

**Why do we Remember Certain Memories of Fiction? Exploring the Phenomenological  
Qualities and Functional Significance of Rehearsed Memories of Fiction.**

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### **Abstract**

Why do we remember certain scenes from fictional content and not others? How do fictional memories compare to personal memories? There has been little research examining the components and function of fictional memories (Yang et al., 2022). Furthermore, there is little research that explores the role of rehearsal in the context of memories of fiction. We aim to answer the following research questions : (1) Are fictional memories qualitatively different from personal memories? and (2) Can differences in rehearsal explain observed differences between fictional and personal memories? We recruited 40 undergraduates to participate in an online, mixed-subject design research study. One group of participants was asked to report two fictional memories, a rehearsed fictional memory and a non-rehearsed fictional memory. The other group was asked to follow the same procedure but to, instead, report two personal memories. Participants were then asked to report on the phenomenological qualities of the memories—measured by the AMQ questionnaire (Rubin et al., 2003)-- and the functional attributes of the memory—measured by both the TALE questionnaire (Bluck et al., 2005) and the CES measure (Bernsten & Rubin, 2006). Using mixed effects ANOVA models, we found that rehearsal is strongly associated with heightened phenomenological and

functional properties of memories. For phenomenology, we found that memory type mattered less than rehearsal. For function, we found that fictional memories tended to be less functionally significant than personal memories. All in all, our research contributes to the literature that certain memories of fiction can be considered similar to other forms of autobiographical remembering. Lastly, our research illustrates the notion that rehearsal is an important variable to consider when studying memories of fiction and that higher degrees of rehearsal allow memories of fiction to act in more similar ways to personal memories.

Keywords: memories of fiction, autobiographical memory, rehearsal, memory function, fictional information, fiction-reality distinction

**Why do we Remember Certain Memories of Fiction? Exploring the Phenomenological****Qualities and Functional Significance of Rehearsed Memories of Fiction.**

Remember that scene from *Casablanca* when Rick Blaine lets go of the love of his life and famously tells her “Here’s looking at you kid”? Why do we remember and think back to this iconic fictional scene? How and why do we remember and talk about fictional scenes in the first place? Furthermore, when thinking back to *Casablanca*, why would your typical moviegoer forget to recall the scene towards the beginning of the film when Ugarte and Rick sit down together at the bar, conversing about Ugarte’s sympathy “for those 2 German Couriers.” Why is one scene from the same piece of fictional media more memorable than the other? All in all, why are some scenes of fiction better remembered and more relevant to individuals than others? In *Casablanca* do we remember that iconic last love scene more because we generally think back to this scene and talk to others about it more so than the “2 German Couriers” scene? We have seen that for personal memories rehearsal is highly associated with memory vividness and retention (Rubin & Kozin, 1984; Svoboda & Levine, 2009; Dark & Loftus, 1976); thus it is reasonable to presume that rehearsal, perhaps, impacts personal and fictional memories in similar ways.

In this work, we hope to answer these questions by studying memories of fiction through an autobiographical memory framework, contributing to the literature that certain memories of fiction can be considered similar to other forms of autobiographical remembering (Yang et al., 2022). We predict that by studying the ways rehearsal impacts the phenomenology and functions of personal memories and memories of fiction, we can gain a more nuanced understanding of the specific memory

qualities that characterize salient memories of fiction. We predict that rehearsed memories, regardless of memory source, increase memory functions and strengthen memory phenomenology.

### **Why is Studying Fiction Important?**

In this work, we define fiction as a creative work that tells a story that does not come solely from real life. Another important component of this definition is the fact that when people read a fictional work, they know the work is fictitious (e.g., they know that they are reading a novel or watching a film that deviates from reality). It is also notable to note that there is a range of fictionality when it comes to studying works of fiction. Some works of fiction contain segments of reality—such as a historical fiction novel like Victor Hugo's *Les Misérables* that contains nonfiction and fiction content—while others are more detached from reality—such as a fantasy movie set in a highly distinct fantastical world as seen in Disney's animated classic *Alice in Wonderland*. Regardless of this degree of fictionality, in this work, we consider a fiction source as one that contains some degree of fictionality. In the present study, we will also focus on studying fictional events that come specifically from books, movies, TV shows, video games, short stories, plays, and poetry (Marsh & Yang, 2020).

With this definition in mind, people spend a remarkably large portion of their lives engaging with fictional stories. With the rise of new technologies and shifts in the entertainment industry, the world of fiction has become more accessible. From listening to fictional works in audiobook form to the ease of watching free short films on YouTube, we can access an infinite amount of fictional content at our fingertips. However, individuals' avid consumption of fiction is not a recent phenomenon. We have seen through history that human beings have relied on storytelling and narratives (Nelson, 2003). Complex narratives serve a crucial value in human society, leading to the creation of religious myths

and heroic epics (Nelson 2003; Carrithers 1991). Furthermore, these fictional fables are easily passed on through generations through oral history methods, revealing the power of remembering and communicating fictional events to others (Rubin, 1995).

Moreover, recent research has demonstrated the role of fiction in developing social-cognitive skills (Appel & Richter, 2010; Green, 2004; Van Laer et al., 2014; Kidd & Castano, 2013; Gerrig, 2023). Kidd & Castano (2013), for example, ran five experiments showing that reading literary fiction leads to better performance on both the affective and cognitive Theory of Mind (ToM) tests. In their first experiment, participants were randomly assigned to read one of six short texts—three literary fiction and three nonfiction stories; after they read these stories, they completed a false-belief test as a measure of cognitive ToM and an affective ToM test. The study demonstrated that participants in the fiction condition scored higher on both assessments, suggesting that reading literary fiction can offer us short-term, social-cognitive effects (Kidd & Castano, 2013). Furthermore, we can also turn to correlational studies to further examine the relationship between lifetime reading and empathy.

Mumper & Gerrig (2017)'s meta-analysis investigates the correlations between measures of lifetime reading habits for fiction with measures of empathy and theory of mind, revealing that lifetime fiction reading, measured by the ART measure scores (Author Recognition Test-Revised) is associated with higher levels of empathy, assessed by the Reading the Mind in the Eyes test scores (Mumper & Gerig, 2017). Theorists have proposed that this connection between the ToM and narrative function is explained by individuals' tendencies to simulate what characters are thinking and feeling as they're delving into a fictional narrative (Currie, 1995; Mar & Oatley, 2008; Oatley, 2016; Mar, 2018). Unlike nonfiction works, fictional works present characters, stories, and the setting of a story in a way that

allows readers to become transported and, hence, change through reading the fictional story (Bal, Butterman & Bakker, 2011; Zwaan, 2004; Bal & Veltkamp, 2013).

Additionally, one can gain factual knowledge and semantic information from reading and watching fictional works. This framework is supported by the early work of McDaniel & Einstein (1989) who proposed that memory and learning performance are inherently linked and that educational text types directly modulate this relationship (McDaniel & Einstein, 1989). This material-appropriate processing (MAD) framework explains why there are differences in narrative and expository processing (McDaniel & Einstein, 1989; Wolfe & Mienko, 2007). McDaniel & Einstein (1989) found that narratives allow further extraction of relationships within the text, whereas expository texts do not readily afford the extraction of such information (McDaniel & Einstein, 1989). This school of thought has inspired future research that has demonstrated that although narrative and expository processing differ concerning the integration of text content and prior knowledge, it's clear that readers inherently learn from narrative works (Wolfe & Mienko, 2007; Appel & Ritcher, 2007).

We can see this in works in the educational research space, exploring the role of fiction in teaching. Marsh et al. (2003) assigned undergraduate participants to read three different fictional stories and then were tasked to answer general knowledge questions. It was found that participants consistently used facts found in these fictional stories; in fact, participants scored the best in the general knowledge tests that assessed the content discussed in the fictional stories (Marsh et al., 2003). This tendency to rely on fictional story facts on a general knowledge test, in addition to one's prior knowledge, illustrates how certain fictional works can lead to an “illusion of truth,” allowing readers to incorporate facts from fictional works into their semantic knowledge framework (Marsh et al., 2003). It's no surprise that this

“illusion of truth” can lead to the misinformation effect when engaging with fictional works even when the readers know the work they are reading or watching is a work of fiction (Marsh et al., 2003; Marsh & Fazio, 2006). Marsh & Fazio (2006) found that when subjects read short fictional stories that contained misinformation, subjects were more likely to get fewer questions correct and produced more target misinformation answers (Marsh & Fazio, 2006).

To summarize, we have seen that fiction is a largely important part of our history and lives. Its impact can be seen in its social-cognitive effects and its application in education. Even though there is a plethora of research that explores how we gain semantic knowledge from fiction, little is known about the episodic and visual memories we encode when engaging with works of fiction.

### **Studying Fiction through an Autobiographical Memory Framework**

In order to study how we encode episodic memories from works of fiction, I propose utilizing an autobiographical memory framework. As described by Rubin & Umanath (2015), autobiographical memories define an area of study encompassing what individuals remember about their lives or imagine as occurring in their futures. Essentially, autobiographical memories provide a sense of identity for individuals and can include memories of both events and knowledge (Rubin & Umanath, 2015; Bernsten & Rubin, 2006; Kopelman et al., 1989; Rubin, Schrauf, & Greenberg, 2003; Tulving, 1972). Furthermore, autobiographical memories are also defined by their unique phenomenology—the specific qualities that describe how an episodic memory is remembered (Mitchell 2016; Tulving, 1985; Coane et al., 2021). Autobiographical memories are notable for their phenomenological properties of reliving, vividness, and belief (Rubin, Deffler & Umanath, 2019). Moreover, autobiographical memories are not only notable for their vivid remembrance but also for their functional significance. It has been

demonstrated in several studies that autobiographical memories serve directive (planning and decision-making), social (developing and maintaining relationships), and self (developing a continuous sense of self) functions (Olivares 2012; Bluck, 2003; Pillemer, 2003; Bluck et al., 2005; Wilson & Ross, 2003). In recent years, our definition of what makes a memory “autobiographical” has shifted in the cognitive psychology field. Recent research has proposed that one’s autobiographical record can contain false memories (Loftus & Pickrell, 1995), vicarious memories (Sheen, Kemp & Rubin, 2001), episodic future thinking (Szpunar, 2010) and episodic counterfactual thoughts (De Brigard et al., 2016 ; De Brigard et al., 2017; Schacter et al., 2015 ). Consequently, scholars in the field now propose that episodic memories that lack a sense of “self”—also referred to as agency-- and a sense of “belief” can also be considered part of our autobiographical record (Yang et al., 2022).

But why would we want to apply this type of autobiographical memory framework when studying memories of fiction? Why would our memory of the last scene of *Casablanca* between Rick Blaine and Ilsa Lund be similar to the ways we remember personal events from our own lives when we have bidden farewell to someone? To begin with, both are episodic memories, in that they contain spatial layout (Rubin, Deffler & Umanath, 2019) and both elicit some visual imagery and emotional reactions (Yang et al., 2022). Research shows that these two types of memories activate similar brain networks (Zwaan, 2004; Speer et al., 2009). Speer et al. (2009) demonstrated this in their ground-breaking study by using MRIs to track participants' brain activity when reading four different narratives taken from the book *One Boy's Day*. The results demonstrate that brain regions involved in navigating spatial environments and manually manipulating objects from the real world were activated at points when those specific aspects of the narrative were changing (Speer et al., 2009). Furthermore,

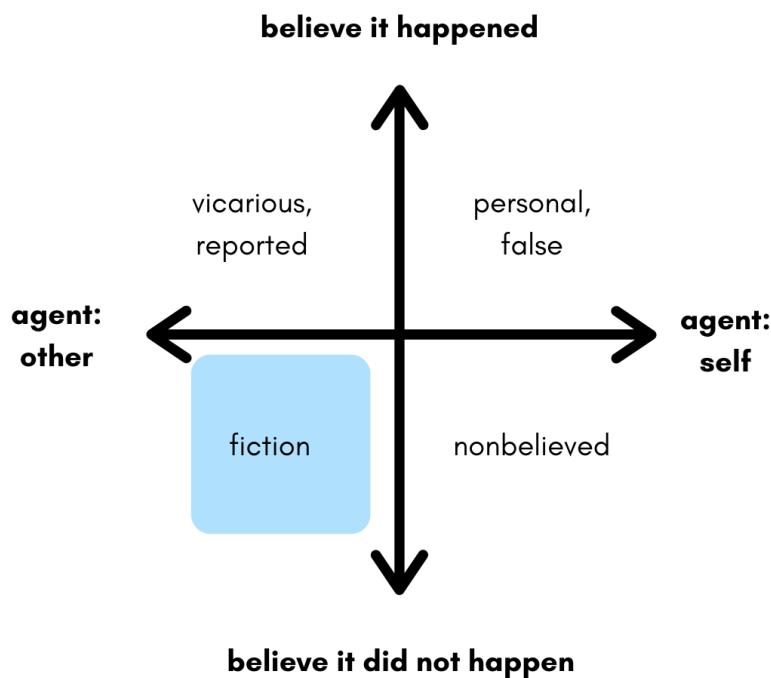
psychologists have long used stories as analogs for autobiographical memories, from Bartlett's (1932) classic work on remembering the Native American tale "War of the Ghosts," to 1970s work on eyewitness testimony, where cognitive psychology researchers utilized fictional video scenes as a proxy for real-life crime scenes (Loftus et al., 1978; Powers et al., 1979), and to current-day neuroscience work where neuroscientists utilize fictional stimuli to stimulate real-life perceptual experiences (Chen et al., 2017; Garcia et al., 2010; Lee, Bellana & Chen, 2020). Evidently, it is clear that a lot of our knowledge of human cognitive memory comes from research that has used narrative stimuli, revealing that fiction has comparable attributes to real-life events as seen by the generalizability of these findings.

Secondly, as explained previously, while traditionally autobiographical memories have been limited to personally experienced memories, recent work has highlighted that personal experience is not necessary (see Figure 1). Our broadened characterization of what makes a memory an "autobiographical memory" allowed Yang et al. (2022) to demonstrate how memories of fiction work in similar ways to personal episodic memories, in terms of phenomenology and function. Yang et al. (2022) argue that memories of fiction can be as vivid and serve some of the same functions as autobiographical personal memories, proposing that some memories of fiction could be considered part of the autobiographical record (Yang & Marsh, 2020). Thus, in this work, we argue that fictional memories are of a similar kind of autobiographical remembering that lack this sense of "self" and "agency" (see Gander et al. (2023) for a different perspective).

In the following sections, we will review evidence on phenomenology, function, and distribution over time of memories of fiction before identifying a factor that may explain the variation found between personal and fictional memories.

**Figure 1**

*Integrating Memories of Fiction in the Autobiographical Memory Framework: Two Selected Dimensions of Event Memories*



*Note.* This model is adopted from Yang et al. (2022)'s theoretical model: "Delianating Memories of Fiction: Two Selected Dimensions of Event Memories."

**Similarities between Personal Memories and Memories of Fiction**

Fictional and autobiographical memories are similar in their phenomenology, function, and time distribution. First, when looking at phenomenology, it has been indicated that memories of fiction and personal autobiographical memories are similar when looking at the phenomenological characteristics of negativity, belief, visual imagery, auditory imagery, the strength of emotions, the intensity of emotions, rehearsal, and positivity (Yang et al., 2022). Similar reports have also been demonstrated with the “reliving” aspect of memories of fiction, albeit at lower levels when compared to personal memories (Yang et al., 2022). This can explain why in laboratory studies we see that participants exhibit similar visual detail, visual perspective, and emotional responses when reading a fiction story versus a non-fiction story (Gendler & Kovakovich, 2005; Hartrung et al., 2017; Gander & Gander, 2022). In one specific study, Hartung et al. (2017) had participants read different short stories that were labeled differently: some were labeled as fictional while others were labeled as factual. The study found no evidence that knowing that a story is based on true or fictional events affects the experiential aspects of reading, visual perspective, mental imagery, or memory of events in the stories (Hartung et al., 2017). Similarly, Yang et al. (2022) found similar findings when examining event memories that were frequently rehearsed, discovering that both rehearsed personal memories and memories of fiction were remembered with similar levels of recollective vivacity (Yang et al., 2022).

Likewise, the time distribution of personal and memories of fiction also works in similar ways. This is seen with the reminiscence bump and the recency effect: cognitive memory phenomena that have been observed in both memories of fiction and personal memories (Jansen et al., 2007). Starting with the reminiscence bump (RB): a phenomenon that describes how individuals possess a

disproportionate number of autobiographical memories in adults over 40, dating from youth and early adulthood (Koppel & Rubin, 2016). A possible cause of this is explained by the resampling theory, stating that at a certain age, people start reminiscing about events from their young adult period (Rubin et al., 1986). Jansen et al (2007) investigated whether this phenomenon is replicated when asking adult participants to name their favorite books, movies, and records. Jansen et al. (2007) found a clear RB across these different media types, suggesting that memories that come from media sources are stored best between the ages of 11 and 25, similar to personal event memories (Jansen et al., 2007). Furthermore, Jansen et al. (2007) also found evidence of the recency effect—the phenomenon in which people remember more recent moments than non-recent moments—across these three distinct media types as well (Jansen et al., 2007). However, with this finding one could claim that a disproportionate number of favorite media consumed during young adulthood is not a proxy for remembering actual fictional scenes better during young adulthood which would show a stronger comparison to the RB as explored in personal memories. Instead, we should consider how people remember event memories from specific works of fiction. This question has been addressed by Copeland, Radvansky, & Goodwin (2009) where the experimenters assigned participants to read *The Stone Diaries* by Carol Shields: a ten-chapter novel that follows the life of the character Daisy Goodwill chronically. Copeland, Radvansky, & Goodwin (2009)'s findings reveal that participants had a better memory of chapters 3 and 6: which refers to the time frame in the story whether the protagonist is about 20 years old—meaning that readers tend to have better memories of character life events that come from the young adulthood period that is also seen in the classic RB.

Functionally, memories of fiction may also share similar properties to personal memories, as seen by the fact that memories of fiction, like personal memories, can be used for directive, self, and social functions (Marsh & Yang, 2020; Bluck et al., 2005). The early work of Albert Bandura, for example, demonstrates how fiction can drive social and behavioral change. Bandura applied his social learning theory, initially developed through his classic Bobo Doll experiments, to conduct global fieldwork research testing whether individuals could learn from fiction in similar ways to how people learn, socially, from others (Bandura, 2006).

In Mexico, Bandura conducted a study where he collaborated on the creation of a soap opera focused on a self-help group. The goal was to inspire viewers to join national reading programs, resulting in a significant surge in program enrollments during the series' airing (Bandura, 2006). Furthermore, we see further evidence of the behavioral and directive change yielded by fiction by the impact of the 1993 "Twende na Wakati" radio drama in Tanzania which led to increased safe sex practices in the country during the times of the AIDS epidemic (Svenkerud et al., 1998). Yang et al. (2022) demonstrated that memories of fiction serve similar functions to personal memories, albeit at lower levels. In Yang et al.'s (2022)'s first study where participants were tasked with scoring the functional significance of a rehearsed memory of fiction and a rehearsed personal memory, participants endorsed the use of memories of specific fictional events for functions classically ascribed to autobiographical remembering (Yang et al., 2022). Although participants in the Yang et al. (2022) study gave lower endorsements for memories of fiction compared to personal memories for the directive, self, and social functions. However, this pattern should not be seen as a set stone in rule but, instead, should be interpreted as a tendency. Fictional memories, like counterfactual and vicarious

memories, tend to be less functionally significant than personal memories but it is possible for them to be as significant as personal memories in certain cases.

### **Differences between Personal Memories and Memories of Fiction**

However, there is another school of thought that proposes that memories of fiction still share very important distinctions from personal memories. Gander et al. (2023) proposes, for example, that memories of fiction should be considered as an entirely separate type of memory that works differently from personal memories (Gander et al., 2023). In this framework, fictionality should be considered an additional fourth dimension of Rubin (2022)'s conceptual memory model, in addition to the dimensions of scene construction, explicit process, and self-referential processes (Gander et al., 2023; Rubin, 2022). Unlike Yang et al. (2022)'s model, Gander et al. (2023) proposes that fact and fiction are distinguished in memory.

This viewpoint is supported by neurological research that suggests differences between fact and fiction. Abraham et al. (2008) found that when people read sentences concerning real people, their neural activation of episodic memories is heightened while when people read sentences with fictional characters, semantic memory is more involved. Altman et al. (2014) found similar findings, demonstrating that when participants read a short story labeled as factual, they visualize the story as a simulation of actions and outcomes, while when reading a short story labeled a fiction, participants visualize the events with a stronger focus on the “what might have happened” aspect and character actions. However, these findings are inherently challenged by notable findings by Speer et al. (2009) who, as stated previously, found that the same regions used to navigate real-life spatial layouts match those activated when reading fictional stories. These contrasting findings demonstrate how the

differences between processing fiction and real life are still not clear and that their discrepancies and similarities might differ on a case-by-case basis.

Additionally, when looking at emotionality, Gander & Lowe (2023) showed in their study that there seems to be an interaction between fictionality and story emotional valence, where negative fictional stories are rated clearer. In a controlled laboratory setting, participants in the study remembered fictional negative stories better than factual negative stories (Gander & Lowe, 2023). The mechanisms behind this are still not fully understood; possible theories propose that the fading affect bias works more pronouncedly in personal memories (Skowronski et al., 2014) and that individuals are more engaged and effectively “transported” by negative fictional stories rather than positive ones (Gander & Lowe, 2023; Green & Brock, 2000). However, it can be argued that this phenomenon is more closely explained by rehearsal rather than the source–fiction or real life– of the event. After all the fading effect bias (FAD)– a phenomenon in which the emotional intensity associated with negative autobiographical memories fades faster than the emotional intensity associated with positive autobiographical memories– is moderated by rehearsal (Walker & Skowronski, 2009). This is explained by two main reasons. Firstly, people tend to rehearse positive memories more than negative memories across all types of rehearsal, such as rehearsal for social communication and for maintaining memory details (Walker et al., 2009). Secondly, specifically when looking at social rehearsal, when individuals talk about their memories with other people, they tend to minimize the negative elements of the events and enhance the positive elements (Walker & Skowronski, 2009). So when considering how we remember fiction, one can theorize that the fading effect bias works differently for memories of fiction than for personal memories. This is because we are motivated to forget negative memories or minimize

their negative attributes to social acceptance and to increase positive self-regard (Walker & Skowronski, 2009). However, when it comes to fiction, this is not necessarily the case since talking about a negative fictional scene does not impact social violations and, most of the time, fictional scenes do not impact one's positive self-image. Therefore, this phenomenological distinction between memories of fiction and personal memories might boil down to rehearsal practices rather than memory type.

### **Rehearsal and Memories of Fiction**

This inherent importance of rehearsal is also illustrated in Yang et al (2022)'s study. In their groundbreaking first study, Yang et al (2022)'s asked individuals to write about event memories that they frequently rehearsed by using the prompt "write about a specific event that you have thought or talked about often." In this first study, personal memories and memories of fiction were remembered with comparable levels of recollective vivacity and functional significance (Yang et al., 2022). However, in their follow-up study, participants were prompted to recall autobiographical memories—both fictional and personal—using word cues. Unlike the first study, this specific methodology prompted participants to merely recall a memory prompted by a word such as "flower" or "hospital," meaning that most of these memories were not necessarily rehearsed compared to the first study. This second study found that, overall, the ratings for memories of fiction were consistently lower than personal memories—unlike in study 1, where ratings were similar (Yang et al., 2022). This was consistent across both phenomenology and function. It's sensible to infer that rehearsal is affecting this discrepancy, meaning that rehearsed memories of fiction and rehearsed personal memories act in similar ways in terms of phenomenology and function. However, if these memories are not rehearsed, the similarities between fictional and personal memories erode, leading personal memories to score much higher in

phenomenology and memory function. After all, we have seen in previous research that rehearsing one's memories by telling others about them or by thinking back to memories increases the memory's vividness (Rubin & Kozin, 1984; Svoboda & Levine, 2009), retention (Dark & Loftus, 1976), heightened sensory information (Suengas & Johnson, 1988), and positivity affect (Skowronski & Walker, 2004).

We can witness the power of rehearsal even further by exploring how rehearsal influences memories of imagined events (Suengas & Johnson, 1988). Suengas & Johnson (1988) assigned participants to experience six perceived situations (participants were given tape to wrap a parcel) and six imagined situations (participants were asked to imagine a cup of coffee in front of them as clearly as possible). With rehearsal, clarity, and sensory memory ratings increased across both conditions, revealing that even for merely imagined events rehearsal still plays a critical role in memory consolidation (Suengas & Johnson, 1988). Thus, if rehearsal is powerful enough to impact how we remember imagined events, it is reasonable to assume that this would also affect how we remember memories of fiction, possibly in similar ways to how rehearsal influences personal memory retention.

Furthermore, although research on the relationship between rehearsal and memory functional significance is still in its infancy, a few works in recent years have proposed that rehearsals, specifically social rehearsal, can affect the way we utilize our autobiographical memories (Skowronski & Walker, 2004; Barnier et al., 2008). It's been shown that we engage in autobiographical memory rehearsal for functional purposes; more specifically for social (relationship functions), directive (problem-solving), and self (self-awareness and discovery functions) purposes (Walker et al., 2009). It has also been argued that the effects of rehearsal on autobiographical remembering can differ depending on the type of

rehearsal. For example, due to established social norms, if we choose to engage in social rehearsal, our autobiographical memories are more prone to increase in positive affect, due to the fading effect bias (Walker et al. 2009; Skowronski & Walker, 2004).

We propose in this work that rehearsal explains some of the variance between memories of fiction and personal memories. When taking into account Yang et al. (2022)'s framework, we are still not sure what factors determine which memories of fiction act most similarly to those of personal memories. Rehearsal may be an important cognitive factor that allows a memory of fiction to act similarly to a personal memory in terms of phenomenology and memory function. Furthermore, the role of rehearsals can also help illuminate why, in some limited cases, memories of fiction are rated higher in terms of phenomenology and function than personal memories. In general, we have seen that memories of fiction are not typically more functionally useful or vivid than personal memories; however, this finding should be interpreted as a general pattern and not a strict rule (Marsh & Yang, 2020). In fact, Yang et al. (2022) found that 13% of participants rated their frequently rehearsed fictional event as more significant than their frequently rehearsed personal event. Thus, a formative work of fiction can be as vivid and significant as an event from one's personal life (Marsh & Yang, 2020), but when is this the case? Is this the case when a fictional work is rehearsed more than a personal memory? What if rehearsal is the key cognitive process that possibly determines whether a memory of fiction acts similarly to a personal memory in terms of phenomenology and memory function?

### **Present Study**

The present study aims to examine the phenomenological qualities and functional roles of memories of fiction and how rehearsal impacts both memories of fiction and personal memories.

Furthermore, we are interested in exploring whether some memories of fiction have stronger phenomenological qualities and functions than some personal memories. We predict that manipulating the degree to which someone thinks about or talks about a certain memory can yield a significant effect in both phenomenology and function. Hence, across both memories of fiction and personal memories, highly rehearsed memories should be more salient than memories that are rehearsed to a lower degree. Since we predict that rehearsal will impact both personal memories and fictional memories in similar ways, by manipulating rehearsal, we will also contribute to the literature on their similarities.

Our study has a 2 x 2 factorial design in which we will manipulate our memory type variable (personal memory or memory of fiction) and our binary rehearsal variable (highly rehearsed and not highly rehearsed). We are interested in seeing if these variables affect both the phenomenological qualities of the memory—measured by the Autobiographical Memory Questionnaire (Rubin et al., 2003)-- and the functional attributes of the memory—measured both by TALE questionnaire (Bluck et al., 2005) and the CES measure (Bernsten & Rubin, 2006). We also predict that we will see a main effect of rehearsal, affecting all facets of autobiographical memory phenomenology. We believe that we will see a main effect of memory type affecting all the facets of the phenomenology of memory measures, demonstrating that personal memories are, in general, stronger than memories of fiction in terms of phenomenology and function, supporting past research (Yang et al., 2022). However, most significantly, we predict that certain memories of fiction, specifically those that are heavily rehearsed, are more salient and significant than personal memories that are not heavily rehearsed. This finding would demonstrate that rehearsal mediates the effect of memory source, demonstrating, that in certain

cases, such as when a memory is heavily rehearsed, fictional memories can be more salient than personal memories.

## Method

### Participants

Our final sample consisted of 40 undergraduate students (15 men,  $M_{age} = 18.8$ ,  $SD_{age} = 0.77$ ) from Duke University. Participation in this study was voluntary. Individuals who completed the study received 0.5 research study credits, helping students taking a Duke University Psychology introductory course complete their required 5 research credits.

For our pre-registration work, we conducted a power analysis using G Power 3.1 and determined that to achieve a power level of 0.95, we would need to recruit 40 participants to detect a medium-size effect of 0.3: an effect size that was previously used in Yang et al. (2022)'s study that incorporated a similar study design (Erdfelder, 2007). We aimed to recruit 50 people in case of technical difficulties and incompleteness of the entire survey. In actuality, we recruited 98 participants in total. Initially, we removed seven participants for not completing the survey, removed five participants for failing the study's attention check question, and removed four participants who did not properly follow procedural instructions. After this initial participant exclusion process, we picked the first 20 participants from each between-variable condition for us to follow our recommended sample size of 40 participants.

### Design

This study utilized a mixed-subject design, more specifically a 2 (memory type) x 2 (rehearsal) factorial design. People were randomly assigned to retrieve either two fictional memories or two

personal memories. In both groups, participants were asked to report both a highly rehearsed memory and a low-rehearsed memory.

## Measures

Our measures were inspired by the choice and utilization of questionnaires used by Yang et al.(2022)'s study. First, we utilized 11 questions from the Autobiographical Memory Questionnaire (Rubin et al., 2003). This measure assessed several distinct qualities of autobiographical memories: (1) recollection and belief, (2) component processes (phenomenological qualities), and (3) Reported Properties of Events and Memories (Rubin et al., 2003). See Table 1. for a full description of the variables used in the AMQ.

**Table 1**

*Phenemonology Items Adapted from Rubin et al. (2003) and Yang et al. (2022)*

Variable	Description of Rating Scale for Personal Memories	Description of Rating Scale for Fictional Memories	Anchors
Rehearsal	Since it happened, I have thought or talked about this event	<b>Since reading or seeing this event for the first time</b> , I have thought or talked about this event.	1 = not at all, 3 = sometimes, 5 = many times, 7 = more than for any other event
Visual Imagery	When remembering the event, I can see it in my mind	When remembering the event, I can see it in my mind	1 = not at all, 3 = vaguely, 5 = distinctly, 7 = (as clearly as an event happening in front of me)
Auditory Imagery	When remembering the event, I can hear it in my mind	When remembering the event, I can hear it in my mind	1 = not at all, 3 = vaguely, 5 = distinctly, 7 = (as clearly as an event happening in front of me)

Reliving	When remembering the event, I feel as though I am living through it again.	When remembering the event, <b>I feel as though I am actually living it.</b>	1 = not at all, 3 = vaguely, 5 = distinctly, 7 = as clearly as if it were happening now / as clearly as if it were happening to me now
Emotion Strength	When remembering the event, I feel the emotions as strongly as when I originally experienced it.	When remembering the event, I feel the emotions as strongly as when I originally experienced it	1 = not at all, 3 = vaguely, 5 = distinctly, 7 = as clearly as if it were happening now
Positivity	When remembering the event, the emotions are extremely positive	When remembering the event, the emotions are extremely positive	1 = not at all, 3 = hardly, 5= somewhat, 7 = entirely
Negativity	When remembering the event, the emotions are extremely negative.	When remembering the event, the emotions are extremely negative.	1 = not at all, 3 = hardly, 5= somewhat, 7 = entirely
Emotional Intensity	When remembering the event, the emotions are intense	When remembering the event, the emotions are intense	1 = not at all, 3 = hardly, 5= somewhat, 7 = entirely
Accuracy	My memory of the event is an accurate reflection of the event. It is not distorted by my beliefs, motives, and expectations.	My memory of the event is an accurate reflection of the event <b>as it is captured by the original fictional work.</b> It is not distorted by my beliefs, motives, and expectations	1 = 100% distorted; 7= 100% accurate
Visual perspective	When you remember the event, do you see it:	When you remember the event, do you see it:	Four Discrete Choices: your own eyes, like a first-person perspective?, As an outside observer, like a third-person perspective?. As a mixture of the two perspectives above, Neither (no visualization)

We utilized Yang et al. (2022) version of the AMQ questionnaire in which the researchers used two versions of the AMQ: the original version from the Rubin et al. (2003) study and a newly adapted AMQ measure targeted toward memories of fiction specifically. For example, the accuracy phenomenological component for personal memories is measured by asking participants to rate how much they agree with the following statement on a scale from 1 to 7 (100% distorted to 100% accurate): “My memory of the event is an accurate reflection of the event. It is not distorted by my beliefs, motives, and expectations.” For the fiction condition, participants were asked to rate the following statement on a similar scale: “My memory of the event is an accurate reflection of the event as it is captured by the original fictional work. It is not distorted by my beliefs, motives, and expectations.”

To determine the functional properties of the self-reported autobiographical memories, we used a five-item version of the TALE questionnaire (Bluck et al., 2005; Bluck et al., 2011). The TALE questionnaire tackles three central functions of autobiographical memories. The directive function illustrates how we use autobiographical memories to guide present and future thoughts and behavior (Bluck et al., 2005). Our five-item version of the TALE derived directive function through the questions “My memory of this event helps me to solve problems in my life” and “My memory of this event impacts my life decisions.” Next, the TALE questionnaire also assessed the self function—how the memory contributes to maintaining the continuity of the self and serves as a source of self-knowledge (Neisser, 1988; Bluck, 2003, Bluck et al., 2005). The “My memory of this event helps me better understand myself” inquiry of our shortened TALE survey gauges the self-function degree of the

pertained memory. Lastly, the TALE questionnaire also evaluated the social function of autobiographical memories which taps into the role of autobiographical memories in developing and nurturing social bonds and social interactions (Bluck et al., 2005). This function was assessed with the single question: "My memory of this event influences the relationship I have with others." All questions were rated on a 1-5 scale from 1 ("totally disagree") to 5 ("totally agree"). See Appendix A for the full TALE questionnaire used in our study.

To further analyze the functional attributes of the given autobiographical memories, we included a shortened four-item measure of the Centrality Event Scale questionnaire (Bernsten & Rubin, 2006). The CES is intended to measure the degree to which a life event has taken the form of a reference point for personal identity (Bernsten & Rubin et al., 2006). The survey strongly aligns with Pillemer (1998)'s study on *anchoring events* and how fundamental life reference points guide individuals' thoughts and behaviors (Pillermer, 1998). Our four-item version tests four facets of the Centrality of Life Events questionnaire. The "this event has become a reference point for the way I understand new experiences" statement and the "this event has colored the way I think and feel about other experiences" statement measure the extent to which the event has become an anchor point for the attribution of meaning to other events in the individual's life (Bernsten & Rubin et al., 2006). The question "I feel that this event has become part of my identity" measures the extent to which the event memory has shaped the person's identity and the "I feel that this event has become a central part of my life story" evaluates whether the event is regarded as a turning point in the individual's life story. All questions will be evaluated on a five-point scale of 1 ("totally disagree") to 5 ("totally agree"). See

Appendix B for the full CES questionnaire. For both the TALE and CES measure questions were identical for both memories of fiction and personal memories.

Finally, participants will then complete a fiction consumption questionnaire followed by a demographics questionnaire. The fiction consumption questionnaire was adapted from Yang et al. (2022)'s study. The questionnaire asked participants how often they think back to and talk about works of fiction, how much fiction they consume, and how much they enjoy engaging with fictional content. See Appendix C. for the full fiction consumption questionnaire. Our demographic questionnaire asked participants to report their age, gender, race, ethnicity, education level, and first language. These questions were not mandatory; participants were allowed to mark down "Prefer Not to Answer" for all demographic questions.

### ***Procedure***

This study was registered on the Open Science Framework (<https://osf.io/hgcs2>). The present study was published on Duke University's SONA research page: a platform where students can sign up for studies to fulfill their undergraduate research requirements. Individuals who signed up to participate were directly taken to a Qualtrics survey page to complete the study. Before participating, individuals were provided with a brief summary of the study's procedures and were told that there were no known benefits or risks involved with taking part in the current study. Participants were also told that the study would prompt them to write about two personal memories and then answer a series of questions regarding the given memories.

After giving informed consent, participants were asked to retrieve two specific events from their own lives. Participants were randomly assigned to take part in the personal memory or memory of fiction condition. Those in the personal memory condition were asked for their first memory prompt to write about a memory that (1) is from their own life (2) is a specific event and (3) that they have thought or talked about often. Participants were allowed to take as much time as they wanted to find a memory that fitted this criteria. After coming up with a memory, participants were asked to describe the event or scene in as much detail as possible. Following this retrieval, participants were then asked specific, temporal questions about the personal memory, delving into at what age and how long ago the event occurred. After finishing this first memory retrieval task, participants are then prompted with their next memory prompt. In this memory prompt, participants were asked to follow the first two memory criteria from their first memory prompt with an additional criterion: now participants will be asked to, instead, come up with a memory that they have *not* repeatedly thought about or talked to others about. Again they will be asked to write a brief description of the event and be asked to answer temporal questions about the specific event memory.

For those in the fiction condition, participants followed the same procedure but were instead asked to come up with an event memory that came from a fictional source. More specifically, they were first asked to recall a memory that met the following criteria: (1) must come from a fictional source such as a book or a movie that the participant read (cannot come from a scene that the participants heard from someone else) (2) is a specific event and (3) that they have thought or talked about often. Similar to the personal memory condition, for the next memory prompt, participants came up with a

second memory of fiction that they have *not* repeatedly thought about or talked to others about. For this fiction condition, participants were asked the name of the fictional work, the modality of the fictional content (movie, TV show, book, etc), how long they first read or watched the fictional content and whether they have watched the fictional scene multiple times. If they report having watched the content more than once, participants would then be asked to report how many times they have watched it and an estimate of how long ago they most recently watched or read the content. For both the memory of fiction and personal memory condition, the order in which participants answered questions about rehearsed or non-rehearsed memory events first was randomized.

After all the participants generated their memories according to their two memory prompts, they were asked to complete a series of questions based on their two given memories. They rated the qualities of their memory events based on the AMQ, TALE, and CES items. Participants in the fiction condition took an edited version of the AMQ that more closely aligned with memories of fiction (refer to Table 1).

"Next, all participants—from both the fiction and personal memory condition—took a final "fiction" habits questionnaire, where they answered a series of questions regarding their fiction consumption. Lastly, participants also provided their demographic information and consented to allowing us to use their individual memory excerpt data. The memory excerpts for those participants who did not consent were not included in our OSF study data page. At the end of the study, we debriefed students and explained the purpose of the research project, the study's hypotheses, and research implications. Afterward, participants completed a data usage form, where we explained that

their answers would be confidential and their responses would be tied only to their participant number. Participants were then asked to give or deny permission for the use of their individual data in several different situations (such as for future experiment stimuli and for academic research talks).

## Results

### Statistical Analyses

Analyses for the current study and all subsequent supplementary analyses were completed in RStudio version 4.3.2. (R Core Team, 2018). The alpha level was set to .05 for all analyses unless reported otherwise.. We ran a series of generalized linear mixed effect models using the ‘lme4’ software package (Torchiano, 2020). More specifically, we computed mixed-effects analyses of variance (ANOVAs) using the lme4 and lmerTest packages in R (Bates et al., 2015).

### Memory Content

#### *Participant Responses*

All participants were able to come up with memory descriptions for their respective participants. Participants successfully described the event or scene they thought of in as much detail as possible. Table 2. provides sample participant responses for our 2 x 2 factorial design conditions.

#### Table 2

##### *Sample Participant Responses in Study 1*

Type of Memory	Rehearsed	Non-Rehearsed
Memory of Lived Experience	When I was 17, I attended a fencing tournament in Paris. The most vivid memories were mainly involving the stadium we competed in and its	I went to my university's art museum last year to complete an assignment for my writing class with my friend. It must have been

	<p>atmosphere. The stadium was huge, much larger than any place I have fenced in before and when the competitors, including me, were fencing, they would shut the lights off on the bleachers and shine them only on us. I remember this very well because it made me feel as if we were on TV or on display, and it made me fence much harder and filled me with pride.</p>	<p>the first semester since that's when I took that writing class, but I can't remember exactly when. We went through one of the exhibits and took notes on the pieces on display. It was during the afternoon, probably late afternoon. I remember feeling bored and that the assignment was tedious and a waste of time.</p>
Memory of Fiction	<p>[From the novel <i>Dante and Aristotle Discover the Secrets of the Universe</i>.]</p> <p>It is a late-summer afternoon in California, and it is pouring rain outside. Dante, a young Mexican American boy, sees an injured animal on the road and walks onto the road to help it. Simultaneously, a car, that he fails to see, is speeding down that same road. Aristotle, Dante's friend, notices the oncoming car and launches himself toward Dante. Aristotle pushes Dante out of the way of the vehicle which causes him to be hit by the car.</p>	<p>In <i>The Meg</i>, there was a scene when the group of researchers decided to go deep underwater and found the Meg they thought they had incaged in their aquarium. They tried to escape it by going even deeper through a zone they thought the megalodon couldn't pass through. It did, in fact, pass through and found that there were multiple. They left their submarine and walked towards a suspicious underwater base to try and flee the meg.</p>

*Note: Participant responses were minimally edited for grammar, spelling, and readability. For their personal memories, proper nouns were also edited and omitted out to protect the identity of the participants.*

### **Modality**

When retrieving memories from works of fiction (for both rehearsed and non-rehearsed memories), most participants described events from movies (45%), followed by TV shows (35%) and books (22.5%). When retrieving rehearsed memories from works of fiction, most participants described

events from movies (40%), followed by TV shows (40%) and books (20%). When retrieving non-rehearsed memories from works of fiction, most participants described events from movies (50%), followed by books (25%), and then TV shows (25%).

Overall, most memories of fiction came from movies followed by TV shows and books. See Table 3 for descriptives. There was no significant difference in modality across our two rehearsal conditions,  $\chi^2(2) = 1.026$ ,  $p = .599$ .

**Table 3**

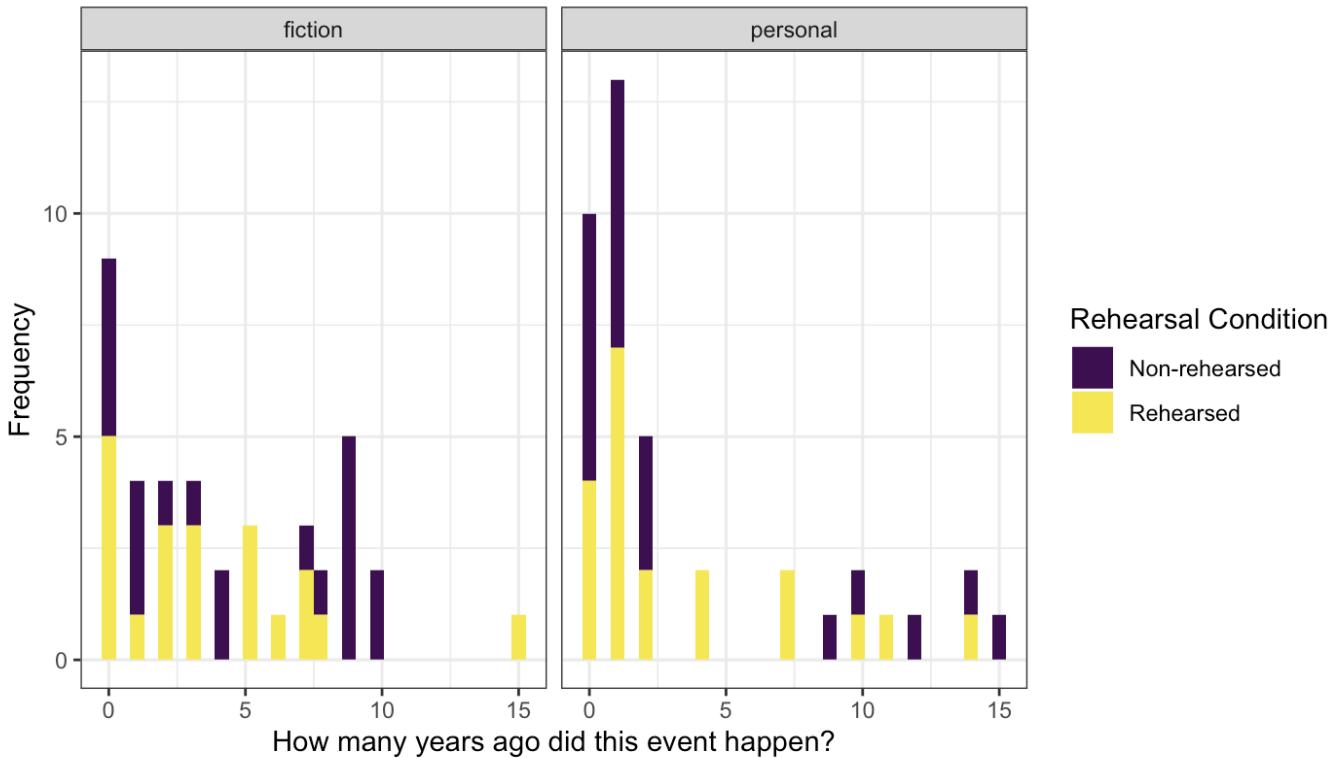
*Frequency Table of Modalities Across Memories of Fiction*

<b>Modality</b>	<b>Conditions</b>		
	Rehearsed Fictional Memories	Non-rehearsed Fictional Memories	Total
Movie	8	10	18
TV Show	8	5	13
Books	4	5	9

### ***Temporal Distribution***

On average, events described by participants occurred 3.88 years prior to the moment of retrieval. These averages are similar when breaking this temporal distribution by memory type ( $M_{personal} = 3.5$ ,  $M_{fiction} = 4.250$ ) and by rehearsals ( $M_{rehearsed} = 4.2$ ,  $M_{non-rehearsed} = 3.55$ ). There was no significant difference in modality across our two rehearsal conditions,  $\chi^2(2) = 56.687$ ,  $p = .065$ . See Figure 2 for the temporal distribution of the retrieved memories.

**Figure 2**

*Histogram of Temporal Distribution Across Event Memories*

Furthermore, looking solely at the age at which the memory first occurred, most event memories originally took place, on average, at 14.9 years old. See Table 4 for descriptives. For context, the age range of our sample was 18-20 since our sample came entirely from a college undergraduate population. Across our different conditions, the average ages at which the event from the chosen memory took place were also similar.

**Table 4**  
*Age of Participant When Event of Memory First Occurred*

Memory Type	Rehearsed Mean (SD)	Non-Rehearsed Mean (SD)
-------------	------------------------	----------------------------

Personal Memories	15.45 (3.99)	15.25 (5.32)
Fictional Memories	15 (3.89)	13.9 (4.04)

### ***Re-experiencing Fiction***

When retrieving memories from fiction, most participants chose works of fiction that they had consumed more than once (62.5%). As expected, we found that participants who were in the rehearsed condition were more likely to report that they had consumed their chosen work of fiction more than once. See Table 5 for descriptives. A chi-squared analysis demonstrates that this difference is significant,  $\chi^2(2) = 5.28$ ,  $p = .02$ . This is an expected result since re-watching or re-reading a fictional source can be considered as a form of rehearsal.

**Table 5**

*Age of Participant When Event of Memory First Occurred*

Watched or Read More than Once?	Rehearsed Fictional Memories	Non-Rehearsed Fictional Memories	Total
Yes	16	9	25
No	4	11	15
Total	20	20	40

### ***Memory Perspective***

As expected, we saw that most participants imagined their personal memories through a first-person perspective (62.5%) while most people imagined their fictional memories through a

third-person perspective instead (67.5%). See Table 6 for descriptives. There was a significant difference in modality across our two rehearsal conditions,  $\chi^2(2) = 28.70$ ,  $p > 0.001$ .

**Table 6**

*Breakdown of Memory Perspectives Across Personal and Fictional Memories*

Perspective	Personal	Fictional	Total
First-Person	25	6	31
Third-Person	6	27	33
Mix of Both	9	5	14
Neither	0	2	2

### Memory Phenomenology

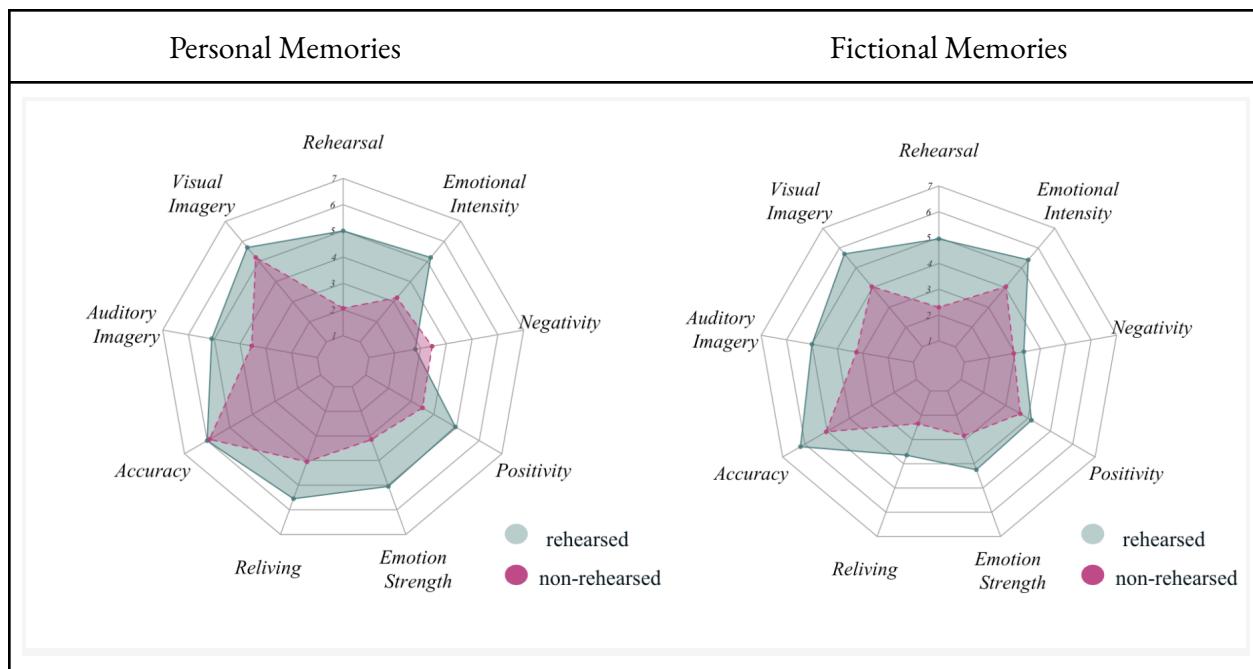
Next, we examined our primary research question: How do phenomenological qualities of personal memories compare to those of memories of fiction? We ran a series of two-way ANOVAs to evaluate the main effects of rehearsal and memory type for each AMQ measure. See Table 7 for 2 x 2 mean comparisons and Figure 3 for radar plot visualizations of our 2 x 2 mean comparisons.

**Table 7**

*Full Descriptive Statistics for Memory Phenomenology across Rehearsal and Memory Type Conditions*

Model	Personal		Fictional	
	Mean (SD)		Mean (SD)	
	Rehearsal	Non-rehearsal	Rehearsal	Non-rehearsal
Rehearsal	5 (1.21)	2.05 (0.89)	4.95 (1.00)	2.3 (1.13)
See	5.7 (1.34)	5.2 (1.24)	6 (1.52)	4.1 (1.45)

Hear	5.1 (1.65)	3.55 (1.70)	5.25 (2.17)	3.3 (1.92)
Accuracy	6.15 (1.46)	6.05 (1.61)	6.6 (1.50)	5.25 (1.86)
Live	5.55 (1.10)	4.05 (1.54)	3.65 (1.66)	2.35 (1.42)
Strength	5.05 (1.15)	3.15 (1.53)	4.35 (1.81)	2.85 (1.50)
Positivity	4.95 (2.24)	3.5 (1.91)	4.3 (2.32)	3.75 (2.17)
Negativity	2.8 (1.96)	3.45 (1.79)	3.5 (2.44)	2.95 (1.70)
Intensity	5.2 (1.24)	3.2 (1.77)	5.6 (1.93)	4.1 (2.40)

**Figure 3***Radar Plot Figure of Mean Ratings of Phenomenology****Statistical Analysis For Phenomenology***

We used a mixed ANOVA with memory type (fiction vs. personal) as a between-subjects factor and memory type (rehearsed vs non-rehearsed) as a within-subjects factor on each phenomenological

AMQ quality. Order of presentation did not affect participant responses on any of the AMQ variables for either fiction or personal memories,  $F(9,70)$ ,  $p = 0.576$ .

Table 8 demonstrates our nine regression models testing how each of our AMQ dependent variables is impacted by rehearsal, memory type, and the interaction between these two variables. As demonstrated by the table, we saw a main effect of memory type for “Visual Imagery”,  $t(74) = 2.499$ ,  $p = 0.0146$ . We also have a main effect of memory type for our “Relivibg” model  $t(74) = 3.72$ ,  $p < .001$ . In both cases, personal memories were rated significantly higher than memories of fiction. We saw a main effect in only two of our models.

**Table 8***Mixed ANOVA Results Table for AMQ Measures*

Model	Estimate	t-stat	p-value	95% CI
<b>Rehearsal</b>				
Rehearsal	2.65	8.89	< .001 ***	[2.07,3.23]
Memory Type	-0.25	-0.74	0.46	[-0.90, 0.40]
Rehearsal * Memory Type	0.3	0.71	0.481	[-0.52, 1.12]
<b>Visual Imagery</b>				
Rehearsal	1.9	4.545	< .001 ***	[1.08, 2.71]
Memory Type	1.1	2.60	0.0146 **	[0.25, 1.95]
Rehearsal * Memory Type	-1.4	-2.37	0.0231**	[-2.56, -0.24]

<b>Auditory Imagery</b>				
Rehearsal	1.95	3.47	< .001 ****	[0.85, 3.05]
Memory Type	0.25	0.42	0.67421	[-0.9, 1.4]
Rehearsal *	-0.4	-0.50	0.61757	[-1.96, 1.16]
<b>Memory Type</b>				
<b>Accuracy</b>				
Rehearsal	1.35	2.68	<b>0.0107**</b>	[0.37, 2.33]
Memory Type	0.8	1.57	0.1212	[-0.19, 1.79]
Rehearsal *	-1.25	-1.76	<b>0.087*</b>	[-2.64 0.14]
<b>Memory Type</b>				
<b>Reliving</b>				
Rehearsal	1.3	3.20	<b>0.003 ***</b>	[0.51, 2.09]
Memory Type	1.7	3.717	< .001 ****	[0.82, 2.58]
Rehearsal *	0.2	0.35	0.729438	[-0.92, 1.32]
<b>Memory Type</b>				
<b>Emotional Strength</b>				
Rehearsal	1.5	3.13	<b>0.002 ***</b>	[0.57, 2.43]
Memory Type	0.3	0.63	0.53325	[-0.63, 1.23]
Rehearsal *	0.4	0.59	0.55687	[-0.91, 1.71]
<b>Memory Type</b>				
<b>Positivity</b>				
Rehearsal	0.55	1.14	0.263	[-0.40, 1.50]

Memory Type	-0.25	-0.37	0.716	[-1.58, 1.08]
Rehearsal *	0.9	1.32	0.196	[-0.44, 2.24]
<b>Memory Type</b>				
<b>Negativity</b>				
Rehearsal	0.55	1.07	0.29	[-0.45, 1.55]
Memory Type	0.5	0.79	0.431	[-0.72, 1.72]
Rehearsal *	-1.2	-1.66	0.106	[-2.62, 0.22]
<b>Memory Type</b>				
<b>Emotional Intensity</b>				
Rehearsal	1.5	3.61	< .001 ****	[0.69, 2.31]
Memory Type	-0.90	-1.51	0.135573	[-2.05, 0.25]
Rehearsal *	0.50	0.85	0.399781	[-0.65, 1.65]
<b>Memory Type</b>				

Note.  $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ , \*\*\*\*

Furthermore, for our manipulation check, we conducted a regression model using rehearsal as a dependent variable. Our model demonstrated that rehearsed memories were significantly more rehearsed than non-rehearsed memories,  $t(74) = 8.89$ ,  $p < 0.001$ , validating our within-subject approach of reporting a rehearsed memory followed by a non-rehearsed memory.

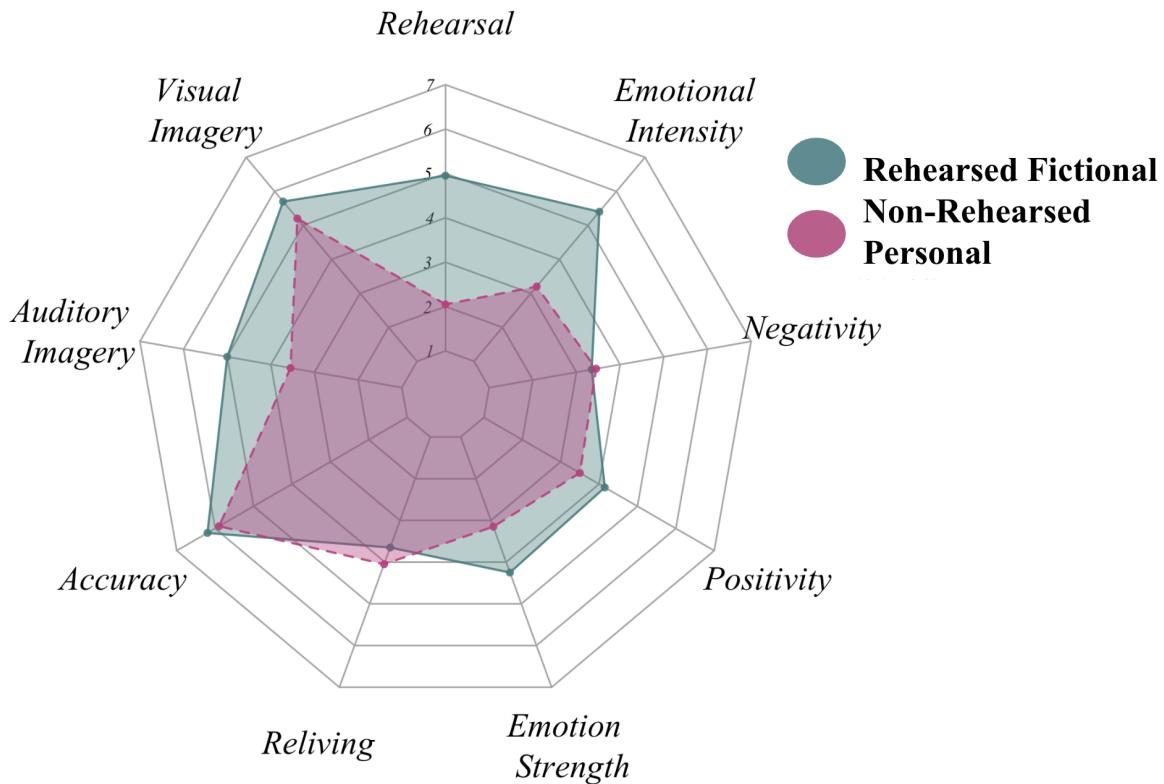
Additionally, there was a main effect of rehearsal across six of our models: “Visual Imagery”,  $t(74) = 4.545$ ,  $p < 0.001$ , “Emotional Strength”,  $t(74) = 3.130$ ,  $p = 0.00248$ , “Reliving”,  $t(74) = 3.203$ ,  $p = 0.002751$ , “Auditory Imagery”,  $t(74) = 3.471$ ,  $p = 0.00131$ , “Emotional Intensity”  $t(74) = 3.613$ ,  $p < 0.001$ , and “Accuracy”,  $t(74) = 2.6830$ ,  $p = 0.0107$ . Rehearsed memories were significantly

higher than non-rehearsed memories in these five specific models. We saw a significant interaction only for the “Visual Imagery” variable  $t(74) = -2.368$ ,  $p = 0.023$ . The “Positivity” and “Negativity” models revealed no significant main effects or interactions.

We also computed nine independent sample t-tests comparing non-rehearsed personal memories with rehearsed fictional memories – in line with our hypothesis that rehearsed fictional memories would score higher in phenomenology than non-rehearsed personal memories. Table 9 demonstrates that “Auditory Imagery”, “Rehearsal,” “Emotion strength” and “Emotional Intensity” were statistically significant. The significance of rehearsal demonstrates that our manipulation of rehearsal was successful since, as expected, rehearsed fictional memories were more rehearsed by participants than non-rehearsed personal memories. Interestingly, “Auditory Imagery,” “Emotional strength,” and “Emotional Intensity” were all statistically significant, demonstrating that fictional rehearsed memories were stronger phenomenologically for these three specific memory qualities compared to personal, non-rehearsed memories (see Figure 4 for mean rating data visuals).

**Figure 4**

*Radar Plot Comparing Rehearsed Fictional Memories with Non-Rehearsed Personal Memories*

**Table 9**

*Comparing the Phenomenology of Rehearsed Fictional Memories and Non-Rehearsed Personal Memories*

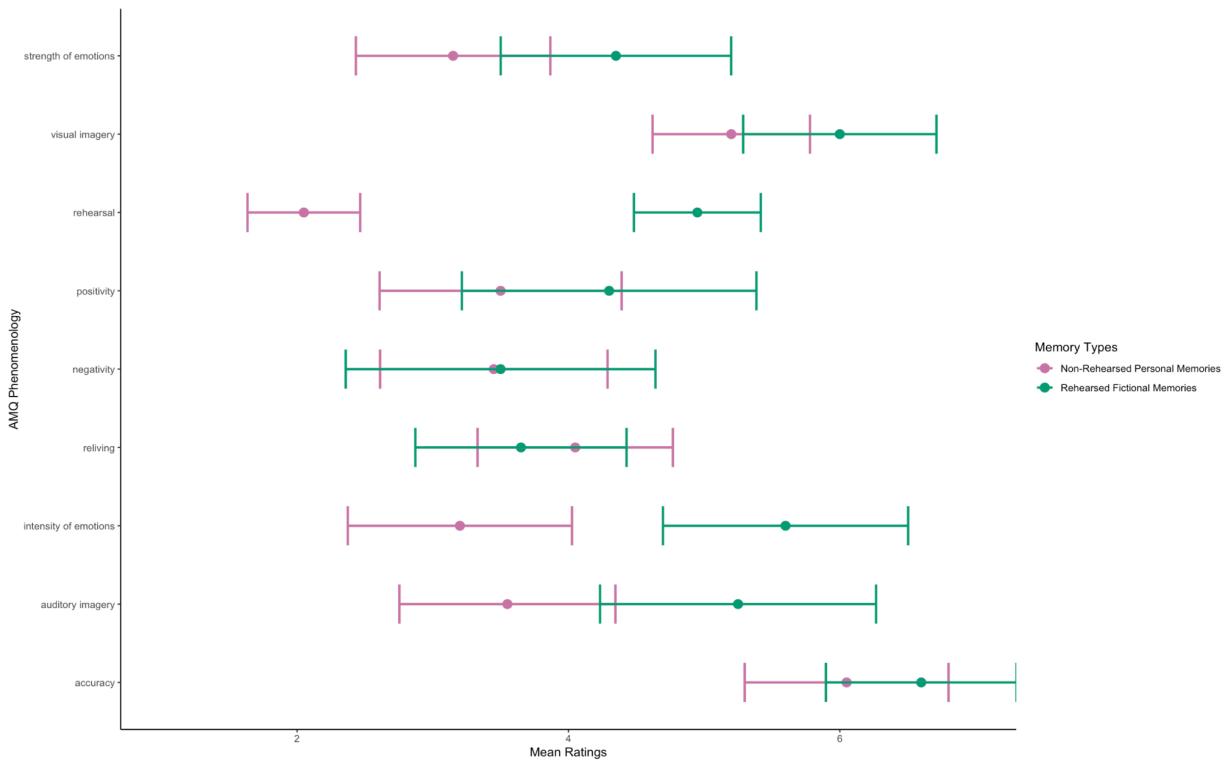
Item	Fictional Rehearsed Memory	Personal Non-Rehearsed Memory	t stat	P value	95% CI
Visual imagery	6.0 (1.52)	5.2 (1.24)	t(56.51)= 1.82	0.07654	[-0.09, 1.69]
Auditory Imagery	5.25 (2.17)	3.55 (1.70)	t(35.92)= 2.26	>0.001****	[0.45, 2.95]
Accuracy	6.60 (1.50)	6.05(1.54)	t(37.83)= 1.12	0.2701	[-0.45, 1.54]

Rehearsal	4.95 (1.00)	2.05 (0.89)	t(37.48)= 9.71	> <b>0.001****</b>	[2.3,3.50]
Reliving	3.65 (1.66)	4.05 (1.54)	t(37.77)= -0.79	0.4346	[-1.42 0.63]
Emotion Strength	4.35 (1.81)	3.15 (1.53)	t(36.96)= 2.26	<b>0.02978**</b>	[0.12, 2.28]
Positivity	4.3 (2.32)	3.5 (1.91)	t(36.62)= 1.19	0.241	[-0.56, 2.16]
Negativity	3.5 (2.44)	3.45 (1.80)	t(34.88)= 0.07	0.9415	[-1.32, 1.42]
Emotional Intensity	5.6 (1.93)	3.2 (1.77)	t(37.70)= 4.10	> <b>0.001****</b>	[1.22, 3.58]

Note.  $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ , \*\*\*\*

### Figure 5

*Mean Ratings of Phenomenology for Rehearsed Fictional memories and Non-rehearsed personal Memories 95% Confidence Intervals Around the Mean Rating for Each Condition*



*Note.* T-tests reflect 95% CI around the mean difference between conditions. In this figure, the confidence intervals overlap because each 95% confidence interval reflects the precision of the estimate of each condition mean.

## Memory Functions

Additionally, we examined whether the memory functions of personal compare to those of memories of fiction and whether memory functions of rehearsed and non-rehearsed memories differ by using both the TALE and CES measure responses (Bluck et al., 2005; Bernsten & Rubin, 2006).

### ***TALE Memory Functions***

For our analysis of the TALE questionnaire, we calculated individual scores for each type of function (directive, self, and social). Responses from questions 1 and 6 from the survey were averaged per participant to create a directive function score. Responses from questions 2 and 4 were averaged per participant to create an individual self-function score. Finally, question 5 responses from the

questionnaire solely represented the social function of the memory . See Table 10 for TALE memory function descriptives.

**Table 10.**

*Descriptive Statistics for TALE Memory Functions Across Memory Conditions*

<b>TALE Function</b>	Personal (SD)		Fictional (SD)	
	Rehearsal	Non-rehearsal	Rehearsal	Non-rehearsal
Directive	2.85(1.05 )	2.03(0.83)	2.0(1.12)	1.58 (0.82)
Self	3.45(0.96)	2.35(0.92)	2.323(0.96)	1.88 (0.86)
Social	2.55 (1.27)	2.3 (1.26)	2.5 (1.36)	1.80 (1.06)

### **Inferential Stats for Memory Functions**

We computed a mixed-effects ANOVA with memory type (fiction vs. personal) as a between-subjects factor and memory type (rehearsed vs non-rehearsed) as a within-subjects factor on each of the three TALE functions: directive, social, and self.

When looking at our three autobiographical memory functions according to the TALE questionnaire (Bluck et al., 2005 ) we found no evidence of a main effect of memory type. Rehearsal was also not a main effect for our directive function and self-function models. However, rehearsal was significant for our social function model (see Table 11).

**Table 11**

*Mixed-Effects ANOVA Results Table for TALE Functions*

<i>Model</i>				
	Estimate	t-stat	P value	95% CI
Directive				
Rehearsal	0.43	1.58	0.12	[ -0.10, 0.95]
Memory Type	0.45	1.47	0.145	[ -0.14, 1.04]
Rehearsal *	0.400	1.05	0.301	[ -0.34, 1.14]
Memory Type				
Self				
Rehearsal	0.45	1.68	0.1003	[ -0.07, 0.97]
Memory Type	0.48	1.62	0.1088	[ -0.09, 1.04]
Rehearsal *	0.65	1.72	<b>0.0935*</b>	[ -0.09, 1.38]
Memory Type				
Social				
Rehearsal	0.70	2.58	<b>0.0139 **</b>	[ 0.17, 1.23]
Memory Type	0.50	1.27	0.2082	[ -0.26, 1.26]
Rehearsal *	-0.45	-1.17	0.2482	[ -1.20, 0.30]
Memory Type				

Note.  $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ , \*\*\*\*

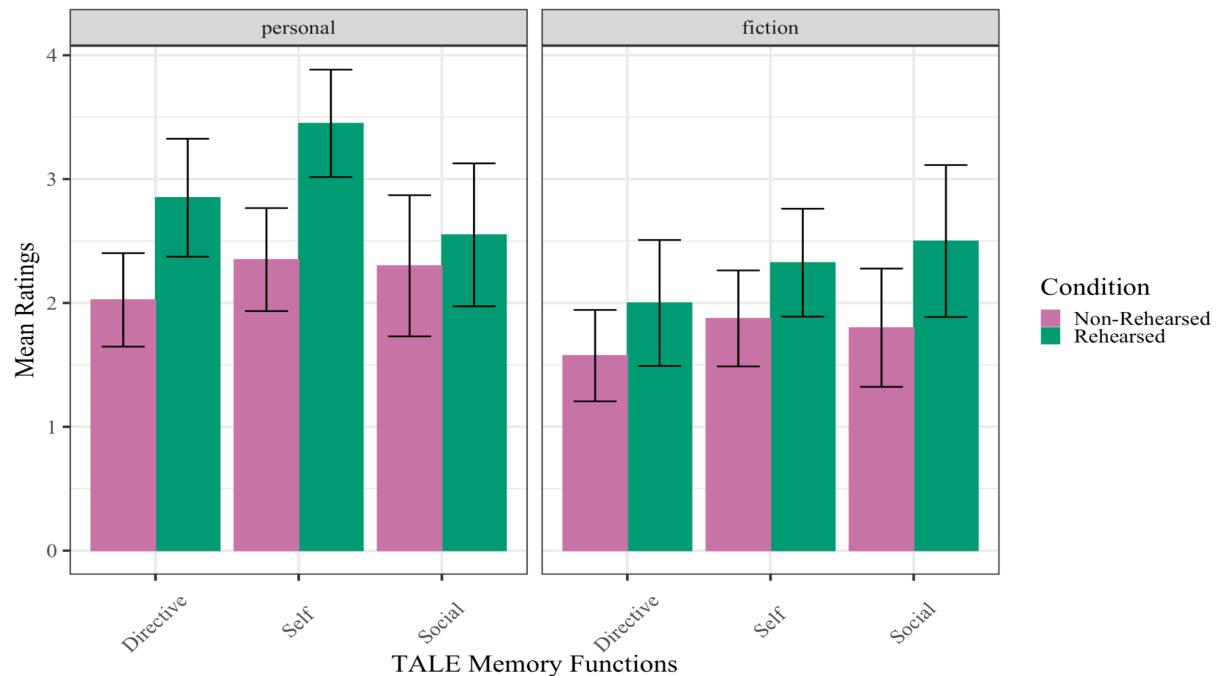
For further analysis, we also ran a mixed effects, multivariate analysis of variance (MANOVA) using the three TALE dependent variables and the two conditions (memory type, rehearsed condition) as crossed predictor variables. Even though this analysis was not part of the study's pre-registration plan, an analysis like this could help illustrate why our previous three ANOVA models yielded non-significant results that were all trending in a similar direction. Furthermore, the three ANOVA

models, although insignificant, showed a similar trend to the findings found in Yang et al. (2022) study. Hence, through the use of a multivariate analysis of variance (MANOVA), more insight can be gained when observing this previously supported trend. Another motivator for this additional analysis came from our Bayesian statistical analysis modeling (see Appendix D for our full Bayesian statistical models). We saw from our Bayesian statistical models when we split up our social, directive, and self functions, that there is evidence for the alternative hypothesis when considering the effect of rehearsal when looking at our directive and self functions (which does not fall in line with the null results observed when running these series of analyses individually). When looking at our social function model, our Bayesian statistical results reveal largely inconclusive evidence. However, when we ran a Bayesian statistical model that incorporated all three TALE functions, we saw strong evidence for the observed main effects of both rehearsal and memory type on function, supporting our decision to use a MANOVA statistical model for our analyses.

Our MANOVA analysis revealed statistically significant effects of personal versus fictional memories,  $F( 3, 74 )$ ,  $p>0.001$ , and rehearsal,  $F( 3, 74 )$ ,  $p= 0.003$ . There was no observed interaction  $F(3, 74 )$ ,  $p= 0.14$ . Hence, similar to Yang et al (2022)'s study we found that personal memories were rated higher on the TALE memory scale than fictional memories (see Table 10 to refer back to descriptive statistics).

**Figure 5**

*Mean Ratings of TALE Functions Across Memory Type and Rehearsal Type Conditions*



When looking at our t-tests we compared non-rehearsed personal memories and rehearsed memories of fiction, we found no significant results (see Table 12).

**Table 12.**

*TALE Function T-tests*

TALE Memory Function	Fictional Memory	Personal Memory	t stat	P value	95% CI
Directive	2.00	2.03	-0.08	0.94	[-0.66, 0.61]
Self	2.33	2.35	-0.08	0.93	[-0.63, 0.58]
Social	2.50	2.3	0.48	0.63	[-0.64, 1.04]

### Centrality Memory Functions

When looking at centrality, we found no main effects of memory type across all of our four models. However, we did find a main effect of rehearsal for our “identity,”  $t(38) = 2.213, p = 0.0330$ , and “colored,”  $t(38) = 3.097, p = 0.00366$ , models. Moreover, we found a significant interaction for our “identity,”  $t(38) = 2.047, p = 0.0477$ , and “central,”  $t(38) = 2.982, p = 0.00497$ , models (see Table 13 for descriptive statistics and Table 14 for inferential statistics).

Similar to our TALE analysis, we also ran mixed effects, multivariate analysis of variance (MANOVA) using the four CES dependent variables and the two conditions (memory type and rehearsal condition) as crossed predictor variables. This analysis revealed statistically significant effects of personal versus fictional memories,  $F( 4, 73 ), p > 0.001$ , and rehearsal,  $F( 4, 73 ), p > 0.001$ . There was also an observed interaction  $F( 4, 73 ), p = 0.02829$ . Hence, similar to our TALE analysis, we found that personal memories were rated higher on the CES memory scale than fictional memories. In this case, however, we found a significant interaction between rehearsal and memory type across our CES measures, revealing that rehearsal had a stronger effect on memories of fiction than personal memories.

See Table 13 for descriptives.

**Table 13**

*CES Function Descriptives*

<b>CES Measures</b>	Personal (SD)		Fictional (SD)	
	Rehearsal	Non-rehearsal	Rehearsal	Non-rehearsal
Identity	3.35 (1.35)	1.85 (0.93)	1.9 (1.07)	1.25 (0.55)
Reference	2.95 (1.19)	2.00 (1.03)	2.25 (1.12)	1.7 (0.86)

Central	3.45 (1.39)	1.70 (0.80)	1.70 (0.98)	1.2 (0.41)
Colored	3.00 (0.97)	2.15 (1.14)	2.75 (1.29)	1.8 (0.83)

**Table 14***ANOVA Table for CES Functions*

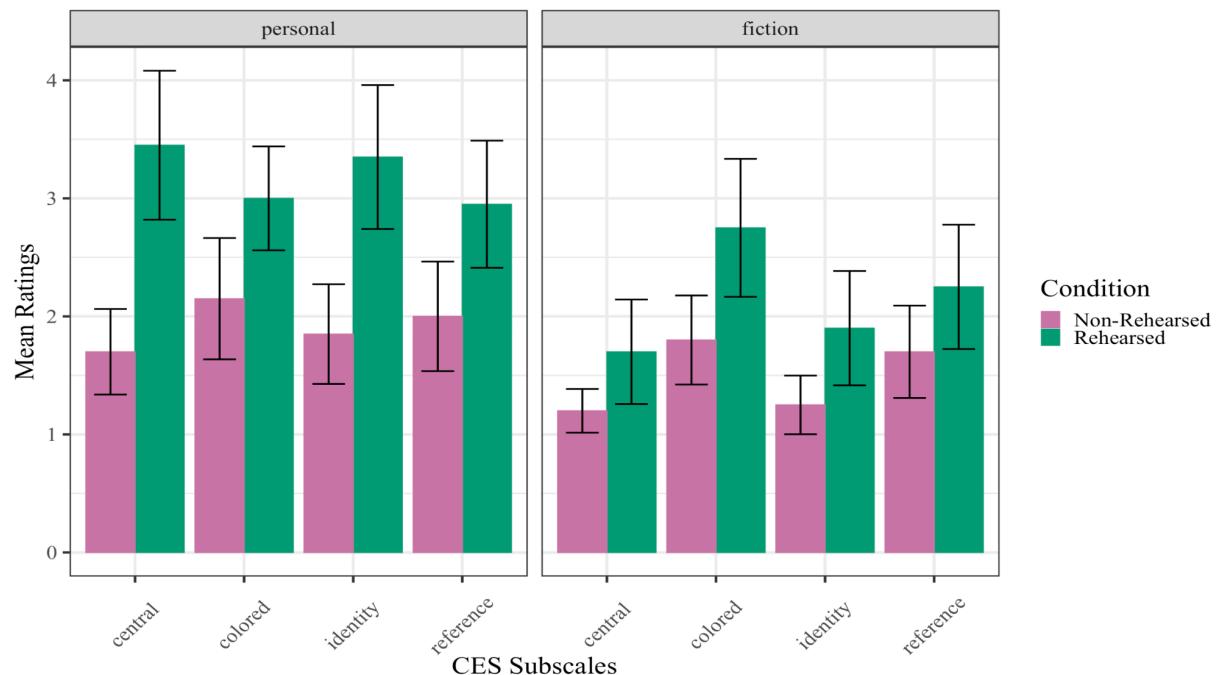
Model				
CES ITEM	Estimate	t-stat	P value	95% CI
<b>Event's impact on identity (“identity”)</b>				
Rehearsal	0.65	2.2	<b>0.0330 *</b>	[0.08 1.22]
Memory Type	0.60	1.87	<b>0.0661*</b>	[-0.02, 1.22]
Rehearsal * Memory Type	0.85	2.05	<b>0.0477 *</b>	[0.04, 1.66]
<b>Status as a reference point (“reference”)</b>				
Rehearsal	0.55	1.87	<b>0.07*</b>	[-0.03 1.13]
Memory Type	0.30	0.89	0.38	[-0.35, 0.95]
Rehearsal * Memory Type	0.40	0.96	0.34	[-0.42, 1.22]
<b>Status in one's life story (“central”)</b>				
Rehearsal	0.50	1.69	<b>0.09977*</b>	[-0.08, 1.08]
Memory Type	0.50	1.64	0.10493	[-0.09, 1.09]
Rehearsal * Memory Type	1.25	2.98	<b>0.00497 **</b>	[0.43, 2.07]
<b>Influence on other experiences (“colored”)</b>				
Rehearsal	0.95	3.10	<b>0.00366 **</b>	[0.35, 1.55]

Memory Type	0.35	1.03	0.30569	[-0.31 1.01]
Rehearsal * Memory Type	-0.10	-0.23	0.81891	[-0.95, 0.75]

Note.  $p < .10$ ,  $*p < .05$ ,  $**p < .01$ ,  $***p < .001$ ,  $****$

**Figure 6**

*Mean Ratings of TALE Functions Across Memory Type and Rehearsal Type Conditions*



When looking at t-tests, for centrality scores, all results were non-significant (see Table 15.)

**Table 15**

*Centrality T-tests (rehearsed fiction compared with personal non-rehearsed memories)*

TALE Memory	Fictional Rehearsed	Personal Non-Rehearsed	t stat	P value	95% CI
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Function	Memory	Memory			
<b>Event's impact on identity ("identity")</b>	1.90	1.85	0.16	0.8758	[-0.59, 0.69]
<b>Status as a reference point ("reference")</b>	2.25	2.00	0.72	0.4757	[-0.45, 0.95]
<b>Status in one's life story ("central")</b>	1.7	1.7	0	1	[-0.57, 0.57]
<b>Influence on other experiences ("colored")</b>	2.75	2.15	1.56	0.1275	[-0.18, 1.38]

Note.  $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ , \*\*\*\*

## Discussion Section

In this work, we explore the phenomenological qualities and functional roles of memories of fiction and how rehearsal impacts both memories of fiction and personal memories. Overall, rehearsal mattered: rehearsed memories were rated higher in visual imagery, auditory imagery, accuracy, reliving, emotional strength, and emotional intensity, as compared to non-rehearsed memories. Rehearsed memories were also rated as serving more function, including directing future actions, maintaining the self, and achieving social goals. Memory type did matter – but the effects were not as strong as those of rehearsal. Surprisingly, rehearsal did not appear to explain the observed differences between personal

and fictional memories; only in the case of visual imagery did rehearsal play a stronger effect in memories of fiction rather than personal memories.

As we will discuss below, these results fit nicely within Yang et al. (2022)'s theoretical framework for situating memories of fiction within the broader landscape of personal autobiographical memories. One major difference between fictional and personal memories was the extent to which they elicited a sense of reliving, as measured by the item "When remembering the event, I feel as though I am reexperiencing it as I read or saw it again." Our result held regardless of the rehearsal status of the memory; personal memories were rated as eliciting greater reliving than did memories of fiction, consistent with the findings of Yang et al.(2022). One possible explanation for this finding involves content differences; it may be easier to relive an event from one's own life than a potentially implausible event from a fictional world. A second possible explanation involves visual perspective in the memories. As previously observed, most participants reported that personal memories were retrieved with the original visual perspective: as if they were viewing them through their own eyes (62.5%). However, the majority of memories of fiction elicited a third perspective point of view, meaning they were viewed from the perspective of an outsider. This third-person perspective may hinder individuals' experience of "reliving" the event when thinking back to it since they are not imagining it from a first-person perspective.

Overall, however, rehearsal was powerful - albeit for both fictional and personal memories. Rehearsal was associated with greater ratings of auditory imagery, intensity, belief in a memory's accuracy, emotional strength, and sense of reexperiencing. More variables showed an effect of rehearsal

than an effect of memory type; for example, personal and fictional memories received similar ratings of auditory imagery, emotional strength, positivity, and negativity whereas all of these factors showed effects of rehearsal (with rehearsed memories rated higher than non-rehearsed ones). Talking or thinking back to memory reactivates the memory regardless of its source, consistent with past work showing that rehearsal affects memories of perceived and imagined events similarly (Suengas & Johnson, 1988; Rubin & Kozin, 1984). Furthermore, given that many works of fiction (e.g., movies, and television) provide individuals with direct visual images and auditory imagery, it is not surprising that rehearsal would impact the sensory qualities of those memories.

Surprisingly, there was only one interaction between memory type and rehearsal: personal memories were rated as vivid regardless of their rehearsal status, whereas non-rehearsed fictional memories were reported to contain less visual information. One possibility is that the rehearsal of fictional memories may disproportionately emphasize visual elements. In contrast, personal autobiographical memories that are rehearsed tend to be rehearsed for more emotional reasons (Conway, 1995; Rubin & Kozin, 1984; Pasupathi, 2001). With this comes more emphasis on explaining the emotional intensity and the way the event made someone feel. This might be different from the ways we talk about memories of fiction. Since memories of fiction tend to be less emotionally relevant to us, individuals might be more motivated to talk about scenes from fiction in a more “matter-of-fact” way that emphasizes the visual construction of the fictional scene rather than emotional content. This could explain why we see rehearsal playing a larger role in visual imagery for memories of fiction rather than personal memories. Such qualities justify telling an audience. Of

course, we do not have any measures of the qualities of the rehearsals but it's possible that retellings of fictional events may focus more on what people saw than what they felt.

Given that rehearsal had a large impact on fictional memories, we asked whether rehearsed fictional memories were similar to non-rehearsed personal memories. Critically, rehearsed memories of fiction were sometimes rated higher than non-rehearsed personal memories, and in other cases were similar. Fictional rehearsed memories were rated higher in emotional intensity, emotional strength, and auditory imagery than non-rehearsed personal memories. The two types of memories were rated similarly on positivity, negativity, visual imagery, accuracy, and reliving. These findings support our hypothesis that some fictional memories, specifically those that are heavily rehearsed, are as vivid and emotional as some personal memories (those that do not tend to be rehearsed).

The findings about memory function were less clear. We used the TALE questionnaire and the CES questionnaire to examine how rehearsal and memory type affected memory function; one set of analyses suggested no effects whereas two other analyses suggested that both rehearsal and memory type affected the reported functions of the memory. The MANOVA analysis included all the data and thus had more power; the conclusions are also consistent with Yang et al (2022)'s work which found that memories of fiction were not as functionally significant as personal memories. In other words, we essentially had to collapse our data to see the effect of rehearsal and memory type across our memory function measures. However, through running Bayesian analysis (see Appendix D) we can see that although we had to collapse these measures, our MANOVA models for our CES and TALE measures did show real effects.

For the rest of our discussion on functional significance, we will focus on the measures from the TALE questionnaire since these measures are more applicable to a memory of fiction context since we have seen in the literature robust evidence that memories of fiction can play high significant roles in social and directive functions, specifically (Bandura, 2006; Svenkerud et al., 1998). Furthermore, the CES questionnaire is a measure that was originally designed to target memories from traumatic events, meaning that this measure is arguably less applicable to the study of memories of fiction (Bernsten & Rubin, 2006). Our results support the notion that, functionally, memories of fiction differ from memories of lived experience in levels of degree. However, we still observed that individuals still endorsed the functional significance of these fictional events. We observed that fictional memories were highest in social function, followed by self function, and lastly with directive function. The high social significance of memories of fiction aligns with what we have seen in the literature about the social benefits of fiction—mainly in its effects in bolstering social-emotional intelligence (Kidd & Castano, 2013). Moreover, one of the benefits of fiction is that it builds individuals' references for events. Fiction allows individuals to place themselves in social situations that they have never been in before. We can speculate as well that memories of fiction are less functionally useful since not all fiction is personally relevant to us. The literature proposes that for fiction to be functionally relevant we need to engage in “transportation,” leading us to suspend our disbelief when delving into a fictional work; this process is based on a variety of factors such as world-building and, usually, requires some sort of emotional response (Gerrig, 2018).

We also saw that personal memories were rated highest in self-memory functions. This can be attributed to the fact that personal memories are already, inherently, more related to the sense of “self” regardless of memory content. However, for fictional memories, there is more inherent variance found in the self-relevance of memories of fiction. More factors influence the degree of self-relevance found in fictional works such as the factors explained earlier about emotional transportation and the “relatability” of the fictional content (whether the fiction consumer relates to the characters and/or plot lines in the story).

When considering solely the role of rehearsal with function significance, our results highly support what we have seen in the literature. Rehearsed memories were more functionally salient for both fictional and personal events. The reason for this is, partially, explained by the fact that rehearsal is intrinsically tied to memory function. In fact, function and rehearsal are so intertwined that it is hard to assume the directionality of this relationship. In other words, is the functional significance of a memory bolstered by rehearsal? Or do we rehearse memories because of their functional value? Or is it a mix of both? Furthermore, Bluck et al. (2005) have proposed that rehearsal and memory functions are hard to even separate. Afterall all, Bluck et al. (2005) developed the TALE questionnaire based on Walker et al.'s (2003) influential research on memory rehearsals and motivations, interpreting the latter's study as indicative of memory recall functions. Future studies should further disentangle this relationship between rehearsal and memory functions when examining memories of fiction, investigating whether we rehearse memories of fiction for similar reasons to why rehearse personal memories.

All in all, our study has three major takeaways. We were motivated to test whether fictional memories are simply another form of event memory or if, instead, memories of fiction should be treated as qualitatively different. Our results show that fictional memories act in similar ways to memories of lived experience. Our findings support those of Yang et al. (2022), illustrating that memories of fiction are products of the same underlying system as prototypical autobiographical memories, exhibiting similar properties and functions. This finding challenges the theoretical framework established by Gander et al. (2023). It seems like we do not “encode” events from fiction differently from how we encode events from real life. The similar phenomenology and function of memories of fiction with memories of lived experience show that these memories simply differ in the source of the memory and do not differ qualitatively in terms of phenomenology and rehearsal. As established earlier, we have also seen that, historically, we have used fictional stimuli as analogs for personal memories (Barlett, 1932 ; Powers et al., 1979). Therefore, if we have historically examined how individuals recall scenes from fiction and extrapolated from these observations to understand how we recall scenes from our personal experiences, it is reasonable to infer that both types of memories are formed, consolidated, and recalled through comparable cognitive mechanisms.

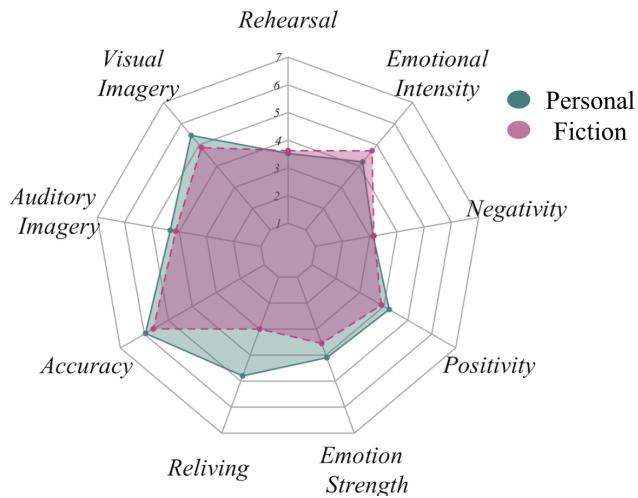
Secondly, our study also found that rehearsal *matters*. Furthermore, our study results also demonstrate that differences in rehearsal can explain observed differences between fictional and personal memories. We observed that not only are fictional and personal memories similar but rehearsal was the more important variable that explained memory differences in quality and function. This work, thus, offers an important extension to the findings found in Yang et al. (2022) notable work

on memories of fiction. Our work supports the findings that when observing event memories that were frequently rehearsed, personal memories and memories of fiction are remembered with comparable levels of recollective vivacity. However, when observing memories that vary strongly in rehearsal levels—memories of fiction are consistently recollected with less vivacity than personal memories (Yang et al., 2022). Our work contributes to this finding since, unlike in Yang et al. (2022), we directly manipulated memory rehearsal and illustrated, through direct manipulation, that a significant or well-rehearsed event from a work of fiction has the potential to be as vivid as some personal memories.

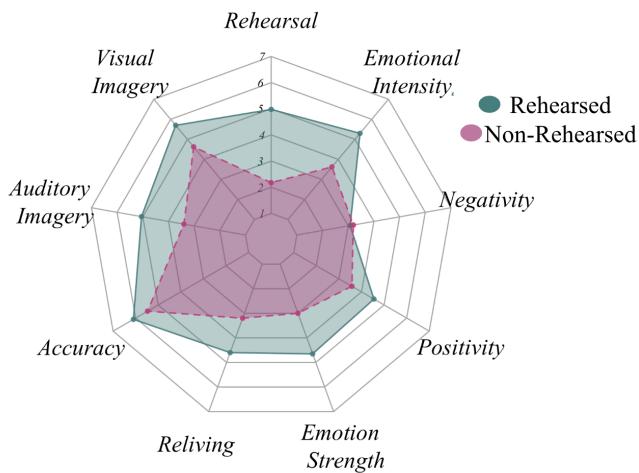
Thus, this study helps fill in the gap in the literature, offering a study that investigates how rehearsal impacts memories of fiction: a relationship that has not been studied extensively in the literature. Furthermore, this study also emphasizes the importance of studying rehearsal in the context of the study of memories of fiction since this is a largely important variable that is, arguably, more important in remembering versus memory source. The importance of this variable can be further observed when breaking apart our main effects of our two variables of interest on memory phenomenology. Figures 7 and 8 demonstrate that differences in memory source overlap much more in memory phenomenology ratings rather than memories that differ in rehearsal levels.

**Figure 7**

*Main Effect of Memory Type on Mean Ratings of Phenomenology*



**Figure 8**  
*Main Effect of Rehearsal on Mean Ratings of Phenomenology*



This study has several notable strengths. To begin with, the study went through a thorough preregistration process through the Open Science Framework (OSF). Moreover, we also utilized reliable and valid measures that have been used multiple across various studies investigating both the phenomenology and function of autobiographical memories (Bernsten & Rubin, 2006; Rubin et al., 2003; Bluck et al., 2005).

However, our study also had several limitations. Our study sample came solely from the Duke University undergraduate population: a population that does not represent the general population. Furthermore, the sample was mostly white (56%) and female (73%). We have seen that culture plays a large role in media consumption, more specifically in the type of media people consume (Ellithorpe & Bleakley, 2017). Future studies should recruit more diverse participants to have higher generalizability and represent the broader United States population. Our study also had a small sample size of 40 participants. However, it is worth noting that this sample number was determined by deriving a power analysis to achieve an effect size of 0.3. Future studies should consider choosing a different effect size and different statistical models to see if our findings replicate with a larger sample size. Lastly, our study also strictly relied on asking participants to report a non-rehearsed and rehearsed memory. This is a quite difficult task to accomplish and arguably if one recalls a non-rehearsed memory it might not be as non-rehearsed as originally thought. Future studies should consider directly, and experimentally manipulating this variable of rehearsal. Future experimental studies can help illustrate the causal relationship between rehearsal and memory phenomenology and function across both memories of fiction and personal memories.

To delve deeper into the topic of rehearsal, future studies should examine whether we rehearse memories of fiction for similar reasons to why we rehearse personal memories. We have seen in previous research that there are many reasons why we rehearse memories—either to maintain memory details, re-experience an emotion, for social communication purposes and to understand an event (Walker et al., 2009). It has been shown that personal memories are mostly rehearsed for social

communication and understanding purposes. It would be interesting to explore whether this is the same for memories of fiction or if other reasons for rehearsal are unique to memories of fiction.

Furthermore, as explained previously, we predict that one of the reasons “reliving” is a more notable quality found in personal memories rather than in fictional memories is because we talk and think about fiction and lived experiences in different ways. Future studies should compare how we talk to others about fiction and how this differs from memories of lived experience. It would also be interesting to investigate whether we talk about fiction differently to others depending on whether the receiver has watched the fictional content as well.

In the end, our study will hopefully inspire future researchers to continue studying the cognitive mechanisms that drive memories of fiction. The fact that memories of fiction can be considered part of our autobiographical memory framework cements the importance of fiction in our daily lives. Our exposure to fictional works allows us to encode valuable memories that act in similar ways to our personal memories. Furthermore, our drive to think back to fiction and talk to others about fictional events makes these memories even stronger and more salient. Ultimately, thanks to our reminiscing of that final scene of *Casablanca*, we now remember that iconic scene in similar ways to memories from our personal lives.

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## **Appendix A**

### **TALE Questionnaire: Adapted from Bluck et al. (2005)**

Instructions: Rate the following statements on a scale from 1= totally disagree, 2= disagree, 3= neither agree or disagree, 4=agree, 5= totally agree.

Q1. My memory of this event helps me to solve problems in my life.

Q2. My memory of this event makes me feel better about myself.

Q3. My memory of this event helps me to better understand myself.

Q4. My memory of this event influences the relationships I have with others.

Q5. My memory of this event impacts my life decisions.

## **Appendix B**

### **CES Questionnaire: Adapted from Berntsen & Rubin (2006)**

Instructions: Rate the following statements on a scale from 1= totally disagree, 2= disagree, 3= neither agree or disagree, 4=agree, 5= totally agree.

Q1. My memory of this event helps me to solve problems in my life.

Q2. My memory of this event makes me feel better about myself.

Q3. My memory of this event helps me to better understand myself.

Q4. My memory of this event influences the relationships I have with others.

Q5. My memory of this event impacts my life decisions.

## Appendix C

### Fiction Habits Questionnaire: Adapted from Yang et al. (2022)

Your responses to these questions will help us to interpret our data. Remember that all information you provide is confidential.

How often do you think back over works of fiction like books, movies or TV shows that you have consumed in the past?

- 1: Never**
- 2: Almost Never**
- 3: Rarely**
- 4: Occasionally**
- 5: Frequently**
- 6: Very Frequently**

How often do you talk to others about works of fiction you have consumed in your life so far?

- 1: Never**
- 2: Almost Never**
- 3: Rarely**
- 4: Occasionally**
- 5: Frequently**
- 6: Very Frequently**

How much do you like reading works of fiction?

- 1: Never**
- 2: Almost Never**
- 3: Rarely**
- 4: Occasionally**
- 5: Frequently**
- 6: Very Frequently**

How often do you read works of fiction, like novels or stories?

- 1: Never**

**2: Almost Never**

**3: Rarely**

**4: Occasionally**

**5: Frequently**

**6: Very Frequently**

How much do you like watching movies?

**1: Never**

**2: Almost Never**

**3: Rarely**

**4: Occasionally**

**5: Frequently**

**6: Very Frequently**

How often do you watch movies?

**1: Never**

**2: Almost Never**

**3: Rarely**

**4: Occasionally**

**5: Frequently**

**6: Very Frequently**

How much do you like watching TV shows?

**1: Never**

**2: Almost Never**

**3: Rarely**

**4: Occasionally**

**5: Frequently**

**6: Very Frequently**

How often do you watch TV shows?

**1: Never**

**2: Almost Never**

**3: Rarely**

**4: Occasionally**

**5: Frequently**

**6: Very Frequently**

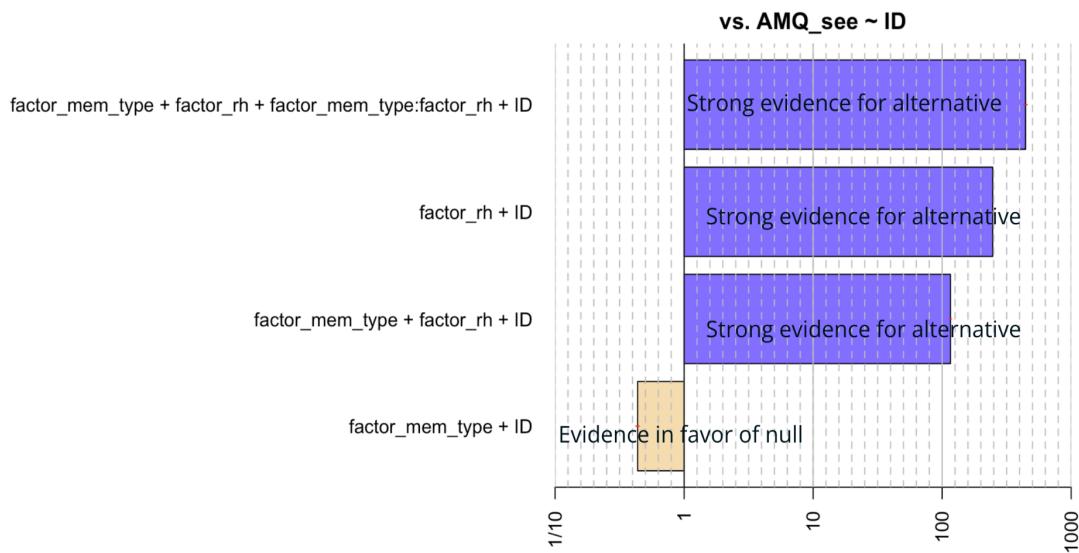
## Appendix D

### Bayesian Statistical Analysis Results

The following Bayesian statistical models were derived on R Version 4.3.2. We used the “BayesFactor” and “R2WinBUGS” packages (Rouder, 2024 ; Sturtz, Ligges & Gelman, 2005). Our results analysis and visuals were inspired by the work of Drown et al. (2022).

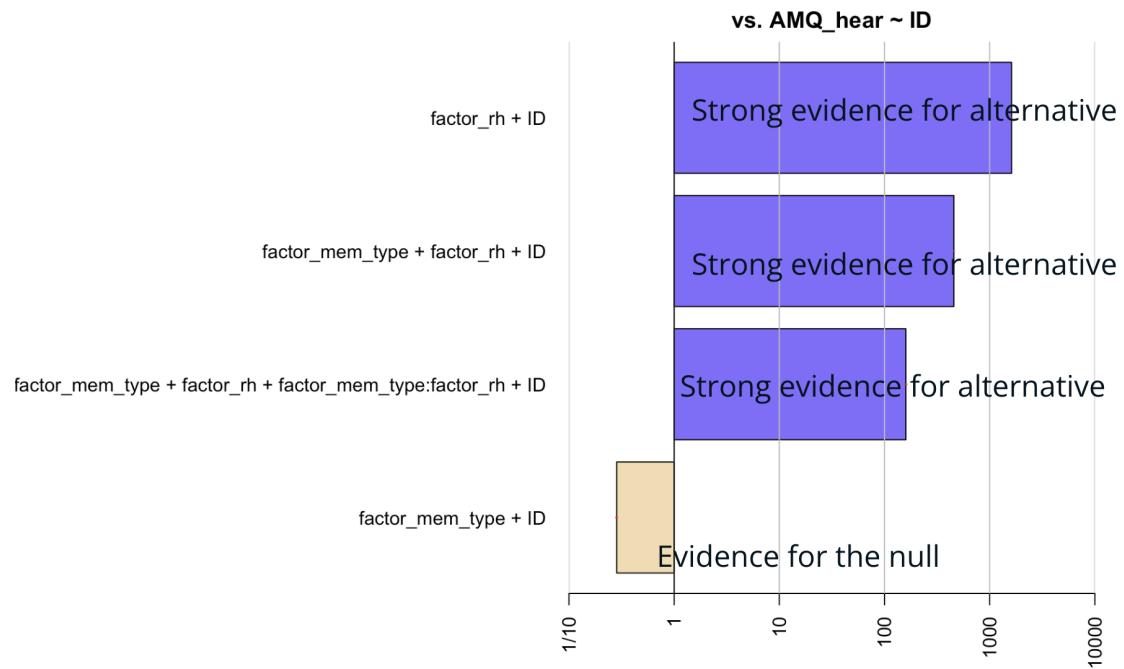
**Figure 9**

*Bayesian Statistical Model of Visual Imagery (AMQ\_See) ANOVA model*

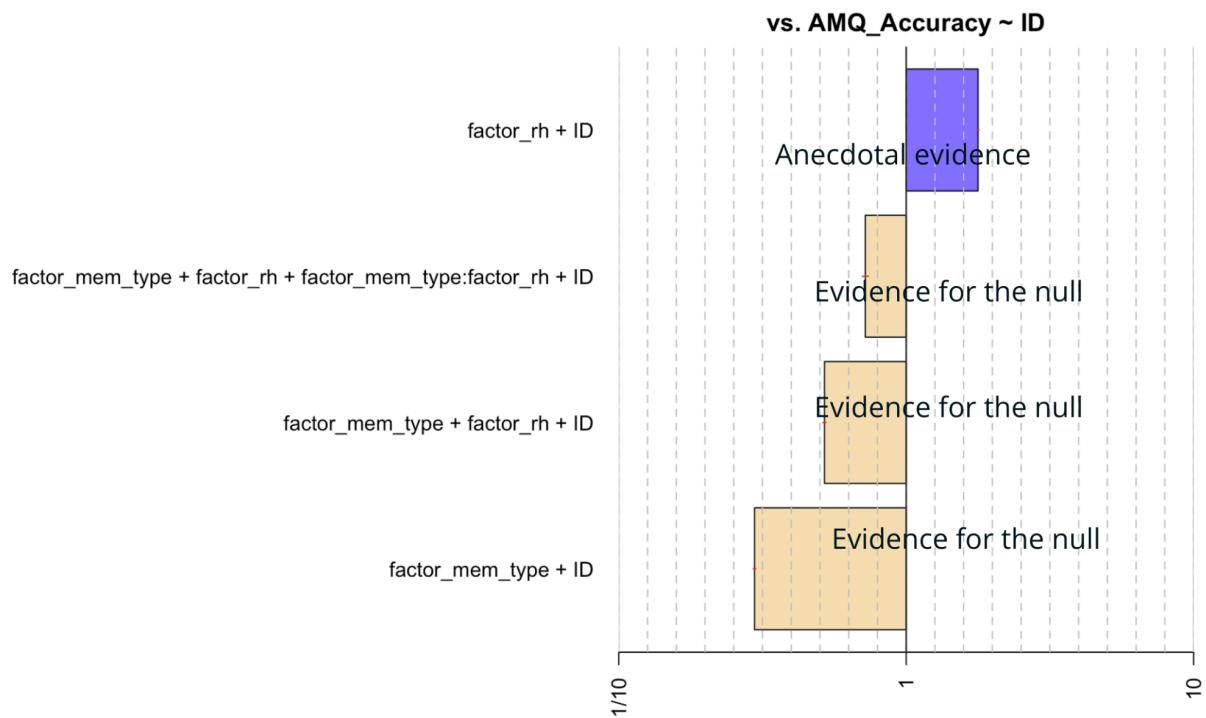


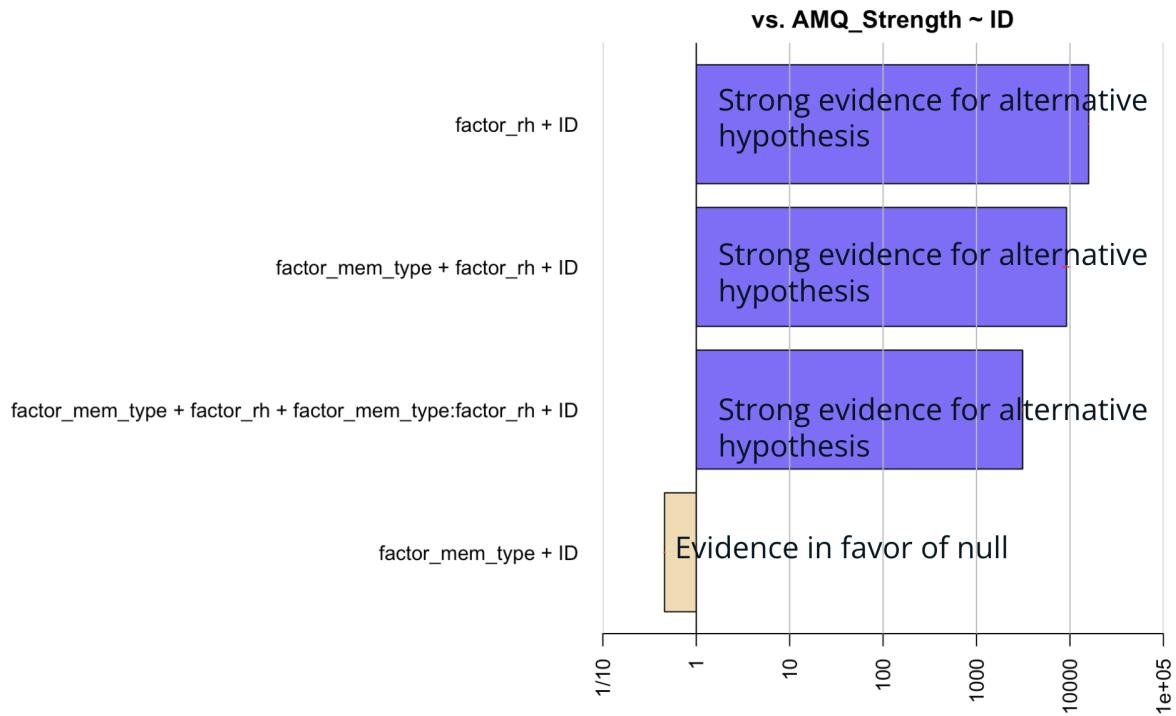
**Figure 10**

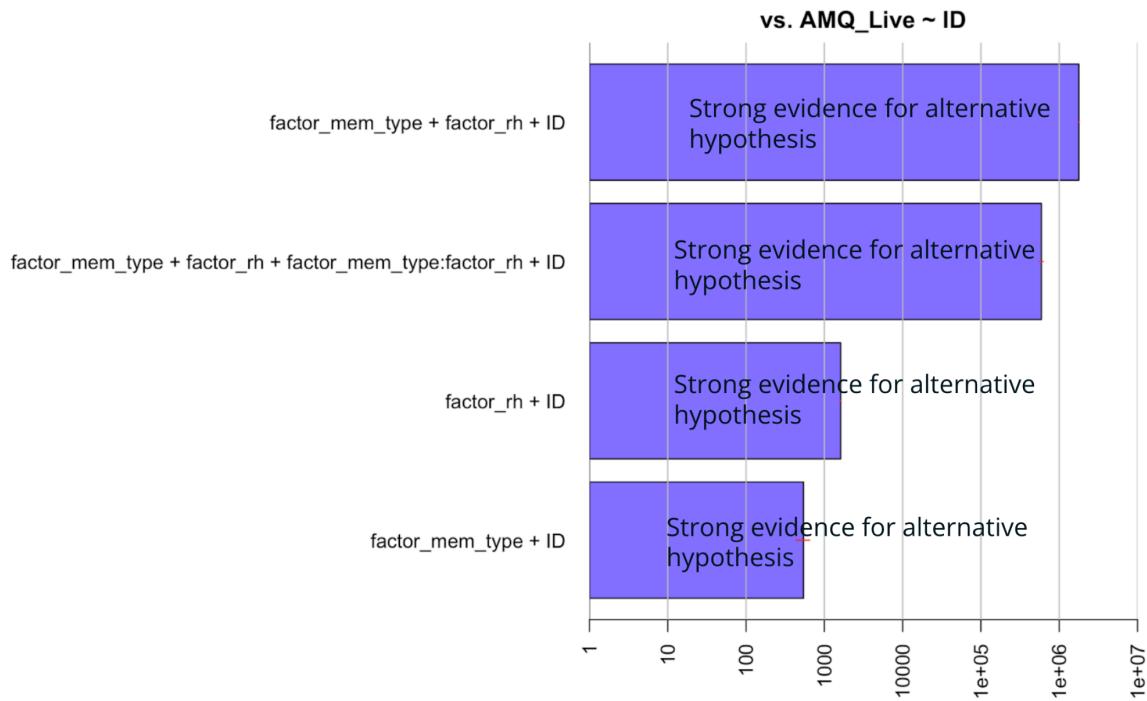
*Bayesian Statistical Model of Auditory Imagery (AMQ\_Hear) ANOVA model*

**Figure 11**

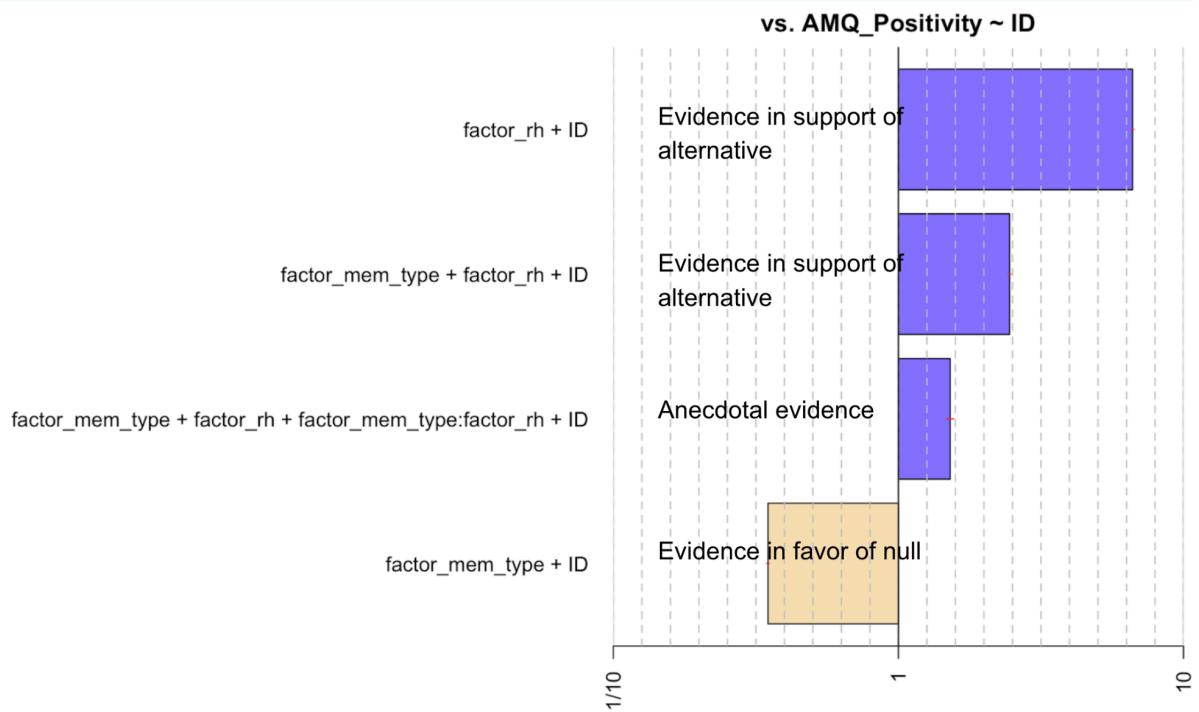
*Bayesian Statistical Model of Accuracy (AMQ\_Accuracy) ANOVA Model*



**Figure 12***Bayesian Statistical Model of Accuracy (AMQ\_Strength) ANOVA Model***Figure 13***Bayesian Statistical Model of Reliving (AMQ\_Live) ANOVA Model*

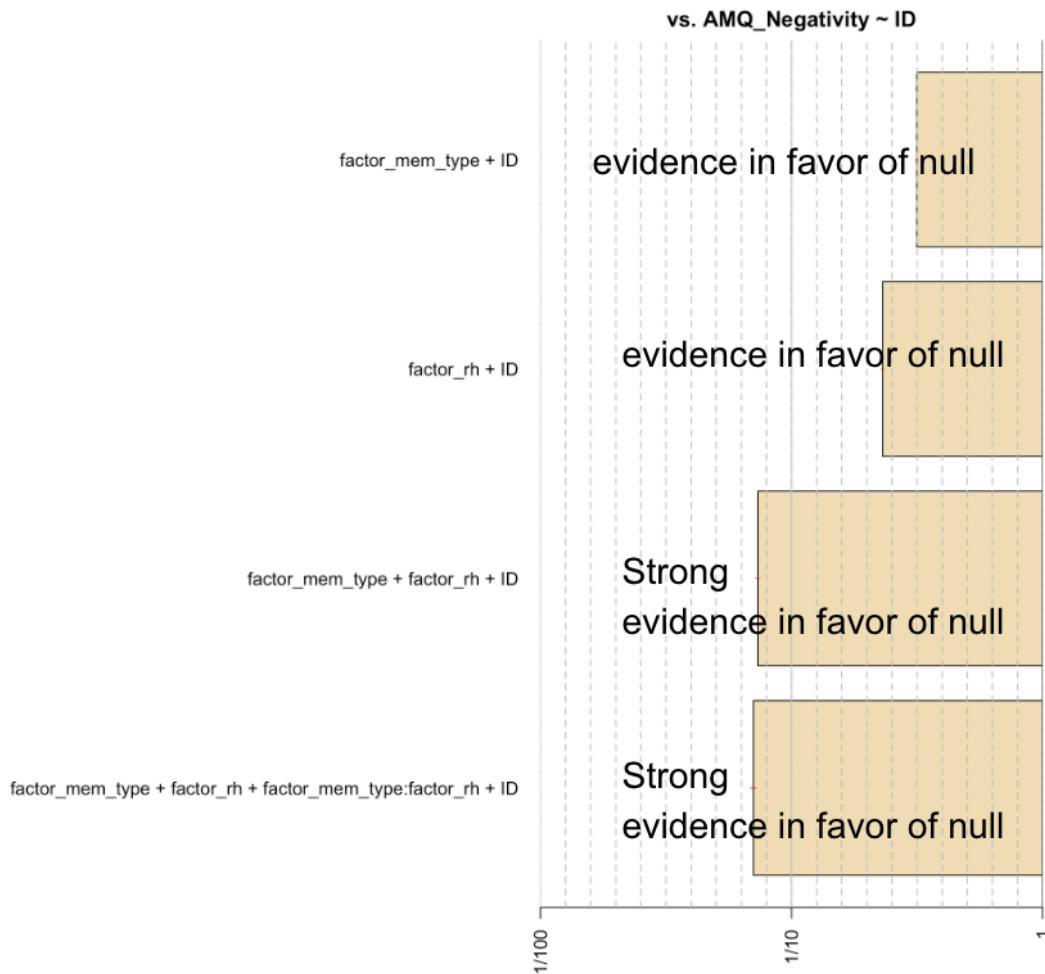
**Figure 14**

*Bayesian Statistical Model of Positivity (AMQ\_Positivity) ANOVA Model*

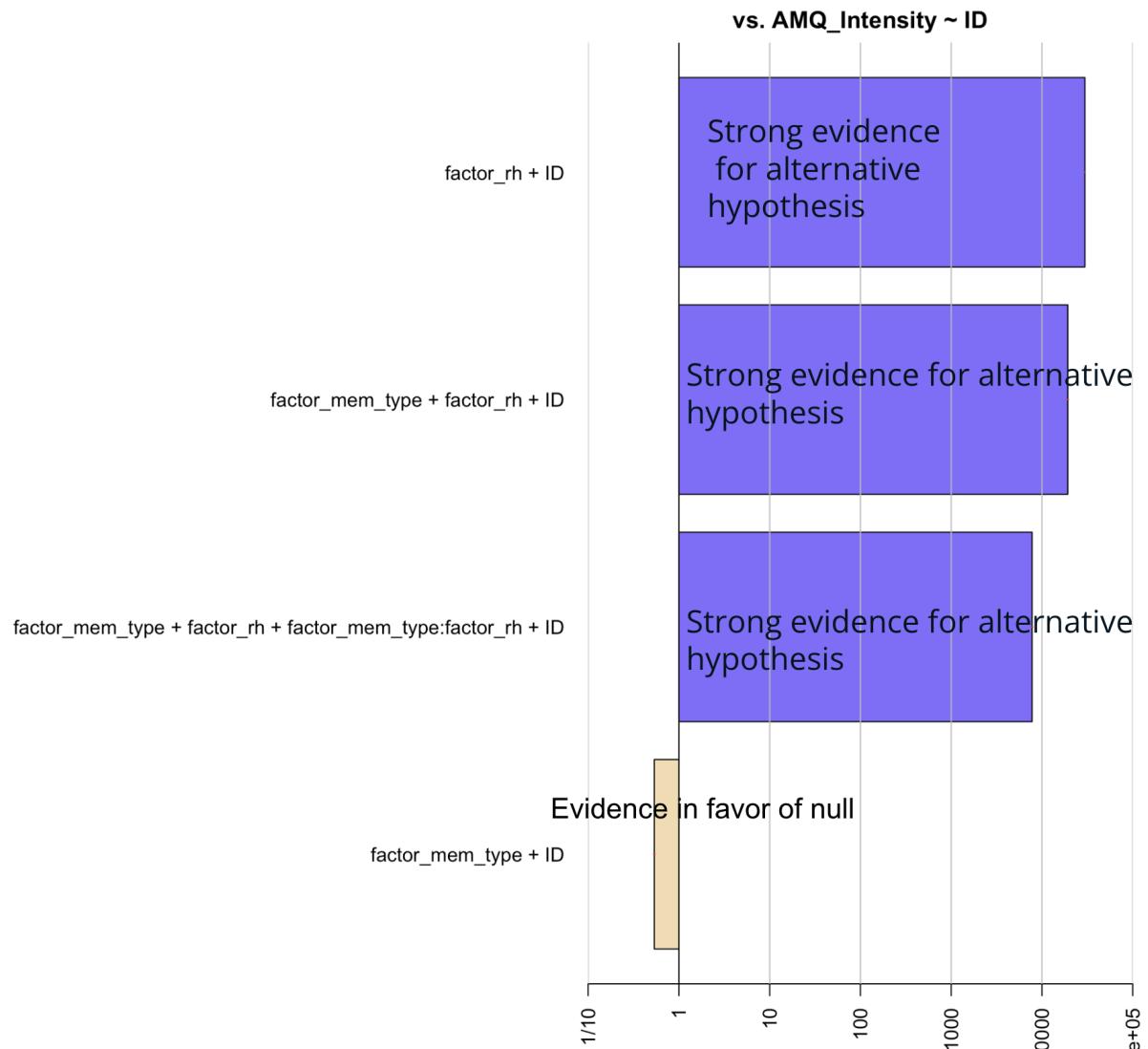


**Figure 15**

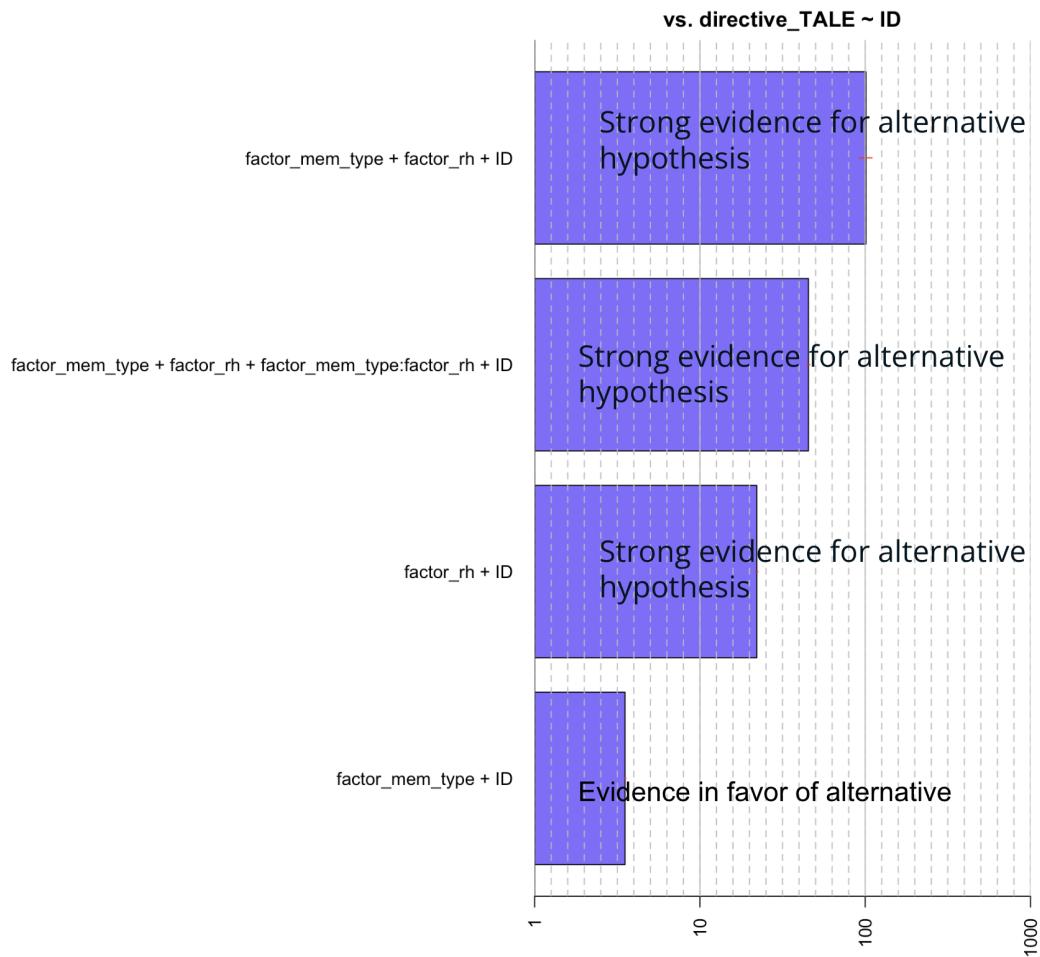
*Bayesian Statistical Model of Negativity (AMQ\_Negativity) ANOVA Model*

**Figure 16**

*Bayesian Statistical Model of Negativity (AMQ\_Negativity) ANOVA Model*

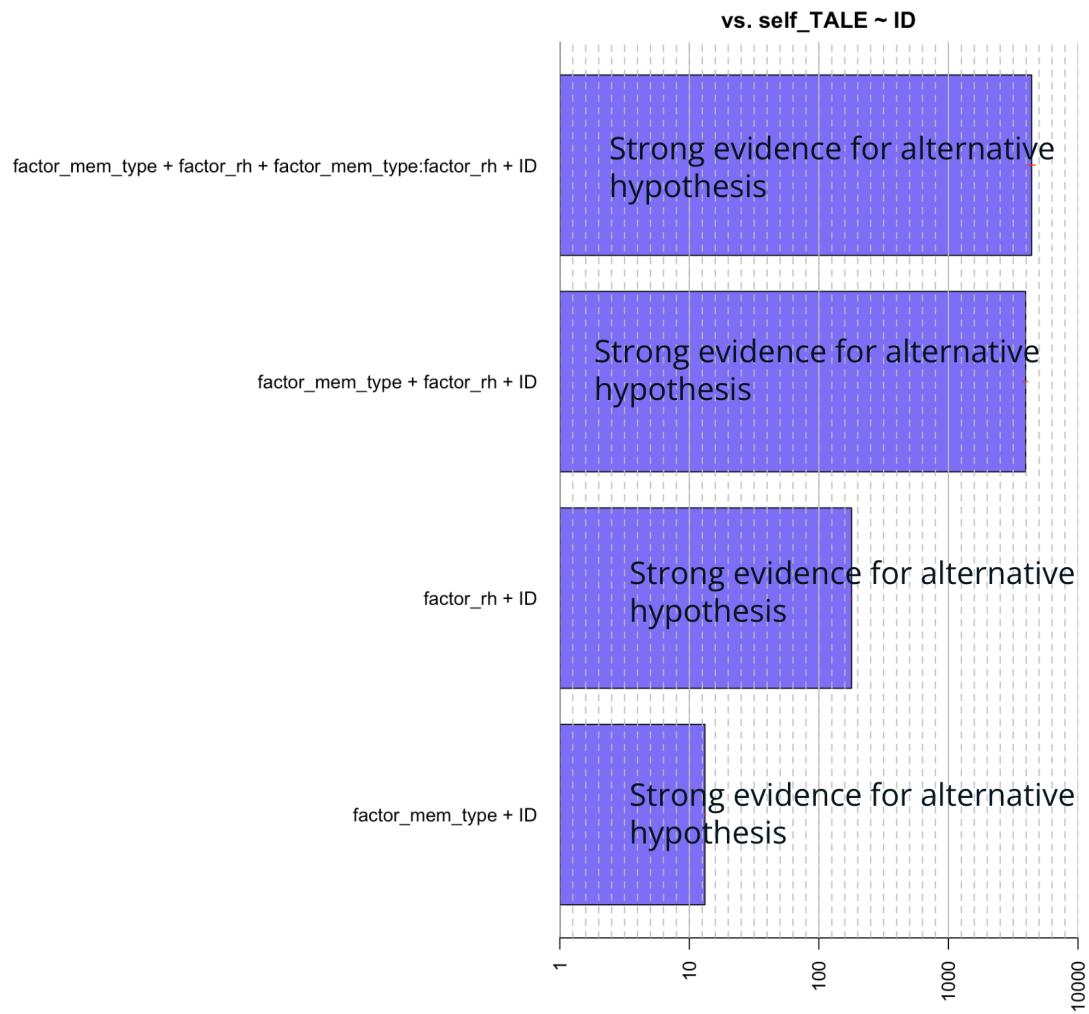
**Figure 17**

*Bayesian Statistical Model of Directive TALE Function (directive\_TALE) ANOVA Model*



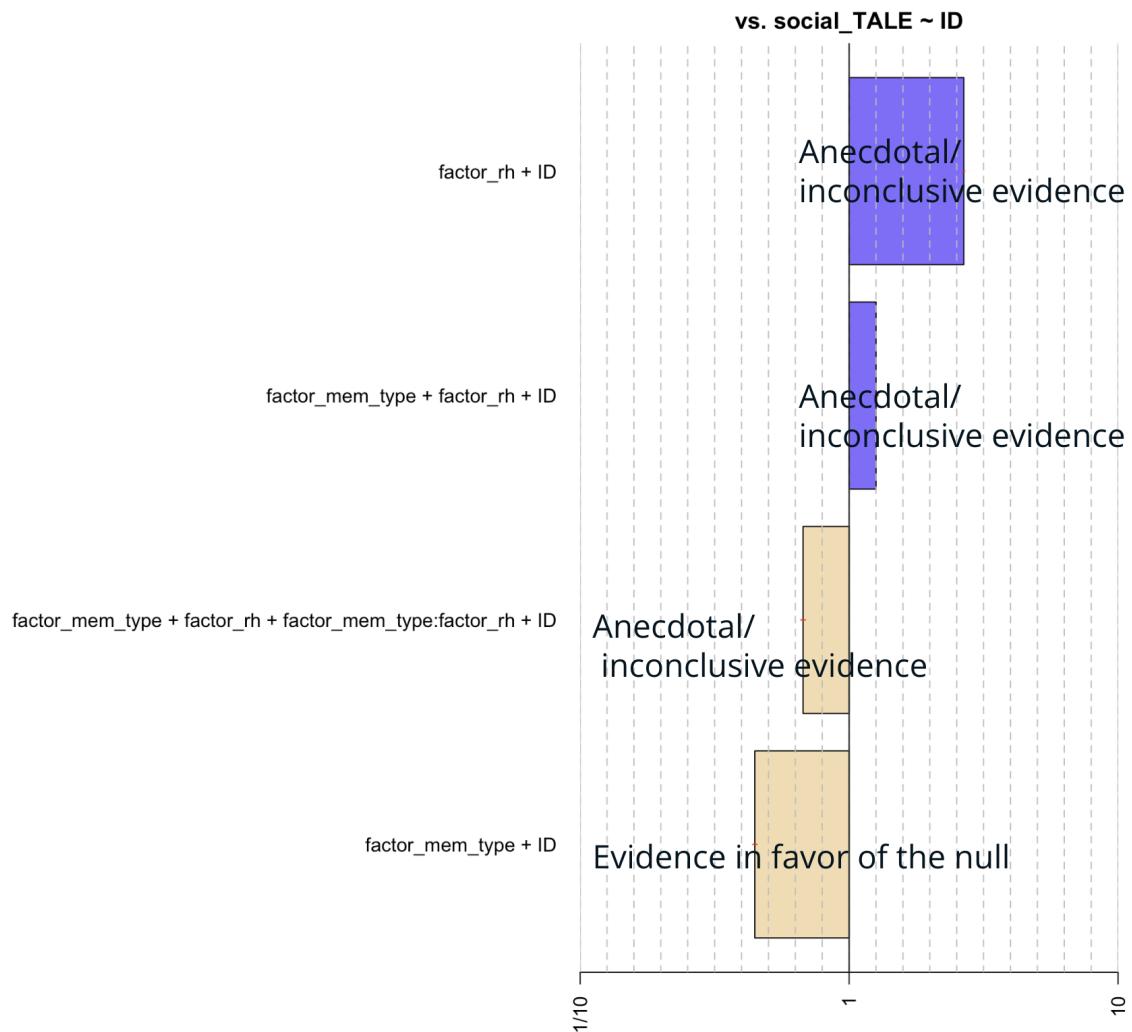
**Figure 18**

*Bayesian Statistical Model of Self TALE Function (self\_TALE) ANOVA Model*

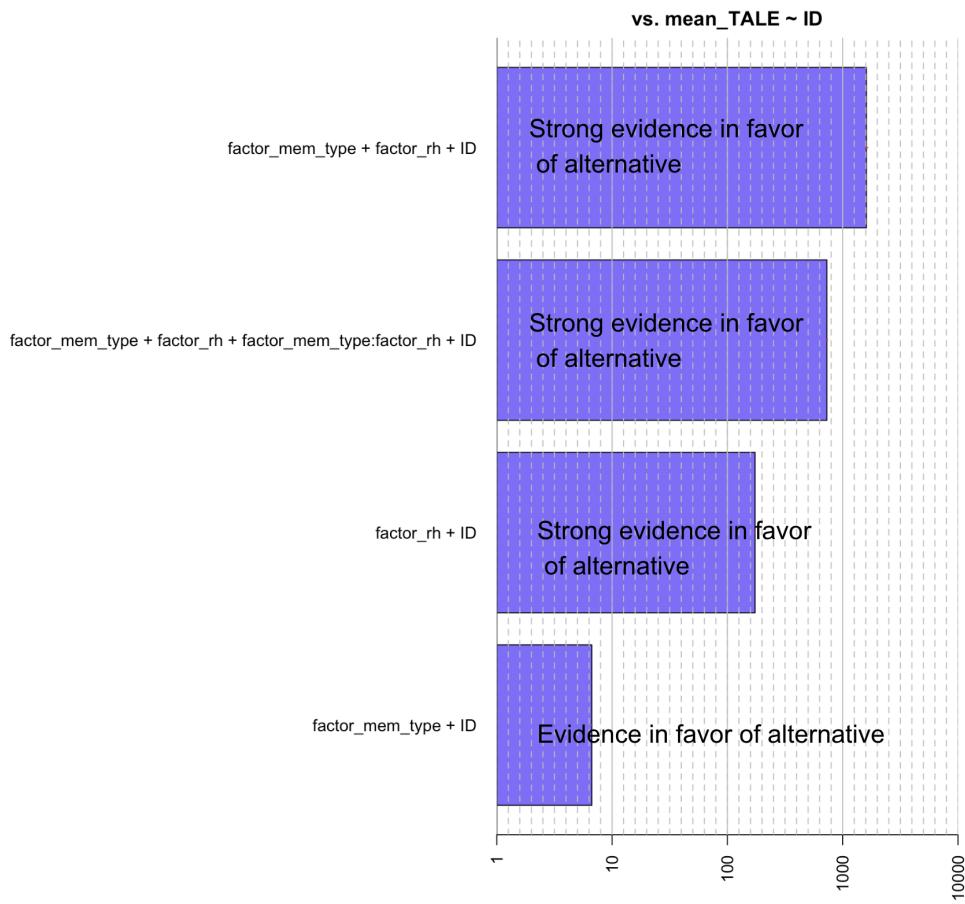


**Figure 19**

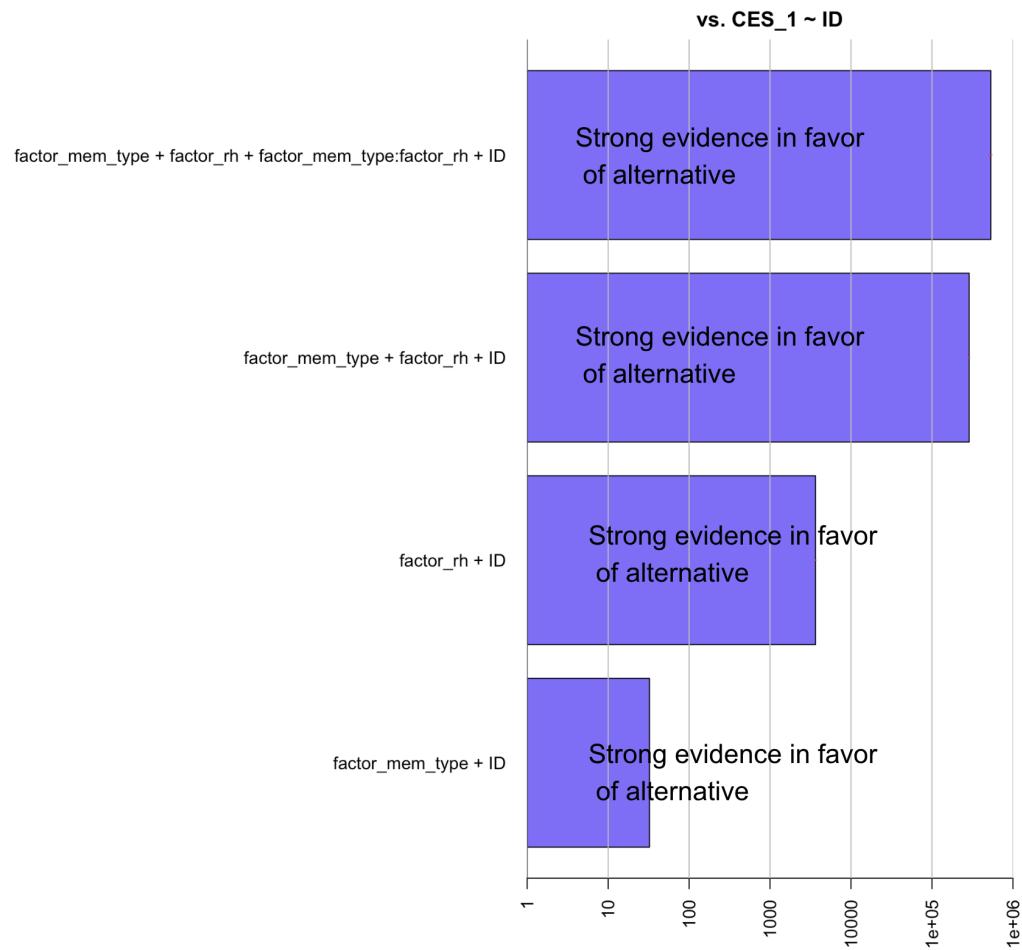
*Bayesian Statistical Model of Social TALE Function (social\_TALE) ANOVA Model*

**Figure 20**

*Bayesian Statistical Model of TALE Functions (mean\_TALE) ANOVA Model*

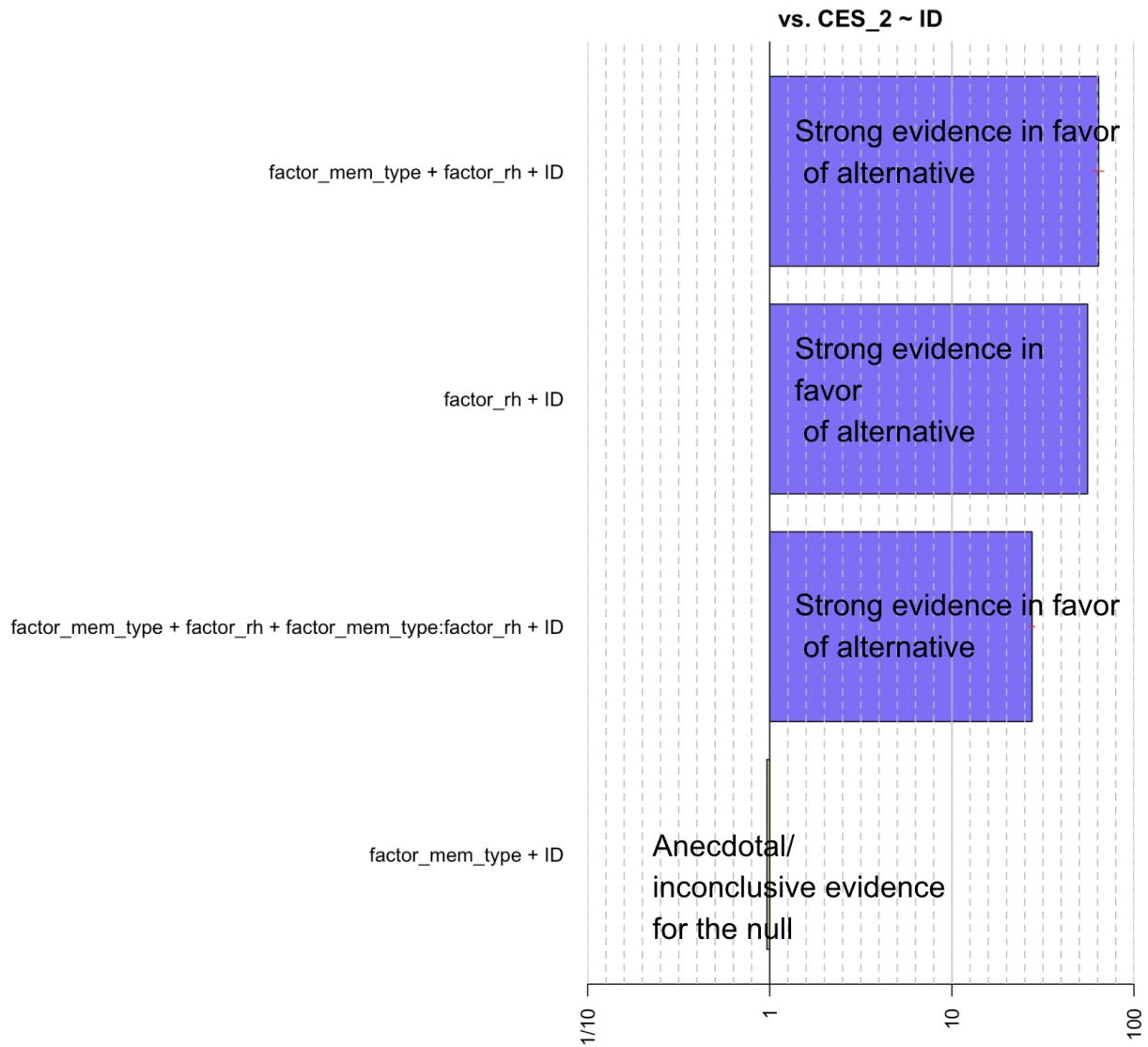
**Figure 21**

*Bayesian Statistical Model of CES Identity Function (CES\_1) ANOVA Model*

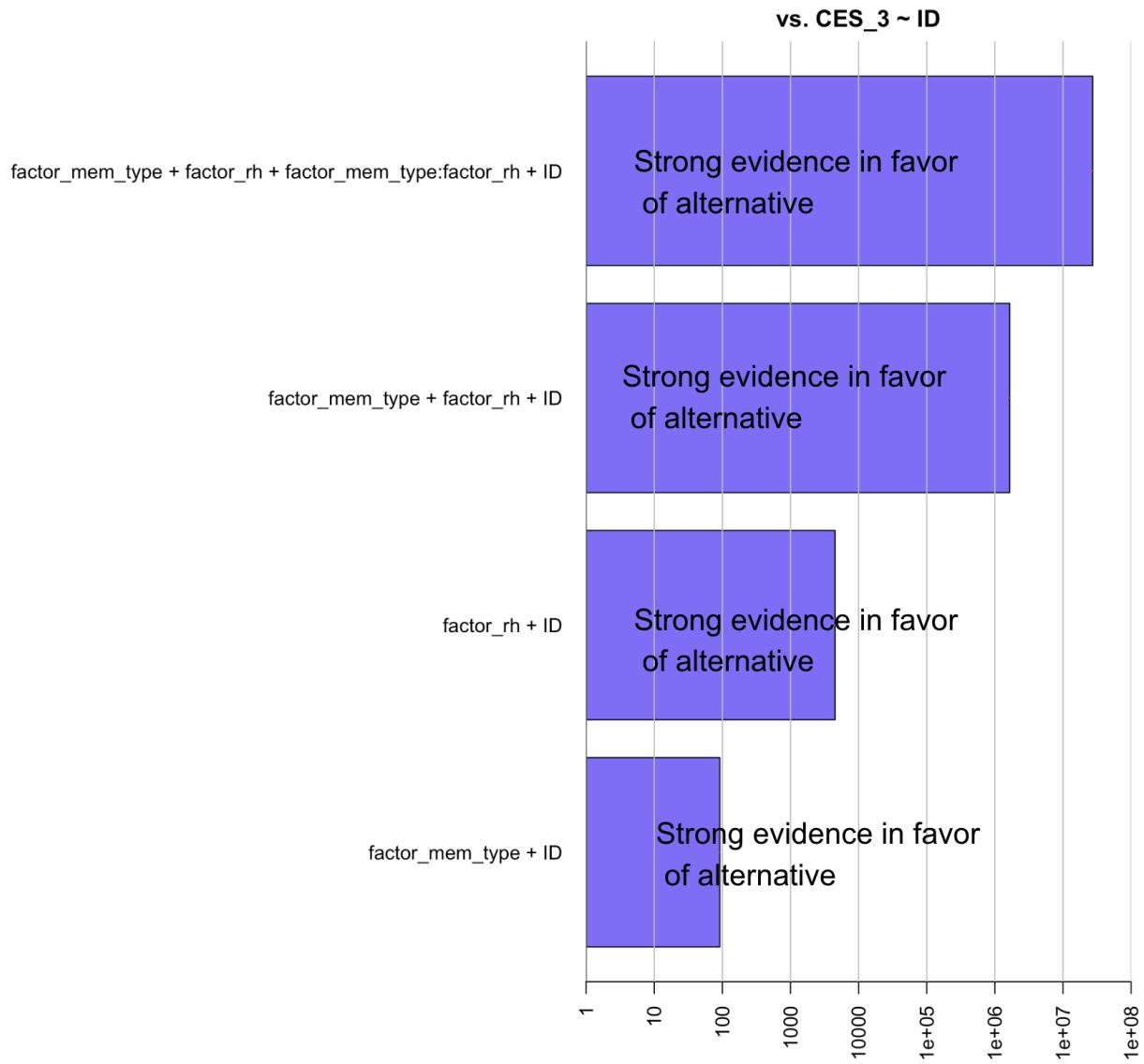


**Figure 22**

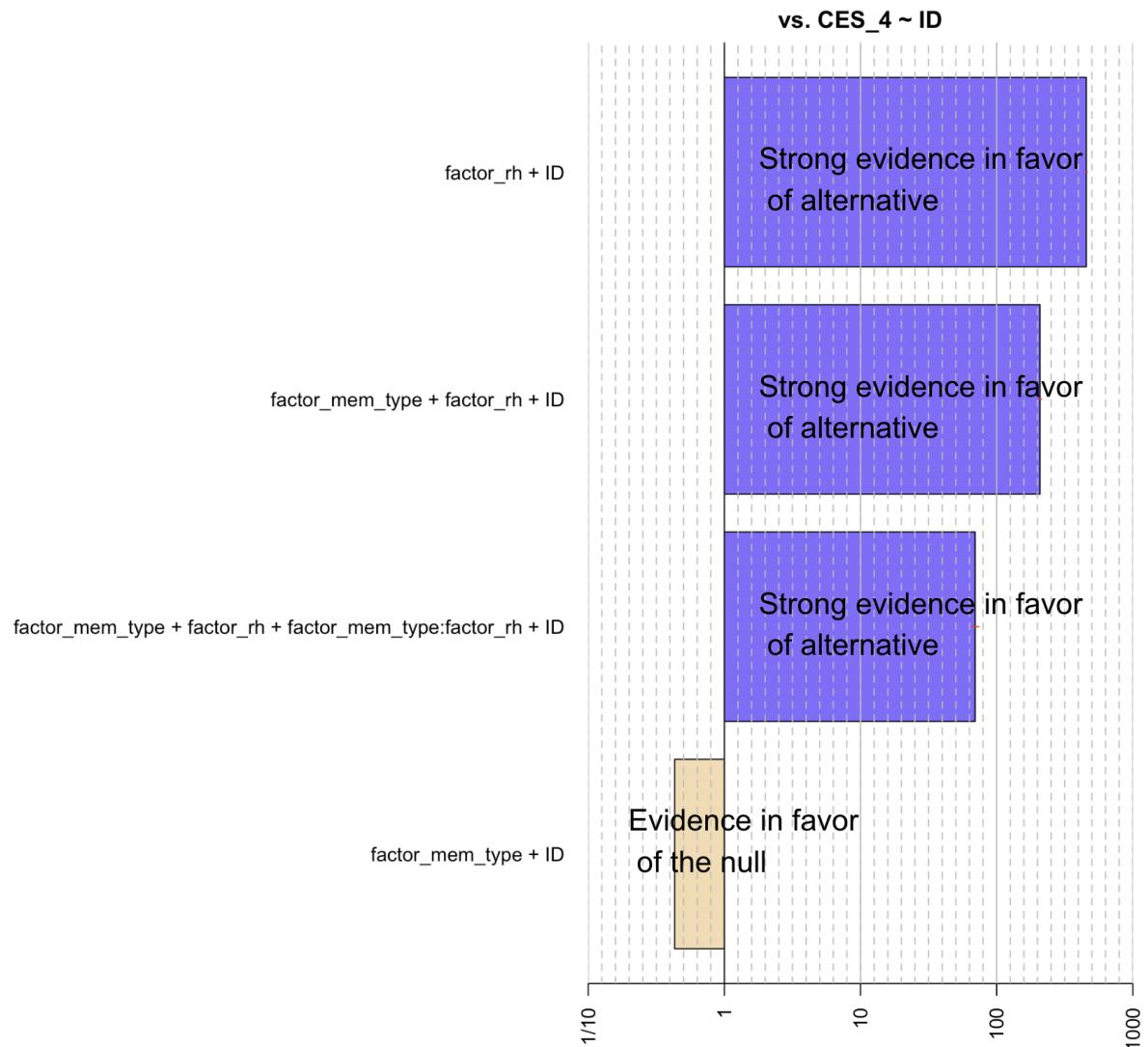
*Bayesian Statistical Model of CES Reference Function (CES\_2) ANOVA Model*

**Figure 23**

*Bayesian Statistical Model of CES Central Function (CES\_3) ANOVA Model*

**Figure 24**

*Bayesian Statistical Model of CES Colored Function (CES\_4) ANOVA Model*

**Figure 25**

*Bayesian Statistical Model of TALE Functions (mean\_TALE) ANOVA Model*

