked to rate perspective using a single-scale, a positive correlation would likely have been found, such that memories rated as more first-person would be characterized as more vivid and memories rated as more third-person less vivid. Using two-scales revealed this is not the nature of the relationship. Although the current results suggest memories rated as containing both perspectives did not significantly differ in vividness from memories rated as primarily first-person or third-person, other phenomenological properties, such as emotional intensity, may vary across these types of memories. Thus, future studies of perspective should use two separate scales in order to accurately characterize the experience of perspective and its relationship with other variables.

**Perspective and Memory Age**

Results show that regardless of whether a single scale or two continuous scales are used to measure perspective, there is a general linear change in perspective over
time. Using a single scale, a method often used by investigators (e.g., Coles et al., 2002; Coles et al., 2001; D’Argembeau et al., 2003; D’Argembeau et al., 2006; Wells et al., 1998; Wells & Papageorgiou, 1999; Williams & Moulds, 2007), older memories were rated as more third-person than recent memories. Similarly, using two scales, older memories were rated as more third-person and less first-person, as well as less vivid than recent memories. Surprisingly, first-person ratings correlated with vividness ratings while third-person ratings did not, suggesting the relationship between perspective and other phenomenological properties of retrieval is more nuanced than previously thought.

Although the current study falls in line with previous results, there is very little data explaining why older memories might lead to third-person perspective. A review of the literature provides three possible explanations. First, older memories are rated as less vivid, which may lead to third-person perspectives. Support for this comes from studies showing third-person perspective memories are generally rated as less vivid (e.g., Nigro and Neisser, 1983; Robinson & Swanson, 1993; Rubin, Burt, & Fifield, 2003; Talarico & Rubin, 2003), as well as a study of false memories, which are associated with less vivid imagery and are more likely to be remembered from a third-person perspective (Heaps and Nash, 2001). This hypothesis is partly supported by the current results showing that as memories become more remote, they are rated as less vivid and are rated as more third-person perspective. However, correlations between perspective
and vividness ratings suggest vividness is not directly related to third-person perspective ratings. Rather, vividness is significantly correlated with first-person perspectives ratings. Thus, although previous studies have found third-person perspective memories to be less vivid than first-person memories, it seems as though the vividness of one’s visual imagery is not driving the construction of a third-person perspective.

Second, the degree to which a memory has been rehearsed or reconstructed may alter the perspective of memory (Heaps and Nash, 2001). Although the current results do not speak directly to this hypothesis, it might be assumed that on average, older memories will be rehearsed or reconstructed more often. However, more direct tests of this hypothesis are obviously necessary.

Third, changes in self-concept over time may account for the effect of memory age. Libby and colleagues (Libby & Eibach, 2002; Libby et al., 2005) have shown remembering events inconsistent with one’s current self-concept lead to more third-person perspectives. Greater changes in self-concept over time may lead to a complimentary increase in third-person perspective use. In fact, cuing memories with different lifetime periods (Conway, 2005; Conway & Pleydell-Pearce, 2000), such as “before first grade,” “during middle school,” may focus participants on changes in their self-concept across these lifetime periods.
Another unsuggested possibility, suggested by studies of perspective use in false memory (Heaps & Nash, 2001), is that relying more on schematized and semantic knowledge about one’s self and the world in order to reconstruct a memory, rather than on episodic memory, may produce more third-person memories. In Heaps and Nash’s study (2001), false memories were rated as more typical of individuals’ general childhood behavior than were true memories, suggesting participants may have been drawing upon general autobiographical knowledge (Conway, 1996; Conway & Pleydell-Pearce, 2000) in order to construct a false memory. A similar notion was mentioned briefly by Robinson and Swanson (1990) who noted individuals often report “the image they experience [when retrieving third-person perspective memories] is more like a template than an accurate depiction of themselves in the context of the remembered event,” going on to suggest that these memories may be composed of more “generic images, each tied to a particular period or condition in their lives” when compared to field memories (pg. 329). Other studies have found third-person perspectives receive greater “know” responses compared to “remember” responses (Crawley & French, 2005; Piolino et al., 2006). Although the current results are consistent with this framework, they do not distinguish this hypothesis from others. Moreover, while consistent with the data, this explanation also does not distinguish why more semanticized memories
would be recalled from a third-person perspective. Additional research is necessary to
disentangle the legitimacy of these different hypotheses.

**Perspective and Gender**

In addition to an effect of time, a gender effect was also observed, such that females rated their memories as more third-person than males. A similar pattern was observed using two scales to measure perspective, in which females rated their memories as more third-person and less first-person than males regardless of memory age. These results suggest the gender effect observed here is not necessarily due to differences in the types of events recalled by males and females, as participants were not limited to recalling particular types of events in the current study. Therefore, the observed gender effect is likely due to females engaging in processes differentially than men.

It is unclear whether these differences are due to processes engaged at encoding or retrieval. Some have suggested experiencing third-person perspective at retrieval is due to differential processing at encoding (e.g., Nigro & Neisser, 1983). For example, social anxiety patients’ greater use of third-person perspective has been explained by greater attention to internalized information, such as a quickly beating heart, feelings of incompetence, or queeziness in one’s stomach, which prevents the encoding of external information and precludes the construction of first-person perspective (Clark & Wells,
1995). In addition, focusing on how one looks to others during the event leads to the spontaneous creation of third-person perspective images, which may enter one’s mind during the event. These two attributes then increase the likelihood of retrieving an anxiety-provoking event from a third-person perspective. This explanation may help account for the gender effect observed in the current study. However, another possible explanation is that females engage in differential processes upon retrieval. Nigro and Neisser (1983) found that asking participants to focus on the concrete details of events, rather than emotional content, led to more third-person perspective memories. Thus, the observed gender effect may be due to females recalling more objective information about certain types of events. It may also be related to differences in spatial abilities across genders (see Halpern, 2000; Spelke, 2005 for reviews). However, these explanations do not address why females also reported greater levels of affect in Huebner and Fredrickson’s study (1999). It is clear additional studies are necessary to examine how gender, perspective, and other memory attributes such as emotional intensity, valence, and self-awareness interact with one another.

**Flexibility of Perspective**

Using the single-scale questionnaire, individuals were able to change their perspective only a few minutes after retrieval, providing further evidence that perspective is a flexible characteristic of memories and memory retrieval. Interestingly,
the amount of change was dependent on both the age of the memory and the initial perspective (i.e., first- or third-person) of the memory. Remote memories initially retrieved as third-person perspective memories were more difficult to change than were remote third-person perspective memories, but first-person perspectives did not differ across time periods. This is contrary to Robinson and Swanson’s (1993) report, which suggested older memories were more difficult to change than recent memories, but this difficulty did not depend on starting perspective.

These results suggest perspective is a flexible attribute that individuals can change at will, but some flexibility is lost for remote memories initially recalled from a third-person perspective. This pattern of results suggests perhaps something is lost from the memory trace of remote memories associated with a third-person perspective. However, exactly what is lost is unclear. For example, are visual details more sparse or the spatial representation less rich? These questions should be investigated to determine what characteristics influence perspective use over time, as well as more generally.

**Individual Differences in Perspective Use**

Finally, individual differences were observed in perspective use, such that individuals who initially rated five memories as predominantly first-person perspective rated five new memories similarly in a follow-up session. Interestingly, similar results were observed for third-person preferring individuals, but there was a greater difference
in their ratings across the two sessions and their ratings were less correlated between
sessions compared to first-person preferring individuals. Therefore, those who tend to
use first-person perspectives vary less across time and have more similar average ratings
across time compared to individuals preferring to use third-person perspective. These
results suggest adopting third-person perspectives may be a flexible cognitive skill some
individuals tend to engage in more often, but their propensity to use this perspective
may vary as a function of the type of event recalled or the focus of their retrieval. Other
possible explanations for these individual differences may include individual differences
in the tendency to focus on feelings, thoughts, and bodily sensations during retrieval,
differences in spatial abilities, or differences in working memory necessary to construct a
third-person perspective. Additional research is necessary to determine whether one or
more of these explanations, or alternative explanations, can account for individual
differences in perspective use.

Although individual differences in perspective use were observed, these scores
only exhibited small correlations with personality and measures of clinical symptoms
and did not uniquely predict individuals’ perspective use scores using either the single
or two continuous scales. Using both versions of our perspective questionnaire (VPQ-1S
and VPQ-2S), individual differences in self-consciousness, self-monitoring, dissociation,
and depression did not predict average perspective use scores. Although differences in
perspective use across personality variables were expected based on clinical literature, null effects were not due to lack of power, as illustrated by power calculations and the significant prediction provided by questionnaire order (using VPQ-1S) and gender (using VPQ-2S). Therefore, it is likely observed differences in perspective use within the clinical literature are limited to particular types of memories. For example, socially phobic patients only show differential third-person perspective use when recalling social events.

Several explanations of differential use of perspective in clinical populations have been posited, yet these theories differ substantially. For example, socially anxious individuals are thought to use third-person perspective as a way to visualize how they look to others during anxiety-provoking situations, whereas depressed individuals are thought to use third-person perspective in positive memories because they cannot integrate these positive events or feelings with their current self-concept (Lemogne et al., 2006) or as a cognitive avoidance mechanism that prevents the individual from re-experiencing the emotion accompanying a particular memory (e.g., Berntsen & Rubin, 2006; Berntsen et al., 2003; McIsaac & Eich, 2004; Williams & Moulds, 2007). Therefore, there may be no single, or even few, underlying personality dimensions to account for the differential use of perspective across various clinical disorders and memory types.
However, additional research is necessary to rule out the possibility that other unmeasured personality differences can account for differences in perspective use. The current investigations show that perspective varies across time and across genders in a reliable way. In addition, using two scales to measure perspective provides unique information compared to using a single scale or dichotomous characterization. Specifically, not using two scales may misrepresent the precise relationship between perspective and other phenomenological properties, such as vividness. The current results also show that individuals often report multiple perspectives within a single retrieval episode. Thus, any future theoretical explanations of perspective must account for this ability and examine whether there are circumstances in which memories are accompanied by a single, distinct perspective or by several, alternating perspectives. There was little evidence to suggest that personality differences or clinical symptoms account for differences in perspective use. Evidence for preferences in perspective use was found using our perspective questionnaire and these preferences are stable across time; however, preference was more stable within the first-person preferring group than in the third-person preferring group. Additional research is necessary to explain why some individuals use predominantly one perspective versus the other.
Chapter 3. Measuring Perspective Across Events

Introduction

In studying visual perspective in autobiographical memory, the primary distinction made by investigators is the distinction between first- and third-person perspectives. In their seminal study, Nigro and Neisser (1983) referred to these two types of memories as being two distinct categories; those memories in which “the scene appears from one’s own position... from roughly the field of view that was available during the original situation” versus those memories in which “one seems to have the position of an onlooker or observer, looking at the situation from an external vantage point and seeing oneself ‘from the outside’” (pg. 467-468). This rubric provides a straightforward definition of a first-person perspective (or field perspective) memory, which is a memory that is re-experienced from the same viewpoint from which it was experienced. However, these definitions do not provide as clear of a characterization of third-person perspective memories, which has been left largely unexplored except to say they are “not first-person.” Nigro and Neisser also raised this question, asking participants to indicate “the position from which the scene [was] being observed (from behind you, above you, in front of you, etc.)” (p. 470). However, the authors did not report these data, nor have other authors pursued similar lines of questioning. In order to fully understand how perspective operates in memory and the processes driving
perspective, one must understand exactly what a third-person perspective is and whether third-person perspective memories can necessarily be lumped together into one undifferentiated category.

Several pieces of evidence lend credence to the hypothesis that third-person perspective is not a single, unified category and may be a flexible attribute that is adaptive to the situation or to the purpose of retrieval. These include the following ideas: 1) individuals can construct relatively flexible mental models of the world using visuospatial imagery and can manipulate these representations for various purposes, 2) previous work within the perspective memory literature shows individuals can manipulate mental imagery from first-person to third-person perspective based on event attributes and task demands suggesting third-person perspectives may also be flexible, 3) some theoretical accounts of perspective use in autobiographical memory retrieval hint at the idea that third-person perspectives may vary across different situations or across retrieval demands. These different pieces of evidence will be discussed in turn.

**Mental Imagery is Flexible**

If you were asked to close your eyes and imagine standing at your front door looking into your house, you would be able to construct a visuospatial image of your front room with relative ease. If you were then asked to rotate your viewpoint to one in which you are standing in the front room facing the door, you would again have little
trouble making this transformation. In fact, the accompanying images could likely be experienced as vivid and detailed. Much debate has focused on whether these mental representations are analog and isomorphic to their actual referents in the world or whether the underlying representations are prepositional and discrete in nature, but the preponderance of evidence seems to lean in the favor of an analog view (Kosslyn, Ganis, & Thompson, 2001; e.g., Kosslyn, Ganis, & Thompson, 2003; Rubin, 1995). In other words, the imagery representations of a scene or object are analogous to the actual perceptual characteristics of a scene or object. However, more cogent to the current argument is that these images can be transformed and manipulated in order to reason, navigate, solve problems, plan actions, and facilitate memory and learning. Humans are relatively adept at constructing and transforming these images, although individuals difference in their ability to do so (Galton, 1883; Isaac & Marks, 1994; Kozhevnikov & Hegarty, 2001; Richardson, 1969, 1977a). Furthermore, these transformations seem to function analogously to perceptual or real-world transformations. For example, when rotating an object in visual imagery, greater angles of rotation increase rotation time in a linear fashion, just as actual rotation would require (Shepard & Metzler, 1971). Also, scanning distances between two objects within one’s mental imagery increases as a function of the distance scanned, whether it be distance across a depiction of space or
imagined movement across an imagined space (Decety, Jeannerod, & Prablanc, 1989; Denis & Kosslyn, 1999; Kosslyn, Ball, & Reiser, 1978).

There is a growing body of research describing how these transformations are made (for reviews see Allen, 2003; Kosslyn, Thompson, & Ganis, 2006; Zacks & Michelon, 2005). Much of this evidence suggest transformations can occur within several reference frames, which may include egocentric transformations, object-based transformations, and allocentric transformations (Hegarty & Waller, 2004; Kozhevnikov & Hegarty, 2001; Nadel & Moscovitch, 2001; O'Keefe & Nadel, 1978; Shelton & McNamara, 2001; Zacks & Michelon, 2005). Because individuals have been shown to be able to take different perspectives when imaging a spatial array (Bryant & Tversky, 1999; Franklin, Tversky, & Coon, 1992; Hegarty & Waller, 2004; Shelton & McNamara, 2004b; Taylor, Naylor, & Chechile, 1999; Taylor & Tversky, 1996; Zacks, Mires, Tversky, & Hazeltine, 2000; Zacks, Vettel et al., 2003), it is likely individuals can construct autobiographical memories from many different third-person perspectives. One might hypothesize constructing third-person perspectives should vary in a manner consistent with what we already know about visuospatial cognition. For example, studies of perspective rotation within the spatial literature suggest constructing a visual image of a scene from an alternative perspective leads to larger reaction times and error rates than constructing a mental representation from the viewpoint it was experienced in (Creem,
Wraga, & Proffitt, 2001; T. P. McNamara, 1991; Shelton & McNamara, 1997b, 2004b; Wraga, Creem, & Proffitt, 1999, 2000; see Zacks & Michelon, 2005 for a discussion) This would suggest first-person perspective memories should require less time to construct than third-person perspective memories.

In addition, studies of perspective transformation in spatial memory suggest perspective transformations in certain dimensions are more difficult and prone to error. For example, several studies have shown, or found results consistent with, quicker and more accurate perspective transformations within the transverse plane compared to the coronal and sagittal planes (Carpenter & Proffitt, 2001; Creem et al., 2001; Parsons, 1987). Therefore, one might expect the majority of third-person perspectives within autobiographical memory would be transformations that do not vary drastically from one’s eye level. Beyond this, perspectives should not be constructed in a completely random way, but rather in a manner consistent with the demands of the context at retrieval, whether they be dependent on the situation being remembered or on task demands.

Changing from First- to Third-person Perspective is Flexible

Previous research on perspective in autobiographical memory suggests perspective can be used flexibly during retrieval, such that individuals can change from first- to third-person perspective within one memory. For example, research has shown
individuals are able to switch their memory perspective for retrieval episodes separated by a few minutes (see Chapter 2; Robinson & Swanson, 1993; Berntsen & Rubin, 2006). Moreover, participants instructed to use a particular perspective at retrieval are able to do so after a delay of approximately 30 minutes (McIsaac & Eich, 2002) or many years (Libby & Eibach, 2002; Libby, Eibach, & Gilovich, 2004). In addition, focusing on particular aspects of a memory influence one’s use of perspective. For example, asking individuals to focus on emotional aspects of a past event leads to more first-person perspective memories and focusing on concrete aspects of an event leads to more third-person memories (Nigro & Neisser, 1983). Therefore, perspective seems to be a rather flexible attribute of memories. This flexibility should also apply to third-person perspectives. In other words, if individuals are able to change from a first- to third-person perspective quite easily and are relatively flexible in their ability to change perspective within a spatial array in memory, individuals should also be able to construct different third-person perspectives in their autobiographical memories.

Theoretical Evidence for Third-person Perspective Flexibility

A few of the explanations accounting for the use of perspective in autobiographical memory suggest third-person perspective locations may vary across events or retrieval contexts. For example, Nigro and Neisser (1983) found memories for highly self-aware, emotionally intense events were more likely to come from a third-
person perspective. Following this, several studies have shown individuals with social phobia are more likely to use a third-person perspective when recalling events during which they were highly self-aware or anxious (Coles et al., 2002; Coles et al., 2001; Hirsch et al., 2003; Spurr & Stopa, 2002, 2003; Wells & Papageorgiou, 1999). Some have hypothesized individuals with social phobia use these third-person perspective images to visualize how they look to others and that very often these images occur not only at retrieval but also spontaneously during event encoding (Clark & Wells, 1995). It is possible one reason for using third-person perspective, regardless of whether an individual is socially phobic or not, is to construct an image of how one looks to others. If true, this may mean third-person perspective locations will correspond to the location of salient individuals present during encoding.

An alternative explanatory hypotheses comes from studies showing individuals with post-traumatic stress disorder (PTSD) often report using third-person perspectives when recalling traumatic memories (Cardena & Spiegel, 1993; E.B. Foa, Steketee, & Rothbaum, 1989; Freinkel et al., 1994; Rainey et al., 1987; Sierra & Berrios, 1999) and individuals with more severe traumas report more third-person perspective than those with mild traumas (Berntsen et al., 2003; e.g., Cooper et al., 2002). Some have hypothesized individuals with PTSD, and perhaps those with depression (Williams & Moulds, 2007) use third-person perspective as a way to distance one’s self from the
emotional impact of an event. This developed from findings that third-person perspective memories are rated as less emotionally intense than first-person perspective memories, as well as switching from a first-person to third-person perspective decreases individuals’ self-reports of emotional intensity in normal individuals (Robinson & Swanson, 1993; Berntsen & Rubin, 2006) and those suffering from PTSD (McIsaac & Eich, 2004). It has been suggested distancing one’s self from an event by using a third-person perspective may help the individual detach from the event (Nigro & Neisser, 1983), serve as a defense to prevent the individual from re-experiencing the associated negative emotions (Berntsen et al., 2003; Freud, 1899/1953; McIsaac & Eich, 2004), or change the memory representation from a “hot” representation to a more “cool” representation that allows for self-regulation of an emotional response and more reflective processing (Kross et al., 2005). One suggestion from these hypotheses is that if distance within one’s memory perspective is used to distance one’s self from aspects of an event, individuals may distance themselves more or less within a memory, leading to perspectives anchored near or far from the individual. Again, this suggests the existence of more than one third-person perspective. Furthermore, other aspects of the memory, such as emotional intensity, may vary as a function of the location of third-person perspectives.
Another possibility not suggested by the perspective literature is third-person perspectives will come from a location that is the optimal viewing perspective. If one were told he or she would be watching a basketball game, but would only be able to watch from a single viewpoint, it is possible there is a single, canonical viewpoint optimal for viewing the game. For example, canonical perspectives have been found for the perception of objects (Palmer, Rosch, & Chase, 1981) and these perspectives translate into photographs taken by individuals to best represent these objects (McBeath & Khalil, 2006). Therefore, canonical viewpoints in memory may exist. If there is more than one canonical third-person perspective, the location may be anchored to the optimal location for viewing that event. If true, the pattern of third-person perspective locations should match those provided by individuals when asked to indicate the optimal perspective for viewing an event.

Beyond differences in emotional intensity, several phenomenological differences have been observed across first- and third-person perspective memories. Studies have shown first-person perspective memories to be more vivid and detailed than third-person perspective memories (Heaps & Nash, 2001; Nigro & Neisser, 1983; Robinson & Swanson, 1993). A study comparing true and false memories found false memories to be less vivid, accompanied by less re-experiencing, less emotionally intense, less detailed, participants were less confident in the accuracy of these memories,
and they tended to be third-person perspective. Because there are several phenomenological differences across first- and third-person perspectives, it seemed a logical extension to investigate whether there are any such differences across third-person perspectives. These sorts of differences are integrally important to our understanding of perspective and its function in autobiographical memory given it’s relation to clinical disorders (e.g., emotional intensity and valence), false memories (e.g., confidence and belief in one’s memory accuracy), and other relevant domains.

To investigate third-person perspectives, individuals were asked to recall several types of events, predominantly those used by Nigro and Neisser (1983) in their initial study of perspective. In Experiment 4, individuals were asked to describe the perspectives they experienced and to then categorize their response based on several spatial dimensions. Participants were also asked to answer three additional questions about the visual imagery accompanying their memories. In Experiment 5, similar methods were employed and participants were also asked to answer several questions about the phenomenology of retrieval. In the next two studies, the hypothesis that third-person perspectives are simply the optimal location from which to view an event was tested. This was tested by asking participants to describe the optimal location to watch another individual complete a task (Experiment 6) or to describe the location from
which they would choose to watch themselves complete a particular task (Experiment 7).

**Experiment 4: Third-Person Perspective Location Across Time Periods and Events**

To examine whether third-person perspective is a single, cohesive category or whether third-person perspective can mean different things, participants were asked to recall memories from 5 different time periods and for 10 specific events. They were asked to describe the accompanying perspective, to categorize their perspective based on several spatial dimensions, to answer additional questions about their imagery, and to date their memories.

**Methods**

**Participants**

86 participants were tested (51 females; mean age = 18.90). Participants were tested individually or in small groups.

**Procedures**

Participants were first told they would be asked to recall several events from their life and asked questions about the way they imaged these events. They were then given a description of what is meant by visual perspective during autobiographical memory retrieval and told that “when recalling an event from the past many people find
they construct an image of the scene” and that “this image can originate from various locations within an overall scene.” They were then provided with concrete examples of different perspectives one might use when imaging a past event, including imaging the using a first-person perspective, and provided with examples of how they would describe the location of the origin of these different perspectives (see Appendix C for instructions). Participants were asked to describe the relative location of their perspective in relation to their original location during the event. For example, if a person remembered a time they were giving a presentation and was viewing the scene from in front of him- or herself during the original event, they were asked to describe the perspective as being “in front of” their original location. Participants were asked to describe their perspective in as much detail as possible, including information about the location, height, and distance in relation to their original location, and were allowed to provide as many perspectives as they felt accompanied each memory. That is, if they felt that they imaged the event from multiple perspectives they should describe the location of all of these perspectives. They were also asked to demarcate the dominant perspective for each event.

Participants then went on to recall 15 different events and describe the relative location of their visual perspective. Ten of the events were taken from Nigro and Neisser’ s (1983) initial study of visual perspective. Five of these events were from the
five specific time periods used in Chapter 2. Events were presented in 4 pseudo-randomized orders. In addition, participants were asked whether they could see themselves in their memory and to rate three additional aspects of their memories on continuous 7-point scales: how clear was their dominant perspective (1=not clear at all, 7=very clear and obvious), how integral was their dominant perspective to the memory (1=not integral at all, 7=very integral), and did they feel they had to force a perspective onto the image (1=had to force perspective, 7=came with a distinct perspective)?

After completing these questions for each event, participants were asked to categorize the description of their dominant perspective for each event in terms of spatial location (e.g., in front of, behind, etc.) and height (e.g., above head, near ceiling, etc.) in relation to their original location. Approximately half of the participants (n = 50) also categorized the distance of their perspective from their original location.

**Results**

Results for the five time periods are reported separately from the ten specific events. This is to allow for straightforward comparisons between the current study and those reported in the last chapter. In addition, this allows for the comparison of the current method with age effects using alternative methods, such as using continuous scales for measurement rather than descriptive methods. Due to the large number of comparisons necessitated by examining 5 time periods and 10 events separately, critical
values for all comparisons to follow were Bonferroni corrected. However, because this is an exploratory study, differences significant at the \( p < .05 \) level are also labeled in figures and tables.

**Perspectives Across Five Time Periods**

As there were no missing data, a total of 430 memories were obtained (i.e., 86 individuals each with 5 time periods). To examine the overall proportion of first- and third-perspective memories, two independent coders coded participants’ perspective descriptions. The author resolved discrepancies between the coders. Participants described 66% of their dominant perspectives coming from a third-person perspective, in contrast to the majority first-person perspective found in Experiments 1 and 2 of Chapter 2 and to most findings in the literature (e.g., Frank & Gilovich, 1989; Kihlstrom & Harackiewicz, 1982; Nigro & Neisser, 1983; Robinson & Swanson, 1993). Sixty-nine percent of participants reported more than one perspective for at least one memory. Because only 8 memories were accompanied by more than two perspectives, these memories will not be discussed further. Table 7 displays the perspectives reported for secondary memories as a function of dominant perspectives. Across time periods the percentage of dominant third-person perspective memories were as follows: before first grade = 79%, elementary school = 74%, middle school = 71%, high school = 71%, and
college = 61%, with the percentage of third-person perspectives showing an increasing pattern as memories become more remote.

<table>
<thead>
<tr>
<th>Dominant perspective</th>
<th>First-person</th>
<th>Third-person</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>First-person (34%)</td>
<td>-</td>
<td>11</td>
<td>23</td>
</tr>
<tr>
<td>Third-person (66%)</td>
<td>14</td>
<td>7</td>
<td>45</td>
</tr>
</tbody>
</table>

Table 7: Secondary Perspectives as a Function of Dominant Perspectives for Time Periods in Exp. 4

To examine the overall location of third-person perspectives, further analyses were limited to individuals’ dominant perspectives as participants were only asked to categorize these perspectives. To interrogate these differences, perspective locations were plotted in three-dimensional space according to participants’ categorization of their perspective (see Figure 5). Notably, the location of individual’s third-person perspectives varied a great deal. From this diagram it is apparent that third-person perspectives can originate from numerous locations, suggesting there is no single, canonical third-person perspective. However, some locations seem to be more common than others. For example, individuals visualize themselves from their own body plane, rather than from the left or right. Third-person perspectives also tend to come from in front of an individual rather than next to the individual and tend to be visualized from
an individual’s eye level rather than below or above eye level. Finally, locations originate from near an individual, rather than from a great distance.

Figure 5: Spatial Distribution of Third-person Perspective Memories For Five Time Periods.

To examine regularity in third-person perspective location across the five time periods, the four categorized dimensions were examined separately for each time period for dominant perspectives. All first-person perspective memories were excluded from these analyses. The following comparisons were made within each time period using separate $\chi^2$ tests: 1) “in front of” versus “from body plane” versus “behind” dimension (also referred to as front/back dimension), 2) “eye level” versus “above eye level” versus “below eye level” dimension (also referred to as height dimension), 3) “near” versus
“far” dimension (also referred to as distance dimension), 4) to “either side” versus “from body plane” dimension (also referred to as side/body dimension). Several dimensions were created by collapsing finer grained distinctions provided when categorizing responses; “above eye level” was created by collapsing all responses that came from above eye level, “to either side” was created by collapsing “to the left” and “to the right” responses, and “near” was created by including all responses less than 6 feet way, while “far” included all responses from greater than 6 feet. Distance was separated in this manner based on Previc’s (1998) characterization of spatial frameworks, with distances from 0-2 meters from an individual considered peripersonal space and distances greater than this considered extrapersonal space, each processed by separate, but interacting, neural systems.

Examining the four categorized dimensions across the five time periods revealed consistencies (see Table 8). When recent memories were constructed from a third-person perspective, these memories also tended to originate from in front of the individual (high school $\chi^2=7.60$; college $\chi^2=9.85$), whereas there was no difference in the location within this dimension for older memories. Regardless of time period, the height dimension differs significantly from normality, smallest $\chi^2=6.91$. Specifically, recent memories were viewed from eye level or above, whereas older memories were most often viewed from above one’s eye level. Although completely post hoc, it seems
older memories may come from a location near one’s current viewpoint (i.e., closer to one’s adult height). In terms of distance, there was a tendency for memories to come from near the individual; however, this difference was significant only for the before

| Table 8: Percent Third-person Perspective Memories Across Four Spatial Dimensions for Time Periods |
|-------------------------------------------------|----------------|---------------|---------------|---------------|---------------|
|                                                  | Before First | Elem. Sch.    | Mid. Sch.     | High Sch.     | College       |
| Front/Back Dimension of Dominant Perspective     |              |               |               |               |               |
| Front                                           | 35           | 42            | 38            | 50            | 54            |
| Body                                            | 30           | 23            | 25            | 23            | 23            |
| Behind                                          | 35           | 34            | 37            | 27            | 23            |
| \(\chi^2\)                                      | 0.27         | 3.41          | 1.90          | 7.60*         | 9.85**        |
| N                                               | 63           | 64            | 60            | 60            | 52            |
| Height Dimension of Dominant Perspective         |              |               |               |               |               |
| Above                                           | 48           | 47            | 48            | 45            | 48            |
| Eye level                                       | 27           | 36            | 47            | 45            | 46            |
| Below                                           | 24           | 17            | 5             | 10            | 6             |
| \(\chi^2\)                                      | 6.91*        | 8.66          | 21.70**       | 14.70**       | 17.81*        |
| N                                               | 56           | 64            | 60            | 60            | 52            |
| Distance Dimension of Dominant Perspective       |              |               |               |               |               |
| Near                                            | 73           | 58            | 68            | 60            | 65            |
| Far                                             | 27           | 42            | 32            | 40            | 35            |
| \(\chi^2\)                                      | 7.81*        | 0.95          | 4.57*         | 1.40          | 2.61          |
| N                                               | 37           | 38            | 37            | 35            | 31            |
| Side/Body Dimension of Dominant Perspective      |              |               |               |               |               |
| Side                                            | 53           | 38            | 62            | 52            | 44            |
| Body                                            | 37           | 61            | 38            | 48            | 56            |
| \(\chi^2\)                                      | 0.24         | 3.06          | 3.27          | 0.07          | 0.69          |
| N                                               | 66           | 64            | 60            | 60            | 52            |

Note: * \(p < .05\), ** \(p < .0025\)
first grade ($\chi^2 = 7.81$) and middle school ($\chi^2 = 4.57$) time periods. There were no significant differences in the “from the side” versus “body plane” dimension nor does there seem to be a consistent pattern across time periods.

Participants’ phenomenological ratings (i.e., image clarity, having to force an perspective onto the memory, and how integral the perspective was to the memory) were highly correlated within each time period ($r$’s ranged from .44 to .76); therefore, these three ratings were averaged to create a composite imagery score. Cronbach’s $\alpha$ for the five time periods were .90, .82, .76, .77, and .76, suggesting high agreement and large overlap across the scales. To determine whether composite scores varied across first- and third-person dominant perspectives, separate t-test were computed for each of the five time periods. Two time periods showed significant differences. First-person perspective middle school memories had higher composite imagery scores than third-person perspective memories, as did college memories. Means for these five time periods are summarized in Table 9. Although there does not seem to be a consistent pattern of significant effects across time periods, one will note that for all time periods, memories with a dominant first-person perspective had higher composite imagery scores than memories with a dominant third-person perspective.

5 Secondary and tertiary perspectives were excluded from this analysis, and further analyses, due to the small number of memories experienced with multiple perspectives for each time period.
Table 9: Composite Imagery Scores Across Time Periods for First- and Third-person Perspective Memories

<table>
<thead>
<tr>
<th></th>
<th>First-person</th>
<th>Third-person</th>
<th>df</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before first</td>
<td>5.39 (1.48)</td>
<td>4.64 (1.45)</td>
<td>83</td>
<td>1.02</td>
</tr>
<tr>
<td>Elementary</td>
<td>5.24 (1.26)</td>
<td>4.71 (1.17)</td>
<td>84</td>
<td>0.42</td>
</tr>
<tr>
<td>Middle School</td>
<td>5.69 (1.04)</td>
<td>4.93 (1.18)</td>
<td>83</td>
<td>2.80*</td>
</tr>
<tr>
<td>High School</td>
<td>5.61 (1.22)</td>
<td>4.90 (1.18)</td>
<td>82</td>
<td>0.15</td>
</tr>
<tr>
<td>College</td>
<td>5.73 (0.86)</td>
<td>4.65 (1.23)</td>
<td>83</td>
<td>4.23**</td>
</tr>
</tbody>
</table>

Note: *p < .05, **p < .001. First-person versus third-person refers to dominant perspective. Single refers to memories with a single accompanying perspective and multiple to memories with more than one perspective accompanying them. SD displayed in parentheses.

To determine whether phenomenological properties varied across third-person locations, comparisons within each dimension (i.e., height, front/back, distance, side/body) were made across location (e.g., above vs. eye level vs. below) for each of the five time periods separately. Again, first-person perspective memories were excluded from these comparisons. Memories accompanied by a single perspective were not separated from memories accompanied by multiple perspectives in these analyses because of the small number of memories accompanied by multiple perspectives (e.g., some cell sizes would be limited to fewer than five data points). To examine differences across the height and front/back dimensions, three-level ANOVAs were conducted separately for each time period and for each dimension (i.e., a total of ten ANOVAs). Similarly, five separate two sample t-tests were conducted for the side/body dimension and near/far dimension, one t-test per dimension per time period. Using $p < .01$ as a
critical value to correct for multiple comparisons, all comparisons were non-significant. From these analyses, it seems that any effect of location on imagery is very small.

**Perspectives Across Ten Event Types**

A total of 830 memories were used in this analysis due to 30 memories with missing data points. Participants described 65% of their dominant perspectives coming from a third-person perspective. Again, this percentage is higher than previous findings, including Nigro and Neisser (1983) who used very similar events. Eighty-four percent of participants reported more than one perspective for at least one memory. More than 2 perspectives accompanied only 3% of total memories. Of the additional perspectives provided, 70% were from a third-person perspective. Percentages of first-and third-person secondary perspectives are displayed in Table 10. Generally, these percentages match those observed when limiting analyses to the five time periods.

<table>
<thead>
<tr>
<th>Dominant perspective</th>
<th>First-person</th>
<th>Third-person</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>First-person (35%)</td>
<td>-</td>
<td>6</td>
<td>29</td>
</tr>
<tr>
<td>Third-person (65%)</td>
<td>7</td>
<td>4</td>
<td>54</td>
</tr>
</tbody>
</table>

Examining dominant and additional perspectives across the ten events reveal that the event being recalled seems to affect the perspective used more than memory age
(see Table 11). For example, having a conversation produces 43% third-person memories, whereas being in a group performance leads to 81% third-person memories.

Calculating point-biserial correlations (first-person = 0; third-person = 1) between their dominant perspective and memory age within each event, revealed no significant correlations (see Table 11). Treating each memory as an independent data point and correlating dominant perspective with memory age did reveal a significant correlation, $r(828) = .14$, such that older memories were more third-person. The correlation coefficient is very small and is likely significant due to inflated power, yet correlations within each event (see Table 11) reveal 8 of the 10 show the same pattern. Therefore, the current study finds a similar relationship between perspective and age as previous studies, but it is very small in this context.

Composite imagery scores were examined across first- and third-person perspective by calculating separate t-tests for each event. A Bonferroni correction was used to correct for multiple comparisons (i.e., $p < .005$) revealing no significant differences across first- and third-person perspectives. Because most studies find differences in imagery across perspectives, a more liberal analysis was applied. For each individual, an average composite imagery score was calculated for first-person and third-person perspectives, revealing a significant difference between first- ($M = 5.57, SD = 0.70$) and third-person perspectives ($M = 5.06, SD = 0.75, t(71) = 5.09$).
### Table 11: Percentage of Third-person Dominant Perspective for Each Event and Correlation of Perspective and Age in Exp. 4

<table>
<thead>
<tr>
<th>Event</th>
<th>% Dominant Third-person (N)</th>
<th>Memory Age (SD)</th>
<th>r with Memory Age</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conversation</td>
<td>43 (36)</td>
<td>0.55 (1.15)</td>
<td>.06</td>
<td>80</td>
</tr>
<tr>
<td>Watching news</td>
<td>59 (51)</td>
<td>2.33 (2.85)</td>
<td>.06</td>
<td>83</td>
</tr>
<tr>
<td>Being in an accident</td>
<td>62 (53)</td>
<td>4.02 (4.18)</td>
<td>.12</td>
<td>82</td>
</tr>
<tr>
<td>Studying</td>
<td>67 (58)</td>
<td>0.87 (1.93)</td>
<td>.10</td>
<td>84</td>
</tr>
<tr>
<td>Running for exercise</td>
<td>71 (59)</td>
<td>1.34 (1.87)</td>
<td>-.04</td>
<td>80</td>
</tr>
<tr>
<td>Individ. presentation</td>
<td>75 (62)</td>
<td>2.58 (2.53)</td>
<td>.15</td>
<td>80</td>
</tr>
<tr>
<td>Demonstrating skill</td>
<td>75 (63)</td>
<td>3.01 (3.91)</td>
<td>.17</td>
<td>80</td>
</tr>
<tr>
<td>Running from threat</td>
<td>76 (65)</td>
<td>3.25 (3.87)</td>
<td>.10</td>
<td>82</td>
</tr>
<tr>
<td>Swimming</td>
<td>77 (63)</td>
<td>4.74 (4.22)</td>
<td>-.05</td>
<td>79</td>
</tr>
<tr>
<td>Group performance</td>
<td>81 (68)</td>
<td>4.17 (3.86)</td>
<td>.22</td>
<td>80</td>
</tr>
</tbody>
</table>

*Note: *p* < .05. Total number of third-person perspectives displayed in parentheses for each proportion. Standard deviation displayed in parentheses for age of memory. Correlation coefficients displayed for point-biserial correlation (first-person = 0; third-person = 1) between dominant perspective and memory age for each event type.

The location of individual’s dominant third-person perspectives was examined by plotting the distribution across space (see Figure 6). Again, third-person perspectives originated from numerous locations, providing additional evidence against the existence of a single canonical third-person perspective. This distribution is similar to the distribution observed across the 5 time periods. For example, individuals visualized themselves from their own body plane, rather than from the left or right, as well as from in front of the individual, from their eye level, and from locations near the individual.

To examine variation in perspective location across the ten event types, the four categorized dimensions were examined separately for each event. The same
comparisons made within each time period previously were made within each event using separate \( \chi^2 \) tests and a \( p \)-value of .00125 (i.e., .05/20). Examining the four categorized dimensions across the five time periods revealed dissimilar third-person perspective locations across event (Figures 7-10).

<table>
<thead>
<tr>
<th>Above</th>
<th>19%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slightly above</td>
<td>30%</td>
</tr>
<tr>
<td>Eye level</td>
<td>36%</td>
</tr>
<tr>
<td>Below</td>
<td>19%</td>
</tr>
</tbody>
</table>

Figure 6: Third-person Perspective Distribution Across Events in Exp. 4

Differences were observed across the front/back dimension, such that memories of giving an individual presentation \( (\chi^2(2, N = 62) = 76.10) \) and being in a group performance \( (\chi^2(2, N = 68) = 59.15) \) led to memories from in front of the individual.

Locations also differed across the height dimension, such that memories of having a conversation \( (\chi^2(2, N = 36) = 11.17) \) and watching the news \( (\chi^2(2, N = 51) = 14.59) \)
led to more perspectives originating from eye level than expected by chance, whereas memories for running for exercising ($\chi^2(2, N = 59) = 22.81$), being in an accident ($\chi^2(2, N = 53) = 14.64$), running from a threat ($\chi^2(2, N = 65) = 24.12$), swimming ($\chi^2(2, N = 63) = 31.71$), and studying ($\chi^2(2, N = 58) = 43.59$) led to more perspectives from above the individual.

Several events differed across the distance dimension, leading to more perspectives near the individual. These included having a conversation ($\chi^2(1, N = 20) = 12.80$), demonstrating a skill ($\chi^2(1, N = 36) = 18.78$), studying ($\chi^2(1, N = 34) = 11.76$), and watching the news ($\chi^2(1, N = 27) = 8.33$).

One event exhibited a difference within the side/body plane dimension, demonstrating a skill led to more perspectives from the side ($\chi^2(1, N = 63) = 7.00$).

Based on these results, it seems there is no single third-person perspective and, in fact, the location of third-person perspective varies substantially across events. This variation also seems to be somewhat systematic in that the location of third-person perspectives for some events seems to be anchored to the location of salient others within the memory. For example, running from a threat leads to perspectives from behind the individual, whereas performing in front of others, either individually or in a group, leads to memories from in front of the individual.
Figure 7: Distribution of Perspective Across Front/Back Dimension in Exp. 4
* $p < .05$, ** $p < .00125$. $\chi^2$ tests were performed individually within each event.

Figure 8: Distribution of Perspective Across Height Dimension in Exp. 4
* $p < .05$, ** $p < .00125$. $\chi^2$ tests were performed individually within each event.
Figure 9: Distribution of Perspective Across Distance Dimension in Exp. 4
* $p < .05$, ** $p < .00125$. $\chi^2$ tests were performed individually within each event.

Figure 10: Distribution of Perspective Across Side/Body Dimension in Exp. 4
* $p < .05$, ** $p < .00125$. $\chi^2$ tests were performed individually within each event.
To determine whether phenomenological properties varied across third-person locations, comparisons within each dimension and each event were made across locations. Again, first-person perspective memories were excluded from these comparisons. To examine differences across the height and front/back dimensions, three-level ANOVAs were conducted separately for each event and for each dimension (i.e., a total of ten ANOVAs). Similarly, ten separate two sample t-tests were conducted for the side/body dimension and near/far dimension, one t-test per dimension per event. None of these comparisons was significant using a critical value of .00125.

To further probe whether there were differences in composite imagery scores across location, scores were compared for preferred locations versus all other locations within each spatial dimension. For example, group performances were more often viewed from in front of an individual compared to from behind or the same body plane. For all events in which there was a significant variation, as measured by $\chi^2$, composite imagery scores were compared across the most common location, or preferred location, and all other locations within a particular dimension (i.e., height, front/body/back, body/side, near/far) collapsed. These comparisons did not reveal any significant differences using a critical value of .00125.
Discussion

Asking participants to describe their visual perspective during retrieval revealed a similar pattern of change in perspective use across time found in experiments in Chapter 1. That is, a greater percentage of remote memories were remembered using third-person perspective compared to recent memories. Also similar to findings from Chapter 1, participants often reported experiencing more than one perspective per memory with a mix of first- and third-person perspectives for a single memory. Using this descriptive technique lead to more overall third-person perspective memories regardless of time period than in Chapter 1, as well as more than are traditionally found in other studies of perspective (e.g., Frank & Gilovich, 1989; Kihlstrom & Harackiewicz, 1982; Nigro & Neisser, 1983; Robinson & Swanson, 1993), even when using the same events (Nigro and Neisser, 1983).

There are two possible explanations for this discrepancy. First, it may be that describing perspective in more detail, and specifically more detail regarding third-person perspectives, biases individuals to construct more third person perspectives. Second, it may be that asking participants to be very specific about the location of their perspective leads individuals to describe memories that would normally be categorized as first-person to be described as third-person. For example, imagine a memory accompanied by a perspective very close to an individual’s head, perhaps just a few
inches above one’s eye level. If one were not asked to make a very specific distinction between a memory coming from “one’s own eyes” and memories coming from any other location, this type of perspective may well have been considered first-person in previous studies. However, providing individuals with more fine-grained distinctions may actually capture an individual’s phenomenological experience more accurately and lead to a more accurate characterization of first- and third-person perspectives.

Interestingly, there were not large-scale differences in visual imagery across first- and third-person perspectives for either the five time periods or the ten events. Nevertheless, there was a general pattern of first-person perspective memories being more vivid than third-person memories. The lack of statistically significant differences between first- and third-person perspectives may, in part, be due to memories which would normally be categorized as first-person (and more vivid) now being categorized as third-person perspective and driving up average third-person perspective vividness ratings to the point that the difference still exists, but is not statistically significant.

Examining differences in third-person perspective revealed large-scale differences in the location of third-person perspective across both time periods and events. Because there were such differences in location across events, it is difficult to draw conclusions about variation in location across time periods since the type of event being remembered was not controlled. However, location across event types seems to
vary in accordance with the location of salient other individuals. For example, memories of running from a threat tend to come from behind the individual, whereas performing in front of others either as a group or individually leads to memories from in front of the individual. In addition, the height and distance dimensions also seem to correspond to the location of salient individuals, with memories of having a conversation being anchored at one’s eye level and near by and memories of swimming being anchored above the individual where others might be watching. However, this rubric does not hold for all memories. For example, it is unclear why memories of studying or watching the news would come from above an individual, unless this is the direction another individual would most likely approach from (i.e., someone walking up to an individual sitting and studying would approach from a location above the individual). Similarly, this explanation does not account for the findings that memories of swimming come from in front of the individual or memories of demonstrating a skill come from behind the individual.

Several questions remain given that third-person perspective locations do differ from one another and are not necessarily a single, cohesive category. For example, even though composite imagery scores did not differ across locations, is it possible that other phenomenological properties, such emotional intensity and belief in the accuracy of one’s memory, vary across location? Moreover, are there differences in the time
required to construct a first-person and third-person perspective memory? A second experiment was constructed to test these ideas, as well as to replicate the location findings presented in Experiment 4.

**Experiment 5: Phenomenology Across Third-Person Perspective Locations**

To replicate findings from Experiment 1 and to further explore differences in phenomenology, as well as reaction time across first- and third-person perspective memories, participants were asked to recall memories of the same 10 events used in Experiment 4. Stimuli were presented via computer in order to acquire reaction time data. Participants were also asked to nominate memories prior to learning about the distinction between first- and third-person perspectives and rate their phenomenological experience during retrieval across several dimensions.

**Methods**

**Participants**

51 participants were tested (34 females; mean age = 19.06). Participants were tested individually or in small groups.

**Procedures**

Instructions were presented via computer using the program DirectRT (Jarvis, 2002), which recorded responses and reaction times for all responses. Participants were
first told they would be asked to recall several events from their life and asked questions about the way they imaged these events. Each participant was then presented with the same 10 event cues from Experiment 4, in 4 pseudo-randomized orders. Participants were presented with a cue, instructed to press a button once they retrieved a specific memory, and then provide a 2-3 word description of their memory to serve as a cue throughout the experiment. Participants were provided specific memories prior to being given perspective instructions to help ensure memory retrieval was not influenced by trying to nominate events with an easily retrievable perspective or a particular type of perspective. Participants were then given the same description of perspective provided in Experiment 4. Several photographs that had been taken of an individual sitting in the participant’s location during the experiment (i.e., sitting at a computer in our laboratory testing room) accompanied this description. These photographs were taken from several positions around the computer in order to illustrate the concept of visual perspective and how participants should describe their own visual perspective. Participants then described as many perspectives as they experienced, listing their dominant memory first and rated several attributes of each memory measured by the Autobiographical Memory Questionnaire (e.g., Rubin, Schrauf et al., 2003; Talarico & Rubin, 2003). These questions can be found in Appendix D (for explanation of the theoretical motivation for each item see Rubin, Burt et al., 2003; Rubin, Schrauf et al.,
2003). Following this, participants were presented with their perspective descriptions and asked to categorize them along the same dimensions as in Experiment 4.

**Results**

A total of 503 memories were used in this analysis due to missing data for 7 memories (i.e., 51 participants with 10 memories). Participants described 64% of their dominant perspectives coming from a third-person perspective, similar to results from Experiment 4 (i.e., 66% across five time periods, 65% across ten events). Of the additional perspectives provided, 46% were from a third-person perspective. Eighteen percent of all memories were reported as being accompanied by multiple perspectives and 51% of participants reported more than one perspective for at least one memory. Only 1% of memories were accompanied by more than 2 perspectives, 83% of which were third-person. For perspectives listed second, 44% were third-person.

Examining dominant and other perspectives across the ten events reveal a very similar pattern of third-person perspective memory proportions as Experiment 4 (see Table 12, Table 11 for comparison). Events in Table 12 are organized based on third-person perspective proportions from Experiment 4, from least to most third-person perspective. The proportions increase in a very similar pattern to Experiment 4, with the only substantial differences being memories for giving an individual presentation leading to more third-person perspectives in this sample and running from a threat and
running for exercise leading to less third-person perspectives. Similar to Experiment 4, there are no significant correlations between memory age and dominant perspective for any event. Treating each memory as an independent data point and correlating dominant perspective (first-person = 0; third-person = 1) with memory age did reveal a significant correlation, \( r(500) = .11 \). Nine of the ten events also produced a positive correlation between perspective and age, such that older memories are more often third-person perspective. Therefore, there seems to be a small relationship between first-versus third-person perspective when controlling for event type.

**Table 12: Percentage of Dominant Third-person Perspectives and Correlations with Memory Age in Exp. 5**

<table>
<thead>
<tr>
<th>Event</th>
<th>% Dominant Third-person (N)</th>
<th>Memory Age (SD)</th>
<th>( r ) with Memory Age</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conversation</td>
<td>43 (220)</td>
<td>1.30 (2.43)</td>
<td>.08</td>
<td>48</td>
</tr>
<tr>
<td>Watching news</td>
<td>49 (25)</td>
<td>4.33 (2.55)</td>
<td>.16</td>
<td>49</td>
</tr>
<tr>
<td>Being in accident</td>
<td>51 (26)</td>
<td>4.61 (4.00)</td>
<td>.03</td>
<td>49</td>
</tr>
<tr>
<td>Studying</td>
<td>72 (36)</td>
<td>0.92 (1.98)</td>
<td>.19</td>
<td>48</td>
</tr>
<tr>
<td>Running for exercise</td>
<td>54 (27)</td>
<td>1.93 (2.33)</td>
<td>.25</td>
<td>48</td>
</tr>
<tr>
<td>Individ. presentation</td>
<td>80 (39)</td>
<td>3.99 (3.56)</td>
<td>.08</td>
<td>47</td>
</tr>
<tr>
<td>Demonstrating skill</td>
<td>73 (37)</td>
<td>2.81 (3.42)</td>
<td>.04</td>
<td>49</td>
</tr>
<tr>
<td>Running from threat</td>
<td>67 (34)</td>
<td>3.70 (3.64)</td>
<td>-.03</td>
<td>49</td>
</tr>
<tr>
<td>Swimming</td>
<td>78 (39)</td>
<td>5.84 (4.23)</td>
<td>.07</td>
<td>48</td>
</tr>
<tr>
<td>Group performance</td>
<td>78 (38)</td>
<td>4.38 (3.68)</td>
<td>.12</td>
<td>47</td>
</tr>
</tbody>
</table>

*Note: \( *p < .05 \). Total number of third-person perspectives displayed in parentheses for each proportion. SD displayed in parentheses for memory age. Correlation coefficients displayed for point-biserial correlation (first-person = 0; third-person = 1) between dominant perspective and memory age for each event type.*
In addition to describing perspective, participants were asked to rate their perspective on continuous scales (as in Experiment 2) when rating phenomenological properties of each memory. To examine the relationship between these two methods (i.e., describing perspective versus rating perspective), point biserial correlations were calculated between described dominant perspective (first-person as 0, third-person coded as 1) and ratings on continuous measures of first-person (i.e., how much did memory come from “own eyes”) and third-person (i.e., how much did you view the event as an outside “observer”) perspectives (see Table 13).

Table 13: Correlations Between Own Eyes and Observer Continuous Ratings and First-person (0) / Third-person (1) Classification in Exp. 5

<table>
<thead>
<tr>
<th>Activity</th>
<th>Own eyes rating</th>
<th>Observer rating</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conversation</td>
<td>-.46**</td>
<td>.52**</td>
<td>49</td>
</tr>
<tr>
<td>Watching news</td>
<td>-.65**</td>
<td>.60**</td>
<td>49</td>
</tr>
<tr>
<td>Being in accident</td>
<td>-.55**</td>
<td>.54**</td>
<td>49</td>
</tr>
<tr>
<td>Studying</td>
<td>-.64**</td>
<td>.63**</td>
<td>48</td>
</tr>
<tr>
<td>Running for exercise</td>
<td>-.50**</td>
<td>.62**</td>
<td>48</td>
</tr>
<tr>
<td>Individ. presentation</td>
<td>-.54**</td>
<td>.65**</td>
<td>47</td>
</tr>
<tr>
<td>Demonstrating skill</td>
<td>-.69**</td>
<td>.76**</td>
<td>49</td>
</tr>
<tr>
<td>Running from threat</td>
<td>-.66**</td>
<td>.70**</td>
<td>49</td>
</tr>
<tr>
<td>Swimming</td>
<td>-.61**</td>
<td>.66**</td>
<td>48</td>
</tr>
<tr>
<td>Group performance</td>
<td>-.49**</td>
<td>.52**</td>
<td>47</td>
</tr>
</tbody>
</table>

*Note: *p < .05, **p < .0025

All correlations were statistically significant, using p < .0025 to control for multiple comparisons. Memories described as third-person received lower “own eyes”
ratings ($rs$ range from -0.46 to -0.69) and higher “observer” ratings ($rs$ range from 0.52 to 0.76). Thus continuous ratings show good agreement with individuals’ described perspectives and are a relatively accurate alternative to descriptions. However, continuous scales cannot capture the full phenomenological experience as scales do not reflect perspective location differences.

In order to examine phenomenological differences across first- and third-person perspective, participants’ responses to each particular question from the AMQ were averaged across first-person memories and across third-person memories. For example, any one participant’s response to the reliving question were averaged across all events described as first-person and all events described as third-person. These ratings were then compared across each individuals’ first- and third-person memories using paired t-tests. A $p$-value of 0.0025 was used to control for multiple comparisons (i.e., 20 comparisons, see Table 14).

Several phenomenological characteristics varied across first- and third-person perspectives in the expected direction. For example, first-person perspective memories were rated as being higher in reliving, more visually and auditorally vivid, more emotionally intense, and the emotions were felt as strongly as the initial event compared to third-person perspective. Third-person perspectives were rated as coming to individuals more in pieces and being more likely to be convinced their memories were
untrue compared to first-person perspectives. Properties not significantly different across perspectives, but with t-values greater than 1, also showed the expected patterns based on previous research. For example, third-person perspectives were older, remembered less, believed less, and produced less re-experiencing of visceral sensations. Interestingly, there was no significant difference in reaction times to construct first- and third-person perspective memories.

Table 14: Phenomenological Ratings Averaged Across Dominant First- and Third-person Perspectives

<table>
<thead>
<tr>
<th></th>
<th>First-person</th>
<th>Third-person</th>
<th>Num. of events</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliving</td>
<td>4.38 (1.25)</td>
<td>3.86 (1.11)</td>
<td>5</td>
<td>5.08**</td>
</tr>
<tr>
<td>Vividness (visual)</td>
<td>5.38 (1.20)</td>
<td>4.94 (0.85)</td>
<td>9</td>
<td>4.21**</td>
</tr>
<tr>
<td>Vividness (auditory)</td>
<td>3.88 (1.39)</td>
<td>3.29 (1.15)</td>
<td>7</td>
<td>4.57**</td>
</tr>
<tr>
<td>Visual detail</td>
<td>4.73 (0.99)</td>
<td>4.29 (1.23)</td>
<td>9</td>
<td>3.42**</td>
</tr>
<tr>
<td>Same emotion</td>
<td>3.68 (1.13)</td>
<td>3.31 (1.12)</td>
<td>6</td>
<td>4.14**</td>
</tr>
<tr>
<td>Positive emotion</td>
<td>3.39 (1.42)</td>
<td>3.92 (0.89)</td>
<td>6</td>
<td>-1.95</td>
</tr>
<tr>
<td>Negative emotion</td>
<td>4.31 (1.19)</td>
<td>3.51 (0.90)</td>
<td>8</td>
<td>4.18**</td>
</tr>
<tr>
<td>Emotional intensity</td>
<td>3.38 (1.21)</td>
<td>2.93 (0.97)</td>
<td>6</td>
<td>4.10**</td>
</tr>
<tr>
<td>Comes in pieces</td>
<td>3.58 (1.20)</td>
<td>4.28 (0.98)</td>
<td>7</td>
<td>-3.69**</td>
</tr>
<tr>
<td>Persuade memory untrue</td>
<td>2.60 (0.77)</td>
<td>3.00 (1.02)</td>
<td>7</td>
<td>-3.31**</td>
</tr>
<tr>
<td>Remember versus know</td>
<td>5.72 (0.96)</td>
<td>5.40 (1.03)</td>
<td>5</td>
<td>2.43*</td>
</tr>
<tr>
<td>Travel back in time</td>
<td>3.98 (1.38)</td>
<td>3.86 (1.24)</td>
<td>6</td>
<td>2.05</td>
</tr>
<tr>
<td>Belief in memory</td>
<td>5.85 (0.85)</td>
<td>5.63 (0.87)</td>
<td>4</td>
<td>1.58</td>
</tr>
<tr>
<td>Rehearse</td>
<td>3.28 (1.19)</td>
<td>3.15 (0.98)</td>
<td>6</td>
<td>1.37</td>
</tr>
<tr>
<td>Heart pounding</td>
<td>2.38 (1.15)</td>
<td>2.27 (1.02)</td>
<td>4</td>
<td>1.83</td>
</tr>
<tr>
<td>Tense</td>
<td>2.05 (1.01)</td>
<td>2.06 (1.02)</td>
<td>6</td>
<td>0.98</td>
</tr>
<tr>
<td>Specific memory</td>
<td>5.09 (1.51)</td>
<td>5.23 (1.14)</td>
<td>3</td>
<td>-0.93</td>
</tr>
<tr>
<td>Setting</td>
<td>5.99 (0.93)</td>
<td>6.00 (0.81)</td>
<td>6</td>
<td>0.14</td>
</tr>
<tr>
<td>Memory age</td>
<td>2.88 (1.99)</td>
<td>3.72 (1.93)</td>
<td>9</td>
<td>-2.68*</td>
</tr>
<tr>
<td>Log reaction time</td>
<td>9.05 (0.52)</td>
<td>9.08 (0.52)</td>
<td>5</td>
<td>-0.87</td>
</tr>
</tbody>
</table>

Note: * p < .05, ** p < .0025. Degrees of freedom = 42 for all comparisons.
The location of third-person perspectives was examined by plotting the distribution across space as in Experiment 4 (see Figure 11). The distribution replicates findings from Experiment 4; there is no single, canonical third-person perspective and individuals tend to visualize themselves from their own body plane, rather than from the left or right, from in front of the individual, from their eye level, and from locations near the individual. To examine regularity in perspective location across the ten event types, the four categorized dimensions were examined separately for each event, as in Experiment 4 (see Figures 12-15). Significance was set at .00125 to control for multiple comparisons within each spatial dimension, although comparisons significant at .05 are also shown in the figures.

Figure 11: Third-person Perspective Distribution Across Events in Exp. 5
Figure 12: Distribution of Perspective Across Front/Back Dimension in Exp. 5
*p < .05, **p < .00125. χ² tests were performed individually within each event.

Figure 13: Distribution of Perspective Across Height Dimension in Exp. 5
*p < .05, **p < .00125. χ² tests were performed individually within each event.
Figure 14: Distribution of Perspective Across Distance Dimension in Exp. 5
* $p < .05$, ** $p < .00125$. $\chi^2$ tests were performed individually within each event.

Figure 15: Distribution of Perspective Across Side/Body Dimension in Exp. 5
* $p < .05$, ** $p < .00125$. $\chi^2$ tests were performed individually within each event.
Consistency of locations across Experiments 4 and 5 was of primary interest in this study. To examine this, $\chi^2$ tests comparing perspective locations within each event were calculated for each of the four spatial dimensions. To control for multiple comparisons across dimensions, a p-value of .00125 was used and revealed no significant differences across experiments. Dropping the critical value to .05 revealed only four significant differences, where two would have been expected by chance (i.e., $40 \times .05$). These differences were observed for the following events: swimming across the Front/Back dimension ($\chi^2(2, N = 98) = 6.41$), studying across the Height dimension ($\chi^2(2, N = 94) = 12.24$), running from a threat across the Height dimension ($\chi^2(2, N = 99) = 12.04$), and demonstrating a skill in the Near/Far dimension ($\chi^2(1, N = 73) = 7.67$). These results suggest the findings from Experiment 4 are reliable and not due to chance. Therefore, comparisons in further experiments collapse across Experiments 4 and 5.

Although the preferred method to investigate phenomenological differences across locations would have been to average phenomenological ratings across location for each individual, this was not possible due to multiple empty cells. Therefore, a very liberal approach was taken in which each data point was treated as an independent observation. The 20 phenomenological ratings were then examined within each spatial dimension regardless of event using a p-value of .0025 (i.e., .05/20) to control for multiple comparisons within each spatial dimension. At this level, seven significant
differences were revealed: positive emotions and negative emotions ratings along the Front/Back dimension, own eyes and observer ratings along the Side/Body dimension, and own eyes rating, observer rating, and memory age for the Near/Far dimension (see Table 15).

**Table 15: Phenomenological Differences Across Third-Person Perspective Locations in Exp. 5**

<table>
<thead>
<tr>
<th>Memory Characteristic</th>
<th>F- or t-value</th>
<th>η²</th>
<th>Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front/Behind dimension</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive emotion</td>
<td>6.36</td>
<td>.04</td>
<td>3.99</td>
</tr>
<tr>
<td>Negative emotion</td>
<td>7.18</td>
<td>.04</td>
<td>3.24</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4.04</td>
</tr>
<tr>
<td>Side/Body dimension</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Own eyes</td>
<td>3.12</td>
<td>.03</td>
<td>3.24</td>
</tr>
<tr>
<td>Observer</td>
<td>3.20</td>
<td>.03</td>
<td>5.30</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4.65</td>
</tr>
<tr>
<td>Near/Far dimension</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Own eyes</td>
<td>4.32</td>
<td>.05</td>
<td>3.95</td>
</tr>
<tr>
<td>Observer</td>
<td>4.35</td>
<td>.06</td>
<td>4.64</td>
</tr>
<tr>
<td>Memory age</td>
<td>3.41</td>
<td>.03</td>
<td>3.10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4.47</td>
</tr>
</tbody>
</table>

Note: Significant differences in phenomenology are displayed, \( p < .0025 \). Means across locations presented with SD in parentheses.

Probing these significant differences further by examining each event separately revealed inconsistent patterns of means. Eta-squared was calculated to determine variance accounted for by each comparison, revealing a maximum of 6% variance accounted for by any comparison. Therefore, there may be small differences in phenomenology across locations, but they do not seem to be robust, reliable, or to
account for much variance in ratings. However, it is possible using highly emotional events, or other event types, would produce differences in phenomenology across locations. Additional research is necessary to fully explore this possibility.

To examine reaction time differences across third-person perspective location, reaction times for each individual were averaged across locations. Rather than comparing across the dimensions used previously, reaction times were compared across the raw spatial location categories provided by individuals, which were: from own original location, directly to the left of location, directly to the right of location, directly in front of location, directly behind location, to the left and in front of location, to the right and in front of location, to the left and behind location, to the right and behind location. This was done to investigate the hypothesis that third-person perspective memories should take longer to construct and perspectives requiring greater angular rotations from first-person should require more time. These 9 locations make a 3 x 3 grid, centered on the original location of the individual (see Figure 16). It was expected that if perspective in autobiographical memory retrieval operates in a similar fashion to perspective in spatial memory tasks, perspectives requiring a greater angle of rotation from one’s original viewpoint should require additional time to construct.
To investigate this, a 9-level ANOVA was calculated and found a significant effect, $F(9,313) = 2.48$. However, the only two locations to show significant differences were between locations directly in front, which required less time to construct than locations to the left and in front of the individual, and locations to the left and behind the individual, which required less time to construct than locations to the left and in front of the individual. Furthermore, there seems to be no discernable pattern across reaction times. For example, first-person perspectives required as much time to construct as third-person perspectives. And memories requiring less transformation (e.g., perspectives directly behind one’s location) did not significantly differ from perspectives requiring more transformation (e.g., perspectives directly in front of the

---

**Figure 16: Reaction Times Across Spatial Locations in Exp. 5**

Reaction times for memories coming from spatial locations around the individual. Values with similar letters denote a significant difference between the two values. SD presented in parentheses.

<table>
<thead>
<tr>
<th></th>
<th>In front</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Left</td>
<td>9.40*a</td>
<td>8.87*b</td>
<td>9.13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.89)</td>
<td>(0.70)</td>
<td>(0.60)</td>
<td></td>
</tr>
<tr>
<td>Right</td>
<td>9.11</td>
<td>9.11</td>
<td>8.88</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.56)</td>
<td>(0.74)</td>
<td>(0.73)</td>
<td></td>
</tr>
<tr>
<td>Behind</td>
<td>8.75*a,b</td>
<td>9.22</td>
<td>9.07</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.63)</td>
<td>(0.76)</td>
<td>(0.79)</td>
<td></td>
</tr>
</tbody>
</table>

Cell entries within columns with similar letters indicate a significant difference between the two values.
individual). Reaction time differences were also interrogated along the height dimension with the idea that transforming perspective out of the transverse plane should require additional time. Treating each data point as independent revealed no significant differences across height.

**Discussion**

The current study replicates several findings from Experiment 4. First, there was a high degree of overlap in the proportion of third-person perspective memories across the ten different events. Although there were less memories accompanied by more than one perspective, over half of the participants reported more than one perspective for at least one memory. Second, there were phenomenological differences across first- and third-person perspectives, although these were only found when collapsing across first-person and third-person events, not when probing differences within a particular event. This suggests phenomenological differences across perspectives may not be as robust as previously thought, particularly when one controls for the type of events being recalled. Third, there were similar findings for the location of third-person perspectives across events. Fourth, there were no differences in phenomenology across third-person perspective locations. This lack of difference also extended to reaction times to construct a particular memory, which did not vary greatly across first- and third-person perspectives or across locations. Studies of perspective taking in the spatial memory
literature generally report that changing perspective from the encoded perspective requires additional time when compared to a zero-degree perspective change (Diwadkar & McNamara, 1997; T. P. McNamara, 1991; Mou & McNamara, 2002; Shelton & McNamara, 1997a, 1997b, 2004a, 2004b); yet this pattern is generally absent from the current data, suggesting perspective in autobiographical memory may operate in a different manner from perspective-taking within the standard spatial memory literature.

However, within the current study reaction times to construct a perspective were also contaminated by the time to search and identify an appropriate memory, which could not be avoided given the design of the current study. In addition, most spatial studies of perspective ask individuals to make judgments about the spatial location of objects following the required transformation, which may be necessary to see differences in reaction times. A very interesting way to test these ideas would be to have individuals engage in some of the tasks known to produce predominantly third-person perspective memories in a laboratory environment. By placing several objects throughout the environment and then later testing participants on the location of these objects based on their third-person perspective locations, one could investigate whether the same spatial relationships are seen within the context of autobiographical memory as are seen in spatial memory. For example, it might be expected that objects above and below the individual would be identified more quickly than objects in front and behind,
followed by objects to the left and right (Bryant & Tversky, 1999; Franklin & Tversky, 1990; Franklin et al., 1992; Taylor & Tversky, 1996; Tversky, 1991, 2003). Obviously additional research is necessary to fully disentangle the relationship between these two domains of research.

Within the current set of experiments, one remaining question is whether individuals asked to report their perspective during retrieval are simply thinking about the optimal viewpoint from which to view a particular event and reporting this perspective. To examine this hypothesis, participants were asked to describe the ideal location to watch an event transpire in the next experiment.

**Experiment 6: Are Memory Perspectives the Same as Ideal Perspectives for Observing Events?**

It may be individuals in the previous experiments were constructing the optimal, or ideal, location for viewing a particular event and using this to guide their memory perspectives. Canonical perspectives have been found for the perception of objects (Palmer et al., 1981) and these perspectives translate into photographs taken by individuals to best represent these objects (McBeath & Khalil, 2006). Similar processes may be used to determine the optimal location for viewing an event and guide the construction of perspective in autobiographical memory. To test this hypothesis, participants were asked to think about observing the same 10 events used in
Experiments 4 and 5. They were asked to describe the optimal location to watch these different events transpire in relation to the main actor they would be watching in each event. After describing the ideal perspective, they were then asked to categorize their perspectives in the same manner as in Experiments 4 and 5.

**Methods**

**Participants**

43 participants were tested (29 females; mean age = 19.13) individually or in small groups.

**Procedures**

Participants were first told they would be asked to think about the optimal way to view several types of events. They were then given a description of how they should describe their optimal viewpoint. Participants were told they should imagine they were going to watch a particular scene or shoot a video of a particular event and to think about the viewpoint that would be best to view the event. Participants were asked to describe the perspective in relation to the actor in the event. For example, if watching a person running, they should describe where they would situate themselves in relation to the person running. They were then provided with concrete examples of different perspectives one might use when viewing an event (see Appendix E for instructions).
After completing these questions for each event, participants were asked to categorize the description of their dominant perspective for each event in terms of spatial location (e.g., in front of actor, behind actor, etc.), height (e.g., above head of actor, near ceiling, etc.), and distance (e.g., 3-6 ft away) in relation to the actor in the event. Participants described and categorized optimal viewpoints for the same 10 events from Experiments 4 and 5.

**Results**

As there were missing data for 28 events, a total of 402 event perspectives were obtained. The distribution of these perspectives across space is displayed in Figure 17. The distribution varies in a few interesting ways from those observed for memory perspectives. Individuals were more likely to report perspectives from the side, rather than from the body plane of the actor. Perspectives were more likely to come from the actor’s eye level and more likely to come from in front of the actor, with very few perspectives coming from behind the actor. In addition, perspectives were much more likely to come from a distance, rather than from near the actor.

The agreement between perspective locations in the current experiment and memory perspectives (collapsed across Experiment 4 and 5) was compared using separate $\chi^2$ tests. Locations were compared for each event across the four spatial dimensions separately, using $p < .00125$. Results indicate ideal and memory perspectives
do not overlap (see Tables 16 and 17) particularly along the Front/Back dimension. For example, the majority of memory perspectives come from behind the individual, whereas ideal perspectives come from in front. These significant differences in memory and ideal perspective locations suggest the perspectives used during recall in Experiments 4 and 5 were not derived from imagining the optimal perspective for viewing events.

**Discussion**

Using similar methods to Experiments 4 and 5, asking participants to provide the optimal perspective for viewing events led to discrepant patterns of perspective location compared to asking participants to describe the perspectives accompanying their memories for the same events. This suggests in Experiments 4 and 5, individuals were not thinking about the ideal viewpoint to take when visualizing a past event. However, it may be this was the wrong control condition. More specifically, conceptualizations of perspective in memory tend to focus on it’s relation to the self and the functional importance of being able to observe one’s self in a third-person perspective (Brewer, 1986, 1996; Nigro & Neisser, 1983). Perhaps individuals are not constructing a viewpoint from the optimal perspective for watching others, but rather from the viewpoint they would want to watch themselves. To test this hypothesis, individuals
were asked to describe the perspective they would use to watch their “imagined self” engage in the same events from Experiments 4-6.

**Experiment 7: Are Memory Perspectives the Same as Self-Focused Perspectives for Events?**

**Introduction**

In order to test the hypothesis that memory perspectives may correspond to the viewpoints from which an individual would want to view him- or herself complete a task, individuals were asked to describe the “best location for visualizing or watching yourself during each of these events.” Participants described and categorized their perspectives in the same manner as in Experiments 4-6, using the same 10 events.

**Methods**

**Participants**

54 participants were tested (39 females; mean age = 19.09) individually or in small groups.

**Procedures**

Participants were first told they would be asked to think about the optimal viewpoint from which to view themselves complete several tasks. They were then given a description of how they should describe their self-focused viewpoint. Participants
were asked to describe the perspective in relation to the location of their “imagined self” in the event. For example, if they were watching their “imagined self” running, they should describe where they would situate themselves in relation to the location of the imagined self. They were then provided with concrete examples of different perspectives one might use when viewing their imagined self. Instructions were similar to those used in Experiment 6, except that “imagined self” replaced “other” throughout.

After completing these questions for each event, participants were asked to categorize the description of their dominant perspective for each event in terms of spatial location (e.g., in front of imagined self, behind imagined self, etc.), height (e.g., above head of imagined self, near ceiling, etc.), and distance (e.g., 3-6 ft away) in relation to their imagined self in the event. Participants described and categorized optimal viewpoints for the same 10 events from Experiments 4 and 5.

**Results**

As there were missing data for 39 memories, a total of 501 event perspectives were obtained. Again, the important comparisons were between self-focused perspectives and memory perspectives. Perspectives were compared separately for each event and across each spatial dimension separately using $\chi^2$ tests. The results displayed in Tables 16 and 17 reveal several discrepant perspective distributions. Ten comparisons show significant differences at the more stringent $p < .00125$ cut-off and fourteen
additional comparisons are significant using $p < .05$. These results suggest memory perspective is not the same as the perspective individuals would choose to watch themselves complete a task.

**Discussion**

Although there is overlap across memory perspectives and ideal/self-focused perspectives, preferred locations vary substantially for certain events suggesting individuals aren’t simply relying on the optimal viewpoint for viewing a particular scene or for watching themselves complete certain tasks. Rather, it seems something unique is occurring when individuals construct perspective in autobiographical memory. Exactly what dictates the construction of perspective in autobiographical memory has yet to be determined, although preliminary evidence from the current studies suggest location may be influenced by the location of salient others during the initial encoding. To examine this hypothesis, one could manipulate the location of others during an encoding event in order to determine whether this influences later perspective construction.
<table>
<thead>
<tr>
<th>Event</th>
<th>Front Mem.</th>
<th>Front Ideal</th>
<th>Front Self</th>
<th>Behind Mem.</th>
<th>Behind Ideal</th>
<th>Behind Self</th>
<th>χ²</th>
<th>Near Mem.</th>
<th>Near Ideal</th>
<th>Near Self</th>
<th>χ²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conversation</td>
<td>38</td>
<td>61</td>
<td>52</td>
<td>26</td>
<td>5</td>
<td>6</td>
<td>8.03*</td>
<td>66</td>
<td>89</td>
<td>92</td>
<td>6.46*</td>
</tr>
<tr>
<td>Watching news</td>
<td>30</td>
<td>50</td>
<td>38</td>
<td>43</td>
<td>40</td>
<td>25</td>
<td>6.63*</td>
<td>66</td>
<td>64</td>
<td>77</td>
<td>0.02</td>
</tr>
<tr>
<td>Being in accident</td>
<td>24</td>
<td>51</td>
<td>31</td>
<td>53</td>
<td>5</td>
<td>21</td>
<td>26.53**</td>
<td>79</td>
<td>20</td>
<td>25</td>
<td>21.54**</td>
</tr>
<tr>
<td>Studying</td>
<td>26</td>
<td>66</td>
<td>44</td>
<td>53</td>
<td>17</td>
<td>31</td>
<td>21.36**</td>
<td>62</td>
<td>80</td>
<td>83</td>
<td>4.31*</td>
</tr>
<tr>
<td>Running for exercise</td>
<td>34</td>
<td>40</td>
<td>39</td>
<td>42</td>
<td>10</td>
<td>18</td>
<td>15.11**</td>
<td>42</td>
<td>28</td>
<td>47</td>
<td>2.48</td>
</tr>
<tr>
<td>Individ. presentation</td>
<td>84</td>
<td>97</td>
<td>94</td>
<td>6</td>
<td>4</td>
<td>0</td>
<td>4.91</td>
<td>63</td>
<td>29</td>
<td>17</td>
<td>11.32**</td>
</tr>
<tr>
<td>Demonstrating skill</td>
<td>27</td>
<td>63</td>
<td>60</td>
<td>45</td>
<td>5</td>
<td>17</td>
<td>23.51**</td>
<td>88</td>
<td>63</td>
<td>63</td>
<td>9.55*</td>
</tr>
<tr>
<td>Running from threat</td>
<td>36</td>
<td>76</td>
<td>59</td>
<td>47</td>
<td>12</td>
<td>33</td>
<td>19.68**</td>
<td>50</td>
<td>20</td>
<td>31</td>
<td>8.32*</td>
</tr>
<tr>
<td>Swimming</td>
<td>43</td>
<td>33</td>
<td>32</td>
<td>36</td>
<td>5</td>
<td>22</td>
<td>23.96**</td>
<td>54</td>
<td>31</td>
<td>32</td>
<td>5.58*</td>
</tr>
<tr>
<td>Group performance</td>
<td>76</td>
<td>95</td>
<td>89</td>
<td>17</td>
<td>2</td>
<td>6</td>
<td>7.52*</td>
<td>36</td>
<td>12</td>
<td>11</td>
<td>8.35*</td>
</tr>
</tbody>
</table>

Note: * p < .05, ** p < .00125 for comparisons across Memory perspectives (collapsed across Exp. 4 & 5, labeled Mem. above) and Ideal (Exp. 6) or Self (Exp. 7) perspectives. Percentages are displayed for the Front/Behind and Distance dimensions. χ² labeled Ideal refer to test statistic between Memory and Ideal frequencies. χ² labeled Self refer to test statistic between Memory and Self frequencies.
Table 17: Percentage Third-person Perspective Locations Across Events for Height and Side/Body Dimensions Compared Across Memory, Ideal, and Self-focused Perspectives

<table>
<thead>
<tr>
<th>Event</th>
<th>Above</th>
<th>Below</th>
<th>( \chi^2 )</th>
<th>Side</th>
<th>( \chi^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mem.</td>
<td>Ideal</td>
<td>Self</td>
<td>Mem.</td>
<td>Ideal</td>
</tr>
<tr>
<td>Conversation</td>
<td>33</td>
<td>3</td>
<td>4</td>
<td>14</td>
<td>0</td>
</tr>
<tr>
<td>Watching news</td>
<td>35</td>
<td>31</td>
<td>15</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>Being in accident</td>
<td>46</td>
<td>37</td>
<td>48</td>
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Note: * \( p < .05 \), ** \( p < .00125 \) for comparisons across Memory perspectives (collapsed across Exp. 4 & 5, labeled Mem. above) and Ideal (Exp. 6) or Self (Exp. 7) perspectives. Percentages are displayed for the Height and Side/Body dimensions. \( \chi^2 \) labeled Ideal refer to test statistic between Memory and Ideal frequencies. \( \chi^2 \) labeled Self refer to test statistic between Memory and Self frequencies.
General Discussion

The current studies revealed perspective location varies greatly across space and varies systematically as a function of the type of event being remembered. In addition, reliability across studies suggests this is a viable methodology for the study of visual perspective in autobiographical memory. However, this method does lead to more overall third-person perspectives than previous studies (e.g., Nigro & Neisser, 1983). As discussed previously, this may be the result of biasing participants to focus on third-person perspectives or may be the result of asking participants to provide finer-grained distinctions in their perspective description, which individuals to describe memories previously categorized as first-person more accurately as third-person.

Similar to findings from Chapter 2, individuals often report using more than one perspective per memory. Memories with more than one associated perspective do not seem to differ phenomenologically from those accompanied by a single perspective. However, additional investigation is necessary to verify this is not due to the small number of memories accompanied by multiple perspectives. Controlling for event type also seems to eliminate large differences in phenomenology previously observed across first- and third-person perspectives. One explanation for this may be that controlling for event type restricts the range of phenomenological experiences across individuals. For
example, emotional intensity and valence may not vary much across individuals or across perspectives when asked to think of a particular emotional event such as running from a threat.

Interestingly, third-person perspective locations varied substantially across events. For example, across two studies, memories of running from a threat came from behind the individual while memories of performing in front of others led to perspectives in front of the individual. Moreover, memories of having a conversation led to memories from near the individual whereas being in a group performance led to memories from a distance. Across several events, it appears as though perspective may be anchored near the location of salient others present during the initial encoding. That is, perspective location seems to vary in a systematic way that maps onto interactions with the self and others. To further test this idea, one could systematically manipulate the location of salient others within an environment and observe the effects on reported perspective location.

In addition, the perspective one uses during recall does not seem to be the ideal location for watching one’s self or another complete a task. For example, discrepancies were observed across all events in the front/behind dimension except for giving an independent presentation and being in a group performance. Additionally, across the
height dimension, giving an independent presentation, demonstrating a skill, and being in a performance led to discrepant memory perspective locations compared to ideal perspective locations. These results suggest when constructing a third-person perspective location in autobiographical memory, individuals do not simply rely on the optimal location for viewing one’s self or others in the same event. It is unclear why retrieval and ideal perspective locations deviated most along the front/back dimension. One explanation may come from the observation that individuals more easily make perspective transformations in spatial arrays within the transverse plane (e.g., Carpenter & Proffitt, 2001). That is, individuals are faster and more accurate when making transformations along the z-axis, as compared to transformations along the y- and x-axis. However, using this framework would not necessitate less variation along the Side/Body dimension, as rotations along the transverse plane also encompass transforming one’s perspective to the left or right of one’s self. Combining this framework with that of Tversky’s group, in which individuals are quickest to verify objects above and below, followed by in front and behind, then left versus right, might suggest perspective transformations in autobiographical memory are made along the spatial dimension that is easiest (z-axis) and more limited to the more accessible
front/back dimension. This may also be affected by that fact a salient dimension along which the location of others’ can vary is along the front/back dimension.

Phenomenology does not seem to differ across location in any of the hypothesized directions. However, it is important to further test this possibility due to the small cell sizes of some comparisons within the current experiment. One interesting follow-up to these studies would be to examine phenomenological reports across locations in individuals with clinical disorders. For example, individuals with PTSD may show a decrease in emotional intensity as distance increases while normal controls do not. It would also be interesting to determine how self-conscious versus narcissistic individuals differ in perspective location and what effects this has on their phenomenological reports.

Another interesting avenue of investigation is the relationship between perspective location in autobiographical memory and spatial perspective-taking. For example, it would be interesting to examine whether Tversky’s Spatial Framework Model holds within autobiographical memory. That is, when individuals construct a third-person perspective image of an autobiographical memory are they quicker to verify objects that are now in front and behind (in their visual image of the past event) than they are to verify objects to the left and right? Studies like these would help to
distinguish whether similar processes underlie spatial processing across spatial mental models and visuospatial models constructed from memory.

This series of studies is the first to show individuals can construct highly varied third-person perspective when retrieving autobiographical memories. Similar to visual imagery used to reason, problem solve, and navigate, visual perspective during autobiographical memory is flexible yet systematic; individuals can construct perspective from many locations, but these locations show regularity within specific events. Using the novel methods described here may help further elucidate the relationship of visual perspective to other related areas, such as emotion regulation, self-consciousness and self-focused thought, spatial memory, and the ability to take the perspective of others to understand emotion and thought.

Chapter 4. Final Discussion

As visual perspective in autobiographical memory becomes a more popular area of study, it is important to clearly define what is meant by perspective within the context of autobiographical memory and how our measurement techniques affect our understanding of perspective. The studies described here take significant steps toward answering these questions, as well as raising interesting directions for future research.
**Memory Age and Visual Perspective**

An effect of memory age on visual perspective use was observed across three studies (i.e., Experiments 1, 2, and 4) and three measurement methods (i.e., single-scale, two-scale, and descriptive method). Using a single-scale version of our perspective questionnaire, remote memories were rated as more third-person and recent memories rated as more first-person. Using the two-scale version revealed similar effects; remote memories were rated as more third-person and less first-person than recent memories. Although this is not the first study to suggest a relationship between visual perspective and memory age, it is the first to show a reliable change in visual perspective ratings across a large time window using both a single continuous scale and separate first- and third-person scales.

It has been suggested that changes in perspective over time may be related to the vividness of the related visual imagery, with less vivid imagery producing third-person perspective memories (Heaps & Nash, 2001). Experiment 2 revealed a pattern consistent with this; older memories were rated as less first-person, more third-person, and less vivid. However, ratings of vividness correlated with first-person, but not third-person perspective ratings across all five time periods. This suggests vividness may affect the phenomenological experience of first-person perspective, but may have little bearing on
the experience of third-person perspective. That is, an inverse relationship between first- and third-person perspectives does not exist, with first-person perspectives being on one end of a spectrum and third-person on the other. However, using a dichotomous variable may produce this effect as in Experiment 2 memories endorsed as primarily third-person (i.e., given a rating greater than 4 on the third-person scale and less than 4 on the first-person scale) were less vivid, on average, than memories rated as primarily first-person or a strong mixture of both perspectives.

These results suggest while vividness does affect first-person perspective ratings, it may not dictate the experience of third-person perspectives. A fundamental difference in the experience of first- and third-person perspectives was also suggested by discrepancies in the ability to change perspective observed in Experiment 1. Here the ability to change perspective was affected by memory age for third-person perspective memories, but not for first-person perspective memories. Again, these results suggest third-person perspective is not the inverse, or opposite, of third-person perspective. Thus, it may be more appropriate to characterize the two perspectives as being dictated by different processes.

Following changes in a particular memory across time may help elucidate the processes influencing perspective across memory age. Talarico and Rubin (2003) found
changes in perspective ratings of the same event after a 6-week delay. An interesting follow-up would be to examine several memories across many delays, while obtaining measures of phenomenology, as well as memory details and content, in order to determine the changes that occur when memories begin to be produced using third-person perspective.

**Gender and Visual Perspective**

An effect of gender was observed across two studies. Using the single-scale questionnaire, females rated their memories as more third-person than males regardless of time period. Using the two-scale questionnaire, females rated their memories as more third-person, and less first-person, regardless of time period. Females and males did not differ in their vividness ratings. It has been suggested women may use third-person perspective more than men due to greater experience with sexual objectification across one’s life, which results in higher levels of self-awareness (Huebner & Fredrickson, 1999).

Yet, the only other study to observe gender differences did not find large-scale effects (Huebner & Fredrickson, 1999). When asked to recall specific events, the only discrepancy across genders was for memories of attending a college party, which females rated as more third-person. Because Experiments 1 and 2 did not examine the
type of events recalled, it is difficult to determine if self-awareness drove the observed
gender effects. It is quite possible alternative explanations could account for these data.
For example, evidence demonstrates individuals who process their feelings and actions
in relation to others use third-person perspective more than those who have an
independent, autonomous self-concept, particularly when in situations where they are
the center of attention (Cohen & Gunz, 2002). Females are more likely to think about the
interconnection of their actions, thoughts, and feelings with those of surrounding
individuals. This may produce more third-person perspective memories rather than
differences in self-awareness. Discrepancies in the focus of retrieval may also produce
the observed gender effects, with females focusing on more concrete details compared to
men (Nigro & Neisser, 1983; McIsaac & Eich, 2002). Additional research is necessary to
determine which of these, or possibly other, hypotheses account for the gender effect
observed in the current experiment. For example, manipulation of aspects such as self-
focus at encoding, post-event processing, and retrieval focus (i.e., details versus feelings)
across genders would help determine when these gender differences emerge, at
encoding, retrieval, or some mixture of the two.
Individual Differences and Visual Perspective

Experiment 3 suggests individual differences in perspective use exist. Specifically, individuals who initially rated five memories as predominantly first-person rated five new memories similarly in a follow-up session. Although similar results were observed for third-person preferring individuals, these individuals exhibited a greater difference in ratings across sessions and their ratings correlated less across sessions compared to first-person preferring individuals. This is the first study to show regularity in individuals perspective use across multiple sessions. It also provides additional evidence that first- and third-person perspectives are not the opposite of each other, and function different ways. That is, third-person may be more of a cognitive strategy that some individuals tend not to engage in (i.e., first-person preferring individuals). Those who do use third-person perspective seem to use it in a flexible way that may vary across retrieval contexts, focus of retrieval, or event types, producing less regularity across sessions.

Individual differences in perspective use did not correlate strongly with personality measures or clinical symptomology and multiple regression showed these characteristics did not significantly account for variance in perspective use scores. This is somewhat surprising, as others have observed greater public self-consciousness in
individuals using predominantly third-person perspective (Robinson & Swanson, 1993). One reason for the current findings may be that differences in perspective use across measures of self-consciousness, self-monitoring, etc., are limited to specific types of memories. For example, perspective use differences in individuals with social phobia, PTSD, and depression are typically observed in memories directly related to their disorder symptomology (i.e., socially anxious events, traumatic events, events that are ruminated over) (Berntsen et al., 2003; Cardena & Spiegel, 1993; Coles et al., 2002; Coles et al., 2001; Freinkel et al., 1994; Sierra & Berrios, 1999; Wells et al., 1998; Wells & Papageorgiou, 1999; Williams & Moulds, 2007). Therefore, differences in perspective use may only exist for specific types of events, rather than for all memories.

**Visual Perspective Location**

Asking individuals to describe the location of their perspectives in Experiments 4 and 5 revealed variability in perspective location across space, suggesting perspective location is a relatively flexible attribute of imagery that is not anchored to a certain spatial location. However, certain locations are more common than others; perspectives were more often situated near eye-level, directly in line with the individual rather than to the left or right, in front of rather than behind the individual, and less than 6 feet from the individual. Beyond this general pattern, systematic and reliable differences in
location were observed as a function of the event being recalled. Furthermore, perspective location seemed to be anchored to the location of others during event encoding: memories of performing came from in front of the individual, swimming from above, running from a threat from behind, and having an individual conversation from nearby.

Yet, location was not always consistent with this framework. For example, memories of watching the news and studying came from behind the individual, a location that likely does not overlap with the position of others. Therefore, alternative explanations were tested in Experiments 6 and 7. It was hypothesized individuals construct their perspective based on the optimal location for viewing a particular event. However, asking participants to report the optimal viewpoint for observing an event and observing themselves in an event produced different results. Locations did not differ across memory perspectives (from Experiments 4 and 5), but several discrepancies were observed across memory and optimal perspectives. This suggests individuals are not constructing their perspective based on an optimal viewpoint; rather some other aspect of retrieval seems to affect perspective location.

Further research is necessary to determine which event characteristics dictate perspective location. For example, to test the hypothesis that the location of others
during an event influence perspective, one could manipulate the location of salient others at encoding and examine influences on perspective location at retrieval. To determine whether self-consciousness interacts with this variable, one could also manipulate the behavior of others, such as critiquing an individual’s performance versus providing reinforcement.

The effects of individual differences on perspective location may also be a fruitful area of research. For example, highly self-conscious or highly narcissistic individuals may be more likely to take perspectives in front of themselves in order to imagine how they look to others, while private self-conscious individuals may use an alternate position. These individuals may also report different phenomenological experiences for the same locations. For example, although self-conscious and narcissistic individuals might report similar perspective locations, their affective experiences might significantly vary. Although the current studies did not produce differences in phenomenology across event locations, there is still the possibility they exist, particularly for highly emotional events. Thus, future studies should investigate this possibility.

The relationship between visual perspective in autobiographical memory retrieval and perspective taking in the spatial memory literature is also a promising area
for future research. As mentioned above, determining whether principles, such as the Spatial Framework Theory (Franklin & Tversky, 1990) operate within autobiographical memories is imperative toward understanding the underlying representation of visual perspective. Reaction time data from Experiment 5 suggest transforming perspectives in autobiographical memory may operate differentially from transforming perspective in a recently learned spatial array (Diwadkar & McNamara, 1997; T. P. McNamara, 1991; Mou & McNamara, 2002; Shelton & McNamara, 2004b). However, design limitations of the current study prevent the separation of processes required for perspective construction and other unrelated retrieval processes. Therefore, additional research is necessary to determine the underlying representations of perspective within autobiographical memory.

**Measuring Visual Perspective**

Although previous research on perspective has used categorical measures (i.e., first-person versus third-person), the current findings suggest a dichotomous measure does not fully capture the phenomenological experience of the rememberer. In particular, individuals commonly experience more than one perspective during a single retrieval episode. Categorical measures do not typically allow participants to report more than one perspective, although recently some investigators have provided
participants with a “both” category (e.g., Day et al., 2004). A single scale may capture this phenomenological aspect by allowing individuals to indicate a mix of perspectives with intermediate values (e.g., Huebner & Fredrickson, 1999). However, this prevents individuals from providing information regarding the clarity of each perspective. Moreover, it may mischaracterize the relationship between perspective and other memory characteristics. For example, using two scales to measure perspective revealed a positive correlation between first-person perspective and vividness, but no relationship between third-person perspective and vividness. The relationship between these variables would likely have been lost had a single scale been used.

Experiments 4 and 5 present a novel methodology for measuring perspective, in which participants are asked to describe and then categorize their perspective along several spatial dimensions. Using this methodology produced similar results across two studies, suggesting it is a viable method for future studies. Not only do descriptions allow for more detailed analyses of perspective, it also allows participants to describe as many perspectives as they experience. However, using this methodology did lead to a greater proportion of third-person perspectives than are typically observed in studies of perspective, including a study using the same event descriptions (Nigro & Neisser, 1983). This discrepancy may be due to biasing participants or to providing finer-grained
distinctions between first- and third-person perspectives, allowing participants to more accurately categorize their memories. It is important others replicate these results and future experiments disentangle these two possibilities. Yet, even given this limitation, this technique provides a promising new approach to further our understanding of visual perspective in autobiographical memory.

Examining visual perspective using converging evidence, including both questionnaire based methodologies and experimental manipulations, as well as neuroimaging techniques, will help us answer the questions of what visual perspective is, how it functions, and how it affects memory, all of which are fundamental to our understanding of autobiographical memory. Using different visual perspectives during retrieval provides us with the unique ability to visualize how we present ourselves in front of others, to distance ourselves from past events, and to view our interactions with people and objects from a novel standpoint. This ability provides us with the flexibility to transform our own memories, yet it may also increase the likelihood of confusing real events with imagined events. Flexibility may come at a cost. However, perspective taking is not unique to autobiographical memory. Individuals take different perspectives within cognitive maps in order to determine the fastest route between two points, to determine whether a couch in the living room will fit out the door, and to
imagine how another individual perceives an event. However, the fact that perspective affects both what we remember and how we re-experience an event, make the relationship between visual perspective and autographical memory unique and essential to our understanding of human memory.

**Conclusions**

The current series of studies make significant contributions to the understanding of visual perspective during autobiographical retrieval. Perspective use changes across time in a reliable way, such that more remote memories are remembered as more third-person and less first-person than recent memories. Gender also influences perspective use, with females rating their memories as more third-person and less first-person than males. In addition, using two scales to measure perspective provides unique information compared to using a single scale or dichotomous characterization of perspectives, including the report of multiple perspectives within a single retrieval episode. The present studies provide little evidence to suggest personality differences or clinical symptoms account for differences in perspective use when event type is not controlled. Evidence for preferences in using first- and third-person perspectives was found and these preferences were relatively stable across time; however, preference was more stable for those preferring first-person perspective. Furthermore, third-person
perspective locations vary in a relatively systematic way across events, and in a way that differs from the ideal perspective for watching the same events.
Appendix A

First- and Third-person Perspective Description From Exp. 1

When remembering an event from their lives, most people imagine the scene in one of two ways. One way that people remember an event is as an outside observer, or onlooker, looking at the situation from an external vantage point (e.g., a bird’s eye view), where the person remembering can see him or herself in the memory. Another way that people remember an event is through their own eyes, from roughly the same viewpoint that it was originally experienced.

On the following page is a list of five specific time periods. Please think of a memory for one event from each time period (making a one or two word note to yourself of what the memory is) and then rate whether the memory comes to you as though you were an outside observer or as though you were seeing it through your own eyes. We ask that you circle one number between one and seven on the rating scale to indicate the perspective. There are no correct answers; we are just trying to document the kinds of memories people have.
Appendix B

First- and Third-person Perspective Description From Exp. 2

When remembering an event from their lives, most people imagine the scene in one of two ways. One way that people remember an event is as an outside observer, or onlooker, looking at the situation from an external vantage point (e.g. a bird’s eye view), where the person remembering can see him or herself in the memory. Another way that people remember an event is through their own eyes, from roughly the same viewpoint that it was originally experienced. For some memories, it may be that you remember it from only your own eyes and not at all from an observer’s perspective or that you remember it from an observer’s perspective and not all from your own eyes. It may also be that you experience both perspectives for a single memory, such that the image you experience oscillates between two or more perspectives while thinking about an event.

On the following page is a list of five specific time periods. Please think of a memory for one event from each time period (making a one or two word note to yourself of what the memory is) and rate how vivid your memory is. Then, rate the degree to which the memory comes to you as though you were an outside observer and the degree to which the memory comes to you from your own eyes. We ask that you circle one number between one and seven on the rating scale to indicate the vividness, degree of observer perspective, and degree of own eye perspective. There are no correct answers; we are just trying to document the kinds of memories people have.
Appendix C

Perspective Description From Exp. 4

In this study we are trying to find out about properties of autobiographical memories, or personal memories for past events. On the following pages, you will find descriptions of several events. For each description we will ask you to recall a memory for a specific event in your life, to think about it for a while, and then to answer questions about that memory. There are no correct answers; we are just trying to document the kinds of memories people have.

Many of the questions will ask you about the way you visualize past events. When remembering an event from the past, many people find they construct a visual image of the experience. For example, if a person remembers the last time he talked with his mother, he might experience a visual image the scene, including the clothes his mother was wearing, her location within the room, and objects within the surrounding environment.

These visual images can originate from various locations within the overall scene. For example, a person might visualize his mother as he saw her during the original event, in which he visualizes her as though standing directly in front of her and imaging only the objects directly behind her. Or he might visualize the event from above, as though floating above the room or near the ceiling, in which he can “see” the entire environment, perhaps including himself. Or he might visualize the event as though he were standing beside his mother and himself, in which he visualizes both of them from the side.

The first question will ask you to indicate from where you visualize each event. We would like you to use yourself as the anchor point of the image. Therefore, please indicate the origin of the image in relation to yourself during the initial event (e.g., above and behind your head, to the left of yourself and above, out of your own eyes, directly in front of yourself, etc.). Some people find that the origin of their image seems to change. If you find this to be the case, please use the additional blanks to describe the other origin locations. Place a star next to the perspective that seems to be most dominant and use this perspective when answering questions about your dominant perspective.
Appendix D

Autobiographical Memory Questionnaire Items from Exp. 5

1. While remembering the event, I feel as though I am reliving it.  
   1  2  3  4  5  6  7  
   not at all   vaguely distinctly as clearly as if it were happening now

2. While remembering the event, it comes to me in words or in pictures as a coherent story  
   or episode and not as an isolated fact, observation, or scene.  
   1  2  3  4  5  6  7  
   not at all   completely

3. While remembering the event, I feel that I see it out of my own eyes rather than that of an outside observer.  
   1  2  3  4  5  6  7  
   not at all   completely

4. As I remember the event, I see myself and the events as an observer as if watching a movie.  
   1  2  3  4  5  6  7  
   not at all   completely

5. My memory comes in pieces with missing bits.  
   1  2  3  4  5  6  7  
   not at all   completely

6. While remembering the event, I feel the same particular emotions I felt at the time of the event.  
   1  2  3  4  5  6  7  
   completely different identically the same

7. While remembering the event, I feel the emotions as strongly as I did then.  
   1  2  3  4  5  6  7  
   not at all   vaguely distinctly as clearly as if it were happening now

8. While remembering the event, the emotions are extremely positive.  
   1  2  3  4  5  6  7  
   not at all   hardly somewhat entirely

9. While remembering the event, the emotions are extremely negative.  
   1  2  3  4  5  6  7  
   not at all   hardly somewhat entirely

10. The emotions that I feel are extremely intense.  
    1  2  3  4  5  6  7  
    not at all   hardly somewhat extremely
11. While remembering the event, I feel my heart pound, or race. 
   1  2  3  4  5  6  7
   not at all more than any other memory

12. While remembering the event, I feel tense all over. 
   1  2  3  4  5  6  7
   not at all more than any other memory

13. While remembering the event, I feel sweaty or clammy. 
   1  2  3  4  5  6  7
   not at all more than any other memory

14. While remembering the event, I feel knots, cramps, or butterflies in my stomach. 
   1  2  3  4  5  6  7
   not at all more than any other memory

15. While remembering the event, I can see it in my mind. 
   1  2  3  4  5  6  7
   not at all vaguely distinctly as clearly as if it were happening now

16. While remembering the event, I can hear it in my mind. 
   1  2  3  4  5  6  7
   not at all vaguely distinctly as clearly as if it were happening now

17. While remembering the event, I know the setting where it occurred. 
   1  2  3  4  5  6  7
   not at all vaguely distinctly as clearly as if it were happening now

18. While remembering the event, I feel that I travel back to the time when it happened. 
   1  2  3  4  5  6  7
   not at all vaguely distinctly completely

19. My memory is based on details specific to my life, not on general knowledge that I would expect most people to have. 
   1  2  3  4  5  6  7
   not at all in some details in some main points completely

20. While remembering the event, it come to me in words. 
   1  2  3  4  5  6  7
   not at all vaguely distinctly completely

21. As I think about the event, I can actually remember it rather than just knowing that it happened. 
   1  2  3  4  5  6  7
   not at all vaguely distinctly completely

22. Since it happened, I have thought or talked about this event. 
   1  2  3  4  5  6  7
   not at all sometimes many times more than for any other memory
23. This memory has previously come to me “out of the blue”, without my trying to think about it.

24. I believe the event in my memory really occurred in the way I remember it and that I have not imagined or fabricated anything that did not occur.

26. If another witness to the event, who you generally trusted, existed and told you a very different account of the event, to what extent could you be persuaded that your memory of the event was wrong.

27. This memory is significant to my life because it imparts an important message for me or represents an anchor, critical juncture, or turning point.

28. Please date the memory (month/day/year) as accurately as you can. Please fill in a month, day, and year even if you must estimate. If the memory extended over a period of time, report the approximate middle of the period. If you know the month, but not the day, record a 1, 15, or 30 for the beginning, middle, or end of a month. It sometimes helps to date the event by using known dates, such as holidays, birthdays, what year you were in school, etc.

______/______/______
Appendix E

Perspective Description from Exp. 6

In this study we are trying to find out about how individuals visualize events. On the following pages, you will find descriptions of several events. For each description we would like you to think about the best location for visualizing or watching each of these events.

For example, when watching someone shoot a three-point basket on a basketball court, you would most likely want to watch the action from a location next to the shooter, somewhere between the shooter and the hoop. Or when watching someone blow candles out on a cake, you would want to be watching from directly in front of the individual. Another way to think about this is if you were to take a picture or video of a person performing a particular action, where would you want to be in relation to the person you are photographing or videotaping?

First you will find a description of the event we would like you to think about. Next you will be asked to describe the location that would provide the best view of the event. We would like you to use the primary actor in the event (e.g., the basketball player or the person blowing out the candles in the example above) as the anchor point of your description. Therefore, please indicate where you would be located in relation to the actor in the event. Please be sure to describe the relative location, relative height, and relative distance from the actor during the event.

For example, if you were describing your location while watching someone shoot a basketball, you might write “To the player’s right, approximately forty-five degrees in front of the player, eye-level height, approximately 20 feet away.” To describe your location while watching someone blow out candles, you might write “Directly in front of the person, eye-level height, approximately 5 feet away.”

Please make sure that when you describe your location that you describe it in terms of the primary actor in the event. In addition, make sure that you describe your location in terms of location, height, and distance.
Appendix F

Inconclusive Experiments

Experiment 8: Individual Differences in Perspective Use, Imagery Measures, and Spatial Ability Measures

Because several other studies have suggested there may be individual differences in visual imagery use and spatial manipulation abilities, we examined this possibility more fully. In Experiment 3, individuals scoring high and low on the visual perspective questionnaire were invited back to the laboratory to investigate individual differences in visual perspective use. In addition to completing the visual perspective questionnaire a second time, these individuals completed several measures of visual imagery abilities and preferences, as well as several measures of spatial manipulation abilities. These were selected based on past research. Specifically, as there seems to be a relationship between perspective use and memory vividness, with third-person perspective memories being less vivid (e.g., Nigro & Neisser, 1983; Robinson & Swanson, 1993), it was hypothesized that individuals primarily using third-person perspectives would have less vivid imagery. These individuals should also be more able to manipulate their visual imagery. As previous research has suggested spatial manipulation may account
for the use of first-person perspective (Lorenz & Neisser, 1985), it was expected
individuals tending to use first-person perspective would score higher on measures of
spatial manipulation similar to those used by Lorenz and Neisser (1985), such as test
requiring the manipulation of objects. However, it is also possible that constructing a
third-person perspective requires the transformation of ones’ spatial representation of a
past event. Therefore, it was expected that third-person perspective preferring
individuals would score higher a sense of direction scale and a test of perspective-taking
abilities, as these individuals would be better able to transform their spatial
representations.

Methods

Participants

High and low responders on the visual perspective questionnaire (from
Experiments 1 and 2) were asked to return to the laboratory. Participants were
considered high responders, or third-person preferring, if their average perspective
erating across the five time periods was greater than 5. Participants were considered low
responders, or first-person preferring, if their average perspective rating was less than 3.
Thirty-eight third-person preferring individuals (mean rating = 5.68, SD = 0.07) and
thirty-five first-person preferring individuals (mean rating = 1.93, SD = 0.10)
participated. The mean age of the entire group was 18.91 years old and 44 participants were female. Demographics for the two groups were as follows: first-person preferring mean age = 18.94, 17 females; third-person preferring mean age = 18.73, 27 females.

Procedures

Participants first completed the visual perspective questionnaire (VPQ). Therefore, participants provided VPQ scores for two sessions, Session 1 being the initial screening in Experiments 1 and 2, and Session 2 being the current session. They then completed the following measures in one of 4 pseudo-randomized orders:

Vividness of Visual Imagery Questionnaire. This questionnaire measures the reported vividness of individuals’ visual imagery (Marks, 1973). This 16-item test asks participants to visualize several scenes and rate the vividness of particular aspects of each scene. For example, participants are asked to visualize a familiar shop and rate the vividness of specific details when imagining standing across the street, near the entrance, and at the counter of the shop. Individuals are asked to rate their images for each item with their eyes open and then return to the beginning and rate each item with their eyes closed. Ratings are made on a 5-point scale (1 = perfectly clear and vivid, 5 = no image at all). A composite score was created by summing all responses across all items. Therefore, lower scores indicate more vivid images.
Absorption Scale. This scale measures an individuals’ “disposition for having episodes of total attention that fully engage one’s representational i.e., perceptual, enactive, imaginative, and ideational resources” (Tellegen & Atkinson, 1974, pg. 268). Participants are asked to decide whether 34 statements apply to themselves, responding using “True” or “False.” Items answered as “True” were scored as 1 and 0 for “False” responses. A composite score was created by summing responses to all items. Therefore, higher scores indicate more absorption.

Memory Style Questionnaire. This 15-item questionnaire examines whether individuals are visualizers or non-visualizers (McConkey & Nogrady, 1986) and is a group version of the Visual Elaboration Scale (Slee, 1980). Individuals are asked to think of four different objects and then are asked whether they were aware of several visual details of each object. Answering in the affirmative to indicate awareness of a particular detail was scored as a 1, whereas answering negatively was scored as a 0. A composite score was created by summing responses to all items. Therefore, higher scores indicate greater visualization.

Controllability of Visual Imagery Questionnaire (CIVQ). This 12-item scale examines how well individuals can control certain aspects of their visual images (Gordon, 1949; Richardson, 1969). Individuals are asked to visualize a car and then asked to manipulate
their image in several ways, including changing the color of the car, visualizing it crashing into a house, and visualizing it as an old, dismantled car in a car cemetery.

Individuals rate their ability to visualize these different scenarios as “Yes,” “Unsure,” and “No.” These were coded as 2, 1, and 0, respectively. A composite score was created by summing across all items. Therefore, higher scores indicate greater levels of imagery control.

*Card Rotations Test.* This test comes from the Spatial Orientation Factor of the Kit of Factor-Referenced Cognitive Tests (Ekstrom, French, & Harman, 1976), testing how well individuals can rotate and match two similar items. It is a two-part test with each part containing 10 items. Individuals are given 3 minutes for each of the two parts. In each item, there is a figure on the left of a solid line, or the target item, and 8 figures to the right of line. These 8 figures are either rotated versions of the target item, or rotated mirror-reversed versions of the target item. Participants are asked to determine whether the target item could be rotated to match each of the 8 figures on the right. Thus, an individual makes a total of 160 responses (i.e., 2 parts with 10 items, each with 8 sample-to-target matches). Participants are given one point for every correct sample-to-target match.
**Paper Folding Test.** This test comes from the Visualization Factor of the Kit of Factor-Referenced Cognitive Tests (Ekstrom et al., 1976). This test not only requires the manipulation of an entire object, as in tests from the Spatial Orientation Factor (see above), but also the restructuring of components of the object (Ekstrom et al., 1976). This is a two-part test with each part containing 10 items. Individuals are given 3 minutes to complete each part. In each item, participants are shown an item on the left of a solid line and five items on the right of a solid line. The item on the left depicts a folded piece of paper with one or more holes punched in the paper. Individuals are asked to pick the figure on the right that accurately depicts where the holes would be when the piece of paper depicted on the left is unfolded. Participants made a total of 20 responses and were given one point for every correct response.

**Group Embedded Figures Test (GEFT).** The GEFT is a test of field dependence-independence (Witkin, Oltman, Raskin, & Karp, 1971). It is a 25-item assessment, in which participants are presented with line drawings of complex figures and asked to find an embedded simple figure (such as a triangle or parallelogram) within the more complex figure. Participants were given a point for every correct response.

**Redrawn Mental Rotations Test.** This test examines individuals’ ability to rotate objects, which in this test are line drawings of three-dimensional cube figures (Peters,
Laeng, Latham, & Jackson, 1995; Vandenberg & Kuse, 1978). The test contains 24 items, which consist of a target figure and 4 sample items. Two of the 4 sample items are the same figure as the target figure, but are rotated in three-dimensional space. The other 2 sample items are similar, but non-matching cube figures. Participants are asked to mark the 2 sample items that match the target figure. They are given a point only when they mark both sample items correctly.

_Santa Barbara Sense of Direction Scale (SBSOD)._ The SBSOD is a 15-item questionnaire, which asks individuals’ to rate their own spatial and navigational abilities (Hegarty, Richardson, Montello, Lovelace, & Subbiah, 2002). Items include: “I am very good at giving directions” and “I don’t have a very good ‘mental map’ of my environment.” Participants rate their agreement on a 7-point scale (1 = strongly agree, 7 = strongly disagree). Therefore, lower scores indicate a better self-reported sense of direction.

_Computerized Perspective Taking Ability Test (CPTA)._ This test measures individuals’ ability to orient themselves in space (Kozhevnikov & Hegarty, 2001). Individuals are shown a two-dimensional array of objects on a screen and asked to imagine taking a particular perspective in the array. They are then asked to indicate the direction of a target object from this imagined perspective. Both their response and
reaction time are used to calculate an overall score. Higher scores indicate better perspective-taking ability.

**Results**

Examining individuals’ perspective taking scores across testing sessions, both groups showed some regression toward the mean at the second testing (first-person group mean rating = 2.49, SD = 0.18; third-person group mean rating = 4.72, SD = 0.20) with ratings at the two time periods being significantly different from one another within in each group (first-person: t(34) = 4.19; third-person: t(37) = 4.36). Change in perspective ratings across time were approximately twice as large for the third-person group compared to the first-person group. Participants ratings were also highly correlated across the first and second testing, r(76) = .69. However, examining the correlation across test days within a particular group revealed a significant correlation within the first-person preferring group, r(33) = .44, but no significant correlation within the third-person preferring group, r(35) = -.07. These significant findings are discussed in full in Experiment 3, but without discussing the imagery tests. As individuals always completed the visual perspective questionnaire first, we felt it appropriate to separate the discussion of the significant individual differences findings from the non-significant imagery and spatial ability findings presented here.
Next, scores on visual imagery measures and spatial measures were examined across first-person and third-person preferring groups. To do this, t-tests were calculated comparing scores on the visual imagery and spatial ability measures across first-person and third-person preferring groups, based on their perspective ratings during their first session. Using a p-value of .0056 to control for multiple comparisons revealed no significant differences across the two groups for any measure. Lowering the threshold to .05, revealed one significant difference for the Santa Barbara Sense of Direction Scale ($t(71) = -2.21$), such that first-person preferring individuals ($M = 60.40, SD = 6.32$) rated their sense of direction as better than third-person preferring individuals ($M = 63.55, SD = 5.86$). No other comparisons approached significance, with the next largest t-value being 1.22 for the Mental Rotations Test.

As there were some individuals who did not show a robust perspective preference during the second session, or who changed perspective preferences across the two sessions, we did the same comparison excluding these individuals. Using the same scores to define first- and third-person preferring individuals (i.e., less than or equal to 3 for first-person, greater than or equal to 5 for third-person), all participants not showing a preference or switching preferences at the second session were excluded. This produced 29 participants in the first-person preferring group and 18 participants in
the third-person preferring group. T-tests were again calculated across the two groups for all visual imagery and spatial ability measures, revealing a significant difference in Memory Style scores across the groups ($t(45) = 2.95$). First-person preferring individuals had higher visualization scores ($M = 10.62$, $SD = 2.26$) than third-person preferring individuals ($M = 8.72$, $SD = 1.93$). This was significant at the $p < .0056$ level. No other comparisons were significant when using a $p$-level of .05.

Discussion

It does not seem that individual differences in perspective use relate to differences in the vividness or controllability of one’s visual imagery, nor the ability to spatially manipulate objects or the ability to adopt different perspectives within a spatial array. In terms of visual imagery, the differences in vividness across first- and third-person perspective memories observed in other studies do not seem to be related to individual differences in imagery, as measured by the scales used here. In terms of spatial abilities, the ability to take a third-person perspective does not seem to be related to individuals’ perspective-taking ability or their ability to mentally manipulate objects. However, it is possible that other measures of visual imagery and spatial abilities are related to perspective use. In particular, perspective-taking tests with a memory component may be related to our measure of perspective use, as compared to the
current perspective-taking test requiring transformation within a static array available to participants during testing. From the current experiment it does not seem that perspective use during autobiographical memory retrieval is directly related to individual differences in vividness or controllability of visual images, or the ability to spatially manipulate objects or perspectives.

**Experiment 9: Attempting to Manipulate Perspective Using Photographs**

The majority of studies investigating perspective do not experimentally manipulate individuals’ perspective use. Rather, studies primarily ask individuals to recall different types of memories and then examine the accompanying perspective. A few studies have directed participants to use particular perspectives and then examined how these memories differ (e.g., Berntsen & Rubin, 2006; McIsaac & Eich, 2002). There is only one study to manipulate perspective without direct instruction to use a particular perspective. Individuals were instructed to attend to either concrete or emotional details during recall (Nigro & Neisser, 1983). Those who attended to concrete details were more likely to use third-person person perspective, whereas individuals attending to emotional details were more likely to use a first-person perspective.
However, to fully understand perspective and to determine the characteristics affecting perspective at recall, it is important to develop additional ways to manipulate perspective use. One common source of alternative perspectives is photographs. For example, when on a vacation, I might take a picture of a monument. This photograph would be from a first-person perspective and every time I looked at this photograph I would reinforce this first-person perspective image. However, while on vacation I might ask a friend to take a photograph of me while standing in front of a monument. In this case, the photograph would be taken from a third-person perspective. This real world example of alternate sources of perspective information, as well as the use of photographs by others to manipulate event memory (Koutstaal, Schacter, Johnson, Angell, & Gross, 1998; Schacter, Koutstaal, Johnson, Gross, & Angell, 1997; Wade, Garry, Read, & Lindsay, 2002), suggested a promising way to manipulate perspective at recall in an ecologically valid manner. Using photographs taken from either a first-person or third-person perspective, we examined the effect of photographs on perspective use at retrieval.

Methods

Participants
Thirty Duke University undergraduates were tested in the final version of this experiment (mean age = 19.14, 18 females). Individuals were paid $10 per hour for participation.

**Materials**

During the initial session, individuals were tested in two separate rooms. In one room, a small web camera was situated in front and to the right of participants’ during the experiment. In the second room, a small web camera was attached to the top of a camera tripod with a piece of rigid wiring. This allowed the camera to be positioned near participants’ heads in order to closely mirror their first-person perspective experience.

Testing consisted of the completion of twelve different tasks. These tasks included: folding t-shirts and placing them in a bag, pulling nails out of a piece of wood with a hammer, copying a passage from a book, looking up dates in a calendar and writing down the corresponding days of the week, pouring dishwashing liquid into small bottles, transferring pieces of dry pasta into a bowl with tongs, weaving wire through a grid, building a house of cards on a rubber mat, drawing items depicted on several rubber stamps, lining up Skittles by color, wrapping a box of tea in wrapping paper, and alphabetizing names on index cards.
Procedures

Testing consisted of two sessions. During the first session, individuals were told they would be completing several simple tasks during which pictures would be taken from small web cameras in each of the rooms. Participants were told they would work on each task for approximately 45 seconds and informed when they should stop. They were shown the camera locations in each room and seated in one of the two rooms. The experimenter then brought the items required for the first task (all testing items were hidden from the participants’ view at all times), provided instructions on how to complete the task, and instructed to begin the task. While completing the task the experimenter acquired photographs via a computer located in a room adjacent to the testing rooms. After completing six of the tasks in this fashion, participants were then moved to the second room and completed the additional six tasks. Participants completed the tasks in one of 8 pseudo-randomized orders with the order of the room they started in (i.e., first-person or third-person camera perspective) being counterbalanced.

After a delay of 2 weeks participants returned to a second location for the second session. This second location was used to prevent re-exposure to the first session environment prior to recall, which could influence retrieval perspective. At this time,
participants were shown 10 photographs of each of the tasks they completed.

Photographs of the 12 tasks were viewed in the same order as the tasks were completed in the first session. However, the first photograph acquired for each task was presented in order, followed by the second photograph, then third, and so on until all 10 photographs were viewed for each of the 12 tasks. Each photograph was presented for 3 seconds, during which time participants were instructed to rate the photograph’s composition. All stimuli and responses were presented and recorded using the computer program DirectRT (Jarvis, 2002).

After viewing the photographs, participants were asked to recall each event completed during the previous session. Participants were prompted with a particular item and asked to recall what they had done with each item. For example, they were told, “You were given a hammer. What did you do with the hammer?” After recalling each event, participants were asked to describe the perspective they used when recalling each event, as well as rate several phenomenological aspects of each event. Of interest here were participants’ perspective descriptions and perspective ratings (i.e., did you visualize the event from your own eyes, did you visualize it as an observer), which were included in the phenomenological ratings.
This design was used after piloting several different versions of the study. These included variations in the number of photographs viewed (i.e., 5, 8 or 10), variations in the delay between sessions (i.e., 1 or 2 weeks), and varying the session during which participants viewed the photographs (i.e., first session after completing tasks or second session before recalling tasks). As other variations in the protocol were not producing robust differences in perspective use at recall, the combination we thought most likely to produce a difference was used (i.e., 10 photographs, 2 week delay, viewing pictures at second session prior to recall).

**Results**

To examine changes in perspective at retrieval, participants’ perspective descriptions were coded as first-person or third-person by two independent coders and discrepancies were resolved by the author. Using a paired t-test, the total number of third-person perspective descriptions provided by each individual was then compared across tasks photographed from a first- and third-person perspective. There was no significant difference in the number of third-person descriptions \((t(28) = -1.18)\). Tasks for which participants viewed a third-person perspective photograph \((M = 2.72, SD = 2.28)\) did not produce significantly more third-person descriptions than did first-person perspective tasks \((M = 2.41, SD = 2.06)\). To further examine differences in perspective
use at recall, participants’ “own eyes” and “view as an observer” ratings were examined across tasks photographed from a first- or third-person perspective using separate paired t-tests. There were no significant differences in “own eye” ratings ($t(28) = 0.85$) across first-person ($M = 5.12, SD = 1.46$) and third-person ($M = 4.95, SD = 1.29$) photographed tasks. There were also no significant differences in “view as an observer” ratings ($t(28) = -1.57$) across first-person ($M = 2.68, SD = 1.49$) and third-person ($M = 3.05, SD = 1.31$) photographed tasks. While these differences are not significant, it is important to note that all means deviate in the expected direction. That is, third-person photographed tasks were more often described as third-person, rated as coming less from one’s “own eyes,” and rated as more being visualized as “an observer,” even though these differences were not significant. This suggests an adaptation of the current technique may provide a method for experimentally manipulating perspective in the laboratory.

**Discussion**

The current study was unable to manipulate perspective use at retrieval using photographs taken from differing perspectives. However, the results provide promising results. While there were no significant differences, changes in perspective were in the expected direction for both descriptions and ratings. The current results suggest
viewing third-person perspective photographs may also affect the recall of tasks for which a first-person perspective photograph was taken. An average of approximately 2.5 tasks were described as third-person for both types of tasks (i.e., first- and third-person photographed tasks). Therefore, it does not seem that the manipulation is not working, but that seeing third-person photographs affects the retrieval of all tasks. Therefore, it may be necessary to use a between-subjects rather than within-subjects design to experimentally manipulate perspective.

Other manipulations may help, as well. For example, increasing the delay between sessions may allow the photographs to have a larger effect on perspective use at retrieval. If visual imagery from the initial encoding session is less vivid or detailed, the perspective introduced during the second session may have a greater effect. It may also be helpful to show participants all 10 of the photographs taken for a particular task consecutively, rather than spaced (i.e., showing the first photograph for all 12 events, then the second, then third, etc.). Seeing all 10 photos of a particular task may allow the participant to build a more stable first- or third-person representation. It was thought spacing would do this by increasing the number of separate exposures of each perspective. However, spacing may have caused third-person perspective representations to affect tasks presented with a first-person perspective.
It is possible making these changes will produce a significant difference in perspective use at retrieval. If they do not, it is important to continue exploring ways of experimentally manipulating perspective use in order to further our understanding of the function of perspective during retrieval. The ability to manipulate perspective would help answer the question of whether changing perspective leads to vividness and emotional intensity rating differences or whether differences in the types of memories recalled drive the perspective being used. In addition, experimental manipulations of perspective would help answer the question of whether or not using different perspectives affects memory accuracy.
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Biography

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