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**IUSS**

**Social Recall Context Moderates the Relationship Between  
Autistic Traits and Episodic Memory: Evidence from an  
Emotional Film Paradigm**

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# 1. Abstract

How an emotional experience is later recalled, shared with another person or held privately, shapes what is remembered as much as the experience itself. This thesis examined whether autistic traits related differently to memory for an emotionally intense film across three memory types, gist, perceptual detail, and socioemotional content, and across two recall contexts: narrating it to an empathic listener versus recalling it alone. The study was designed to test Weak Central Coherence (WCC) theory, which proposes that autistic traits involve a detail-focused processing style at the expense of integrating information into broader representations; perceptual detail memory might therefore be expected to remain preserved even as more integrative memory becomes vulnerable. Forty adults viewed a neutral and a trauma-analogue film; after each film, participants either narrated their experience to an empathic listener or reflected on it alone, and completed memory assessments immediately and one week later. Higher autistic traits predicted significantly lower memory for perceptual detail and for socioemotional content among participants who had narrated their experience to a listener; this relationship did not reach significance among participants who recalled the film alone, and the formal interaction between recall condition and autistic traits did not reach significance for either outcome, so this pattern is best read as suggestive rather than as confirmed evidence that social context moderates the association. A separate, weaker trend linked higher autistic traits to lower gist memory overall, independent of recall condition. Contrary to WCC's prediction that detail memory would remain protected, it instead declined alongside socioemotional memory during social narration. These findings suggest that WCC's detail-focused processing account may not generalize straightforwardly to socially demanding recall, and that autistic traits interact with the social and cognitive demands of recalling an experience to another person to shape what is remembered and forgotten.

**Keywords:** autistic traits, episodic memory, social recall, empathy, Weak Central Coherence, emotional memory

## 2. Introduction & Background

### 2.1. Introduction

Why do we remember some experiences vividly, while others fade almost completely? Does emotion play a role in what we keep and what we lose? As early as 1890, William James wrote that "an impression may be so exciting emotionally as almost to leave a scar upon the cerebral tissues" (James, 1890/1981). Although memory is imperfect, some moments seem to be preserved with striking accuracy. Modern research supports this intuition: emotionally arousing events are remembered differently than neutral ones, following a distinct pattern of what is preserved and what is lost rather than becoming uniformly better or worse overall (Dolcos et al., 2025). Cognitive psychology describes this pattern as a trade-off: memory gains something and loses something else at the same time. But the size and shape of this trade-off differ from person to person. What makes some people show a stronger trade-off than others? This thesis examines one specific source of that variation: differences in autism-spectrum traits.

A century of research since James has also replaced his metaphor. Memory does not work like a recording that is stored once and replayed intact; it behaves more like a retelling, reconstructed each time from parts that do not all age at the same rate. Over days and weeks, the specific and detailed components of an experience fade while its general meaning consolidates and stabilises (Sekeres et al., 2018). And each act of retelling leaves its own mark: recounting an experience to another person measurably changes which of its components survive in the teller's own memory (Eckardt et al., 2024). Both facts matter for this thesis. If memory is reconstruction rather than playback, then anything that shapes the reconstruction, the passage of time, the presence of a listener, or the cognitive style of the person remembering, becomes a legitimate object of study rather than a nuisance to be controlled away.

The specific target of interest here is episodic memory: memory for a particular, personally experienced event, tied to a specific time and place, as distinct from semantic memory for general facts and knowledge that carry no such context (Tulving, 1972). What gets reconstructed is not one thing but several. An emotional experience leaves behind its overall meaning, the gist of what happened; its perceptual particulars, what things looked and sounded like; and its human content, who was involved and what they felt (Levine et al., 2002; Kensinger, 2009). These components can be measured separately, and they do not rise

and fall together (Sekeres et al., 2018). A person can retain a film's storyline while losing its visual details, or remember a room precisely while forgetting who in it was angry and who was afraid. The present thesis scores all three components separately, because its central predictions concern exactly this kind of divergence: the possibility that autistic traits relate to some components of emotional memory and not others.

The question has stakes well beyond the laboratory. Memory for distressing events sits at the centre of several clinical conditions, most visibly in the intrusive, unbidden images that characterise post-traumatic stress (James et al., 2016). And what people do with such memories in everyday life is rarely private: after a difficult experience, the near-universal advice is to talk about it. Yet talking is itself an intervention. Sharing a memory with a listener changes its emotional weight over time (Muir et al., 2015). Narrating a traumatic experience in a structured, supportive way is also the basis of an established PTSD treatment: narrative exposure therapy treats building a coherent narrative of a traumatic event as a central mechanism of recovery (Schauer et al., 2011). What is less well established is whether this works the same way, and equally well, for everyone. The common-sense recommendation to talk things through assumes a uniform benefit that has been tested far less than the therapeutic value of narrating trauma itself. If people differ in how empathic engagement shapes what they remember, then understanding those differences matters for anyone whose work depends on listening with empathy, from therapists to close friends and family, and for the ordinary decision each of us makes about whether to speak or stay silent. Autism-spectrum traits are the specific lens taken here, because autism is centrally a matter of social communication itself: current diagnostic criteria are built around persistent difficulties with social-emotional reciprocity and the back-and-forth of everyday conversation (American Psychiatric Association, 2013). A population already defined by differences in how conversation unfolds is a natural place to look for whether empathic exchange shapes memory differently for some people than others. Autism-spectrum traits also relate to memory processing style, a connection this chapter develops later, but the social-communication link is the more immediate reason to study this population here.

This thesis approaches that question through individual differences, and it does so dimensionally. Autism-spectrum traits are distributed continuously through the general population; a diagnosis marks a region of that continuum, not a separate category of mind (Baron-Cohen et al., 2001). Much of this research, however, still relies on comparing a diagnosed group against a control group (e.g., Justus et al., 2025), a design that cannot say

whether the patterns it finds are graded, present in milder form wherever the relevant traits are found, or specific to the clinical range. Measuring autistic traits continuously in a non-clinical sample turns that question into something testable. If memory for an emotional experience varies systematically with trait levels well below any diagnostic threshold, the mechanisms involved belong to cognition in general rather than to a disorder, and findings from clinical studies gain a bridge to the wider population.

It does so in a setting designed to resemble how emotional memories are actually formed and shared. Participants watched an emotionally intense or a neutral film and then either narrated their experience to a listener or reflected on it alone, with memory assessed immediately and again approximately one week later. The chapters that follow build the theoretical case for why autistic traits, social recall context, and emotional content should jointly shape what is remembered from an emotional experience, and then test that case empirically.

## **2.2. Objectives, research questions, and hypotheses**

### **2.2.1. Objectives**

The study addresses four primary objectives:

1. To test whether higher autistic traits are associated with weaker memory for the overall gist and meaning of an emotionally arousing experience. The expectation, grounded in Weak Central Coherence theory, is that a processing style biased toward local detail comes at the cost of the global integration that gist memory requires.
2. To test whether higher autistic traits are associated with weaker memory for the emotional and character-level content of such an experience. Remembering who felt what, and who did what, depends on binding separate elements of an experience into relations, and the relational binding literature reviewed below points in the same direction, suggesting this is precisely the kind of memory most sensitive to autistic traits.
3. To determine whether these relationships depend on the social context of recall, comparing narration to a listener with recall performed alone. Narrating adds demands that solitary recall does not: constructing a coherent account in real time, monitoring a listener, and tuning the telling to an audience. Managing these demands well is itself a matter of social communication, an area of specific difficulty in autism (American Psychiatric Association, 2013), though a successful exchange with an empathic listener could also ease memory

processing rather than only burden it (Muir et al., 2015). If autistic traits relate to how this exchange unfolds, trait-related memory differences should be larger during social narration than during recall alone.

4. To establish whether any such relationship is domain-specific. Weak Central Coherence predicts a dissociation, weaker gist and socioemotional memory alongside comparatively preserved memory for perceptual detail, and this predicted split is what distinguishes it from accounts that expect general impairment. Testing all three memory domains within the same participants makes that dissociation directly observable.

### **2.2.2. Research questions**

RQ1: Are higher autistic traits associated with weaker memory for the gist of an emotionally arousing experience?

RQ2: Are higher autistic traits associated with weaker memory for its socioemotional content?

RQ3: Does the social context of recall, narrating to a listener versus recalling alone, moderate the relationship between autistic traits and memory?

RQ4: Do the three memory domains, gist, socioemotional, and perceptual detail, show different relationships with autistic traits, as Weak Central Coherence predicts, or does any relationship apply uniformly across domains?

### **2.2.3. Hypotheses**

Four hypotheses follow from the objectives and research questions above. In brief, higher autistic traits were expected to predict weaker gist and socioemotional memory but not weaker detail memory, and these relationships were expected to be stronger during social narration than during solitary recall. Because each hypothesis rests on a specific theoretical argument, all four are stated formally and developed with their supporting rationale in Chapter 3 rather than being duplicated here.

### **2.2.4. Thesis structure and expected findings**

Chapter 2 reviews the theoretical background across seven areas: emotional memory and the gist/detail trade-off, the trauma film paradigm, autism-spectrum traits and episodic memory, Weak Central Coherence theory, empathic context and the sharing of memory,

memory transformation over time, and the neural mechanisms connecting them. Chapter 3 develops the research hypotheses in detail. Chapter 4 describes the sample, film stimuli, procedure, and memory questionnaires. Chapter 5 presents the ordinal regression (cumulative link) models testing the interaction between autistic traits and social recall context across memory domains. Chapter 6 discusses the findings in light of Weak Central Coherence theory, and Chapter 7 concludes by summarizing the main contributions, limitations, and directions for future research.

Based on Weak Central Coherence theory, autistic traits are expected to relate to weaker memory for gist and for socioemotional content, particularly when recall takes place in conversation with a listener, while memory for perceptual detail is expected to remain comparatively preserved.

## **2.3. Literature Review**

### **2.3.1. Emotional memory and the gist/detail trade-off**

Episodic memory is not a single capacity. Researchers have long distinguished between the overall gist or meaning of an experience, its perceptual and contextual details, and its emotional and character-level content, components that can be measured separately and that respond differently to the same conditions (Levine et al., 2002; Kensinger, 2009). This division matters because emotion does not act on memory uniformly. Emotionally arousing events tend to be remembered with a characteristic profile: central, meaning-carrying information is preserved well, while peripheral and contextual details are often remembered worse than they would be for a comparable neutral event (Kensinger, 2009). Recent reviews confirm that arousal produces dissociable, sometimes opposite, effects across memory components rather than a general improvement or decline (Dolcos et al., 2025).

The trade-off extends beyond the distinction between central and peripheral information. Emotional arousal can strengthen memory for individual, emotionally salient elements while at the same time impairing memory for the associations between those elements (Fujiwara et al., 2021). Socioemotional memory depends on exactly these associations: remembering that a particular person felt a particular way, or did a particular thing, requires binding separate pieces of the experience together. If strong arousal makes those links harder to form, then emotionally intense material should produce weaker socioemotional memory than neutral material, which is the reasoning behind H2. It also identifies socioemotional memory as the

domain most likely to suffer when any additional factor burdens integrative processing, a point that becomes central when autistic traits enter the picture in Section 2.3.3.

### **2.3.2. The trauma film paradigm**

Studying memory for genuinely traumatic experiences raises an obvious ethical problem: researchers cannot expose participants to real trauma, and survivors' memories cannot be checked against an objective record of what actually happened. The trauma film paradigm was developed as a way around both problems. Participants view film footage depicting traumatic content under controlled laboratory conditions, which allows emotional reactions and subsequent memory to be measured prospectively, against a known stimulus, without exposing anyone to actual harm (Holmes & Bourne, 2008). Reviewing the studies that established this method, Holmes and Bourne (2008) showed that trauma films reliably elicit measurable emotional responses and intrusive memories whose frequency can be experimentally increased or decreased in line with theoretical predictions, which indicates that the paradigm captures processes relevant to real-world traumatic memory rather than only reactions to watching a film.

A later systematic review of 74 studies extended this conclusion, positioning the paradigm as an experimental psychopathology model suitable for studying the full course of trauma processing, from before exposure through encoding to later remembering (James et al., 2016). Film stimuli carry an additional advantage for memory research specifically: because every participant encodes the same events, memory can be scored against a known ground truth, and memory for extended film narratives has been shown to remain measurable and structured over long delays (Furman et al., 2007). Both films are considerably longer than the brief clips typical of trauma film paradigm studies, though the underlying logic still applies: a trauma-analogue film and a neutral film of comparable narrative structure, each edited to approximately 20 minutes, allow memory for emotionally intense and emotionally neutral material to be compared within the same participants.

### **2.3.3. Autism-spectrum traits and episodic memory**

Autism-spectrum traits are not an all-or-nothing category; everyone shows some degree of these traits, from very low to very high, even outside of a clinical diagnosis (Baron-Cohen et al., 2001). Given this, researchers have asked whether autism-spectrum traits relate to memory performance. Justus et al. (2025) studied 326 adults, half with a diagnosis of Autism

Spectrum Disorder (ASD) and half without. Neurotypical adults remembered emotionally arousing images better than neutral ones, while adults with ASD showed no such difference: emotional and neutral images were remembered at roughly the same rate. This suggests that emotional arousal does not boost memory in the same way for people with autism-spectrum characteristics, and that how emotion and memory interact may depend on where someone falls on the spectrum.

Bessé et al. (2025) approached the question differently. Using standard laboratory tests across a broad adult age range (19 to 80 years), they found no meaningful link between autistic traits and episodic memory performance. This matters because their tasks were neutral and context-free, with no emotional content and no social element. It raises the question of whether the effect only becomes visible under richer, more emotionally and socially demanding conditions, which is exactly what the present study sets out to test. The inconsistency between these two studies may come down to how autism was measured, a clinical group in Justus et al. (2025) versus a continuous trait score in Bessé et al. (2025), and to the type of memory task used, a distinction this thesis addresses directly.

A separate research tradition, developed largely independently of the theories discussed below, converges on a similar conclusion. Work on relational binding has shown repeatedly that autistic adults recall individual words, objects, and images as well as neurotypical comparison groups, but perform worse specifically when a task requires binding those items to their context: pairing an object with its location, a word with the list it appeared in, or a feature with the item it belonged to (Bowler et al., 2014). This pattern held even when encoding was tightly controlled across groups, suggesting the difficulty is not a matter of study strategy but of how relational information gets bound together in memory in the first place.

The proposed mechanism points toward the same neural structures already implicated in this thesis. Gaigg et al. (2015) combined behavioral and neuroimaging evidence to argue that these binding difficulties reflect atypical hippocampal-dependent encoding: autistic participants showed reduced recollection specifically for contextually rich, integrated information of the kind the hippocampus supports, while simpler familiarity-based memory remained comparatively spared. The same pattern extends beyond the laboratory into real, personally experienced memories. Crane and Goddard (2008) found that autistic adults retrieved fewer specific episodic autobiographical memories than comparison participants, despite intact semantic autobiographical knowledge: they could report general facts about

their own lives fluently, yet struggled to retrieve the particular, contextually embedded event a cue was meant to trigger.

Taken together, this line of work arrives at the prediction tested in H1 and H2 from an entirely different direction than Weak Central Coherence, through the mechanics of memory encoding rather than through perceptual or attentional style. That two independent literatures, built on different methods and vocabularies, converge on the same expectation, weaker memory for integrated and relational content alongside relatively preserved memory for discrete items, gives H1 and H2 a stronger evidential foundation than either literature could provide alone.

#### **2.3.4. Weak Central Coherence theory**

"Some individuals can identify dozens of brands of vacuum cleaner from their sound alone. Others can spot a misaligned book in a bookcase in seconds, or mimic foreign speech distinctions not usually noticeable to non-native speakers. These exceptional perceptual abilities may be maladaptive in so far as they may lead to distress at small changes in the environment" (Happé & Frith, 2006, p. 5). One cognitive theory that has specifically sought to address both deficits and assets in autistic traits is the "weak coherence" account. Weak Central Coherence (WCC) theory (Frith, 1989; Happé & Frith, 2006) proposes autistic cognition is biased away from that automatic big-picture pulling-together, and toward processing individual details on their own. More recent work continues to support this local processing bias, showing that adults with ASD tend to focus on isolated details rather than pulling them together into an overall social or contextual meaning, a tendency that appears especially pronounced in social situations (Pavlopoulou et al., 2022).

At the neural level, individuals with ASD show reduced hippocampal connectivity and attenuated frontal activity during episodic memory retrieval, in regions responsible for binding separate pieces of information into a coherent memory and for organising retrieval (Richter et al., 2017). Since autistic traits exist on a continuum in the general population (Baron-Cohen et al., 2001), individuals higher on this continuum may show a milder, subclinical version of the same pattern. This gives a direction for H1 and H2: if weaker hippocampal and prefrontal coordination underlies difficulty binding information into meaningful wholes, then higher autistic traits should be associated with lower gist and socioemotional memory, while leaving detail memory comparatively intact.

Detail memory appears to follow a different route. Autistic traits are associated with greater response selectivity in extrastriate visual cortex, the regions that process object-level perceptual detail, with Autism-Spectrum Quotient (AQ) scores predicting larger population receptive fields in these areas even in non-clinical samples (Schwarzkopf et al., 2014). This supports the direction predicted in H4: if detail processing runs through a pathway that is intact or even amplified, then higher autistic traits should not reduce memory for perceptual details, and may leave it relatively preserved, in contrast to the expected decline in gist and socioemotional memory.

WCC was chosen over alternatives such as Theory of Mind or Executive Function. Two other well-established cognitive accounts of autism were considered and set aside. An executive-function account, which attributes autistic cognition to broad difficulties with planning, inhibition, and cognitive flexibility, would predict domain-general impairment across all three memory types rather than the specific pattern tested here, since these control processes are not selective for any one kind of content. A Theory-of-Mind account, which attributes autistic cognition to specific difficulty inferring other people's mental states, predicts impairment more narrowly for content that requires understanding what a character felt or intended, but offers no clear account of why gist memory for the overall storyline, or memory for perceptual detail, should be affected at all. WCC is the only one of the three that predicts the specific dissociation tested here: impairment for the two domains requiring integration, alongside detail memory that should remain comparatively intact (Hemmers et al., 2022). This prediction is not universally supported, however: using the California Verbal Learning Test, autistic participants showed reduced semantic organization of recalled material without a corresponding advantage on any other memory strategy, a pattern more consistent with a general encoding difficulty than with the compensatory local-processing shift that WCC would predict (Minshew & Goldstein, 1993).

### **2.3.5. Empathic context and the sharing of memory**

Memory is not formed in isolation, and the context in which an experience is recalled can shape what is remembered. But not any social presence does this: what distinguishes the recall context tested in this thesis is specifically empathic engagement, a listener who responds with warmth, attention, and understanding, rather than a passive or disengaged audience. Muir et al. (2015) found that sharing a memory with a responsive, engaged listener produced different emotional memory outcomes than recalling it alone. Talking to an attentive listener reduced

the emotional intensity of unpleasant memories over time, while a non-responsive listener had the opposite effect, which suggests that a listener actively shapes the memory, not just receives it. What matters here is not social presence on its own, but whether the engagement is empathic.

The effect of an audience is not limited to emotional intensity. A long line of work in social psychology, beginning with Higgins and Rholes (1978), has shown that speakers tailor what they say to fit their audience, and that this tailoring feeds back into their own memory: after describing a person in terms adjusted to the listener's attitude, communicators later remembered the original information in a way biased toward their own tuned description. This "saying-is-believing" effect has proven robust and appears to depend on the communicative relationship itself, emerging most clearly when speakers aim to establish a shared understanding with their audience (Echterhoff et al., 2005). For the present study, this literature makes a simple point with large consequences: narrating an experience to another person is itself an act of communication that can reshape the memory being told, rather than a neutral read-out of what is stored. This kind of audience effect on memory content shows up across several different research traditions. Directly discussing a witnessed event with another person can shift what gets remembered toward what that person said, sometimes overriding a strong, accurate original memory (Edelson et al., 2011). Using a real group situation with fMRI, a related study found that social conformity pressure shifted recognition memory judgements, with this shift tracked by activity in the hippocampus and anterior cingulate cortex (Deuker et al., 2013). Jointly recalling an experience with someone else changes both what is recalled and how it is organised compared to recalling alone (Harris et al., 2008). Even brief social discussion after witnessing an event can shift memory toward inaccurate details introduced by a conversational partner (Dalton & Daneman, 2006). Across these different paradigms, the common thread is that engaging with another person during or after an experience does not leave the memory of that experience untouched.

The content of what is shared changes too. When people recall an experience with the goal of communicating it, they tend to minimize idiosyncratic, episodic detail in favor of more general, shared content (Eckardt et al., 2024). In the context of autistic traits, Losh and Gordon (2014) measured narrative coherence using a computational linguistic tool, comparing how closely autistic and non-autistic adults' spoken narratives matched expected semantic content across two narrative tasks that differed in their interpersonal and cognitive demands. Narrative coherence was reduced in autism overall, and this gap was larger in the more

demanding of the two tasks, suggesting that the demands of producing a narrative for another person may bring out cognitive style differences, including gist and detail trade-offs, that stay hidden during less demanding recall. This leads directly to H3: if social narration amplifies WCC-related processing differences, then people higher in autistic traits should show a stronger reduction in gist and socioemotional memory when sharing socially than when recalling alone.

### **2.3.6. Memory transformation over time**

Memory also changes on its own over time. As days pass, episodic memories shift away from specific, detailed representations and toward more abstract, meaning-based ones, a process known as memory transformation (Sekeres et al., 2018). At the neural level, this shift shows up as a decline in specific memory representations in the anterior hippocampus, together with a strengthening of gist-based representations in the ventromedial prefrontal cortex (vmPFC) and angular gyrus across longer retention intervals (Krenz et al., 2023). This gives a clear directional prediction for the two sessions of the present study: gist memory should increase from Session 1 to Session 2 as semantic representations consolidate, while memory for specific socioemotional content should decrease over the same week as hippocampal specificity fades (Krenz et al., 2023; Sekeres et al., 2018).

### **2.3.7. Neural mechanisms: one circuitry, three influences**

The behavioral literatures reviewed above point to a shared set of neural structures that appear repeatedly, and this overlap is itself informative. Emotion's influence on memory runs through two connected pathways. The amygdala, engaged by arousal, strengthens hippocampal encoding and consolidation of the specific details bound into an emotional episode, while the prefrontal cortex, particularly its ventromedial and orbital regions, exerts a separate, top-down regulatory influence back on the amygdala itself, shaping how much arousal-driven signal reaches memory systems in the first place (LaBar & Cabeza, 2006). Each region's contribution maps loosely onto the three memory domains tested here: the hippocampus supports the rapid binding of specific perceptual and contextual detail into a coherent episode, the ventromedial prefrontal cortex is associated with the more abstract, schema-like representations that gist memory depends on, and the amygdala's connections to both regions give emotional and character-related content its own privileged, if selective, route into memory. This two-way arrangement is selective rather than uniform, which is the

neural counterpart of the behavioral trade-off described in Section 2.3.1: arousal amplifies some memory operations while leaving others unsupported, so an emotionally intense experience is remembered with a different profile, and through partly different circuitry, than a neutral one.

The same hippocampal and prefrontal territory reappears in the transformation literature. As reviewed in Section 2.3.6, the shift from detailed toward gist-based memory over time tracks declining specificity in the anterior hippocampus alongside strengthening representations in ventromedial prefrontal cortex (Krenz et al., 2023). Consolidation, in other words, is a gradual handover between the same two regions that emotion modulates at encoding.

It is also precisely this circuitry that differs with autistic traits. Individuals with ASD show reduced hippocampal functional connectivity and attenuated frontal engagement during episodic retrieval (Richter et al., 2017), and behavioral binding difficulties have been traced to atypical hippocampal-dependent encoding (Gaigg et al., 2015). Reviewing this literature as a whole, Cooper and Simons (2019) reached a conclusion that matters for the present design: the recollection difficulty in autism is best explained by altered functional interactions between neurocognitive systems, rather than by dysfunction localised to any single region or process. Meanwhile, perceptual processing in extrastriate visual cortex appears intact and possibly sharpened with higher trait levels (Schwarzkopf et al., 2014), providing a separate route through which detail memory could be spared.

Putting these three strands side by side yields the mechanistic logic of the present study. The hippocampal-prefrontal circuitry that binds an experience into an integrated memory is the point where all three of this thesis's factors meet: emotional arousal modulates it, time transforms what it has stored, and autistic traits are associated with differences in how its components interact. If Cooper and Simons (2019) are right that the autism-related difference lies in coordination between systems rather than in any single system, then conditions that demand more coordination should reveal larger trait-related differences. Narrating an emotional experience to a listener, which requires retrieving, integrating, and communicating at once, is exactly such a condition. This is the neural-level rationale for H3, and it explains why the present design crosses autistic traits with social recall context rather than studying either factor alone.

## 2.4. Identifying Gaps in Literature

At its core, this is a study of how empathic interaction shapes episodic memory. Bringing the preceding sections together with that aim in view, three gaps stand out.

First, the studies that directly examined autistic traits and episodic memory used materials stripped of the features that give everyday remembering its difficulty and its meaning. Bessé et al. (2025) found no link between autistic traits and memory using neutral, context-free laboratory tasks, and Justus et al. (2025) found group differences using emotional pictures, but with no social element and a clinical group rather than a dimensional trait measure. Whether autistic traits relate to memory under conditions that resemble real remembering, with emotionally arousing material, an extended narrative, and a listening other, has not been tested.

Second, despite a body of work on how listeners shape memory, almost no study isolates empathic interaction specifically: existing work has examined listener responsiveness or presence in general terms, but not empathy, warmth, and understanding as their own defined dimension, and none has asked how this depends on individual differences in autistic traits. Muir et al. (2015) and Eckardt et al. (2024) demonstrated that listeners change what is remembered, and Higgins and Rholes (1978) showed that the act of communicating reshapes the communicator's own memory, yet none of this work asked whether these effects are uniform across people. Losh and Gordon (2014) provide the closest bridge, showing that narrative differences linked to autism emerge most clearly in social conversation, but their study measured narrative production rather than subsequent memory. A related line of evidence comes from Jones et al. (2011), who found that autism symptom severity, specifically social and communication difficulty, predicted memory performance on an everyday memory battery embedded in social and communicative demand, but not on a standard, decontextualized word-recall task. Social context, in other words, can matter more, not less, for people with higher autistic traits, a pattern this thesis tests directly by comparing memory for the same material recalled alone versus narrated to a listener.

Third, to our knowledge, no prior study has combined these elements: emotionally arousing, trauma-analogue stimuli; recall that is either social or solitary; memory scored

separately for gist, socioemotional content, and perceptual detail; and autistic traits measured dimensionally in a non-clinical sample. The present study was designed to fill precisely this gap.

Putting these strands together gives a conceptual model with three connected parts. First, autistic traits are associated with a cognitive style that favours local over global processing, which should show up as weaker memory for the overall meaning of an experience and for its emotional and character-level content, while leaving perceptual detail memory relatively intact. Second, recalling an experience socially, by narrating to a listener rather than reflecting alone, adds integrative and communicative demands that may amplify these trait-related differences. Third, emotional arousal shapes which components survive at all: high arousal disrupts the binding of separate elements into coherent wholes, while consolidation over time strengthens gist at the expense of specific detail. The present study asks whether these three factors, autistic traits, social recall context, and emotional content, work together to determine what is remembered from a shared emotional experience.

The present study brings these questions together. Participants watched either a neutral or an emotionally intense film and then either shared their experience with a Listener or reflected on it alone. The central question was whether people higher in autism-spectrum traits remembered the film differently depending on which situation they were in, and whether that difference showed up in what they remembered: the overall meaning, the socioemotional content, or the specific details. Memory was assessed immediately after the recall task in both conditions and again approximately one week later.

### 3. Research Hypothesis

Based on the literature reviewed above, the following hypotheses were formulated regarding the relationship between autistic traits, social recall context, and memory for different components of an emotional experience.

H1: Higher autistic traits were expected to be associated with weaker memory for the overall meaning and narrative gist of an emotional experience, reflecting reduced global integration in line with Weak Central Coherence theory (Happé & Frith, 2006).

Gist memory is not stored as a single unit; it has to be built by integrating separate scenes, actions, and outcomes into one coherent storyline. Weak Central Coherence theory proposes that autistic cognition is biased away from exactly this kind of automatic, big-picture integration, and toward processing individual elements in relative isolation (Frith, 1989; Happé & Frith, 2006). At the neural level, this bias has a plausible substrate: individuals with ASD show reduced hippocampal connectivity and attenuated frontal activity during episodic retrieval, specifically in the circuitry responsible for binding separate pieces of information into a coherent memory (Richter et al., 2017). Because autistic traits are continuously distributed through the general population rather than confined to a diagnostic category (Baron-Cohen et al., 2001), this same difficulty integrating parts into a whole should appear, in milder form, as trait levels rise even among people without a diagnosis. If so, then constructing and later retrieving the overall gist of an emotionally arousing film, a task that depends on pulling many separate scenes into one narrative thread, should become harder as autistic traits increase. H1 tests this prediction directly.

H2: Higher autistic traits were expected to be associated with weaker memory for the emotional and character-level content of an experience, reflecting the same WCC-consistent difficulty with relational and meaning-based integration.

Socioemotional memory places even greater demands on integration than gist memory does, because it requires binding specific people to specific actions and specific feelings: remembering not just that someone was upset, but who was upset, why, and what they did about it. This is a relational, associative form of memory, and a body of work developed independently of Weak Central Coherence theory converges on the conclusion that this is precisely the kind of memory most affected by autistic traits. Autistic adults recall individual items as accurately as neurotypical adults but perform worse specifically when a task requires

binding those items to their context, a pattern traced to atypical hippocampal-dependent encoding rather than to any general memory weakness (Bowler et al., 2014; Gaigg et al., 2015). Emotional arousal compounds the difficulty: arousal can strengthen memory for individual salient elements while simultaneously impairing memory for the associations between them (Fujiwara et al., 2021), which means an emotionally intense scene may leave a participant with vivid but disconnected fragments rather than a bound memory of who felt what. H2 tests whether this combination, relational binding difficulty plus arousal-driven associative impairment, produces measurably weaker socioemotional memory as autistic traits increase.

H3: The relationship between autistic traits and memory was expected to be stronger when recall took place in a social sharing context than in isolated recall, reflecting the additional social-cognitive demands placed on the narrator during interaction (Losh & Gordon, 2014).

H1 and H2 predict a difficulty with integration; H3 predicts when that difficulty should become visible. Narrating an experience to a listener is not a neutral act of retrieval: it requires holding a coherent account together in real time, monitoring how the listener is responding, and adjusting the telling accordingly, on top of the underlying memory search itself. Doing this well is a social-communication skill, precisely the area autism-spectrum traits are most directly associated with difficulty (American Psychiatric Association, 2013). This cuts both ways: an exchange that goes well, where the Narrator feels heard and understood, can ease and consolidate the memory being shared (Muir et al., 2015), while a breakdown in coordination between Narrator and listener could add difficulty on top of the retrieval task itself. If the difficulty predicted by H1 and H2 is fundamentally about coordination between cognitive systems rather than damage to any single one, as neuroimaging evidence on autism and episodic recollection suggests (Cooper & Simons, 2019), then conditions that demand more coordination should reveal larger trait-related differences, and conditions that demand less should not. Solitary recall is comparatively low-demand: there is no audience to track and no delivery to manage. Social narration is high-demand in exactly the sense this account predicts. Independent support for this logic comes from the social-memory literature: narrative differences between autistic and non-autistic individuals are clearest specifically during social conversation (Losh & Gordon, 2014), and more generally, the act of communicating a memory to another person reshapes what a speaker later remembers of it, an effect long documented in the audience-tuning and saying-is-believing literature (Higgins & Rholes, 1978; Echterhoff et al., 2005) and shown more

recently to extend to which specific details survive being told at all (Eckardt et al., 2024). H3 brings these strands together into a single moderation prediction: the memory difficulties tested in H1 and H2 should be amplified specifically in the Narrator condition.

H4: A domain-specific pattern was expected: autistic traits should show a negative relationship with gist and emotional memory, but not with memory for perceptual details. This dissociation follows WCC's prediction of reduced global integration alongside relatively preserved local processing (Happé & Frith, 2006; Schwarzkopf et al., 2014).

H4 is the hypothesis that distinguishes Weak Central Coherence from a simple account of general impairment, and it is in some ways the most demanding prediction in this thesis, because it requires autistic traits to relate to memory in opposite directions depending on which component is measured. WCC does not propose that autistic cognition processes less information overall; it proposes a redistribution, away from global integration and toward local, detail-level processing (Frith, 1989; Happé & Frith, 2006). The detail-processing side of this account has direct neural support: autistic traits are associated with greater response selectivity in extrastriate visual cortex, the region responsible for object-level perceptual detail, with higher AQ scores predicting larger population receptive fields in these areas even in non-clinical samples (Schwarzkopf et al., 2014). If detail processing runs through a pathway that is intact, or even sharpened, while the pathway supporting global integration is comparatively weaker, then perceptual detail memory should not decline alongside gist and socioemotional memory, and may remain flat across the range of autistic traits. This is not a universally supported prediction, and it is treated here as a genuine test rather than a foregone conclusion: at least one study using the California Verbal Learning Test found reduced semantic organization in autistic participants with no compensatory advantage in any other memory strategy, a pattern more consistent with general encoding difficulty than with a true trade-off (Minshew & Goldstein, 1993). H4 was designed specifically to adjudicate between these two accounts using the present study's own data.

## **4. Method**

### **4.1. Overview**

The present study formed part of a broader research project examining how social interaction influences episodic memory for emotional events. The broader project included additional affective measures administered at several points during testing. The present thesis focuses specifically on memory performance and its relationship to autistic traits and social recall context; only the components relevant to these questions are described in detail below.

### **4.2. Participants and Recruitment**

We recruited participants through an online screening procedure completed before the laboratory sessions. The screening collected demographic information and assessed eligibility for participation. Only individuals between 18 and 40 years of age were eligible, and individuals with post-traumatic stress symptoms, social anxiety, or other severe psychopathology were not recruited.

Sixty eligible participants were scheduled in groups of three, with all three members of each group matched by gender. The Narrator and Listener attended their session together, while the Alone participant could complete their session on a different day. Roles were then randomly assigned within each same-gender group.

The final analytic sample for the present thesis comprised the Narrator and Alone participants ( $N = 40$ ), who viewed the film material directly and completed the memory assessments. This sample had a mean age of 24.88 years ( $SD = 4.23$ , range 19-36) and comprised 26 female (65.0%) and 14 male (35.0%) participants. By role, the Narrator group comprised 14 female and 6 male participants, and the Alone group comprised 12 female and 8 male participants.

Listener participants took part in Session 1 but did not complete memory assessments; their data are not analyzed in the present thesis. The target sample of 40 Narrator/Alone participants was set by practical constraints on recruitment and testing time within the project timeline, rather than by a formal a priori power analysis; the resulting statistical power to detect small-to-moderate effects is correspondingly limited, a constraint discussed further in the Discussion.

Participants received compensation of €15 per hour or one course-credit point (Versuchspersonenstunde) per hour.

### **4.3. Design**

The study used a mixed factorial design. Social recall context was manipulated between subjects: participants either narrated their experience to a listener (Narrator condition) or reflected on it alone (Alone condition). Two factors varied within subjects: film type (neutral versus trauma-analogue) and time of testing (immediate versus one week later); a third factor, questionnaire version, was counterbalanced between subjects to control for item-specific difficulty. Autistic traits were treated as a continuous individual-difference variable.

Figure 4.1 illustrates the full procedure, from recruitment through both sessions.

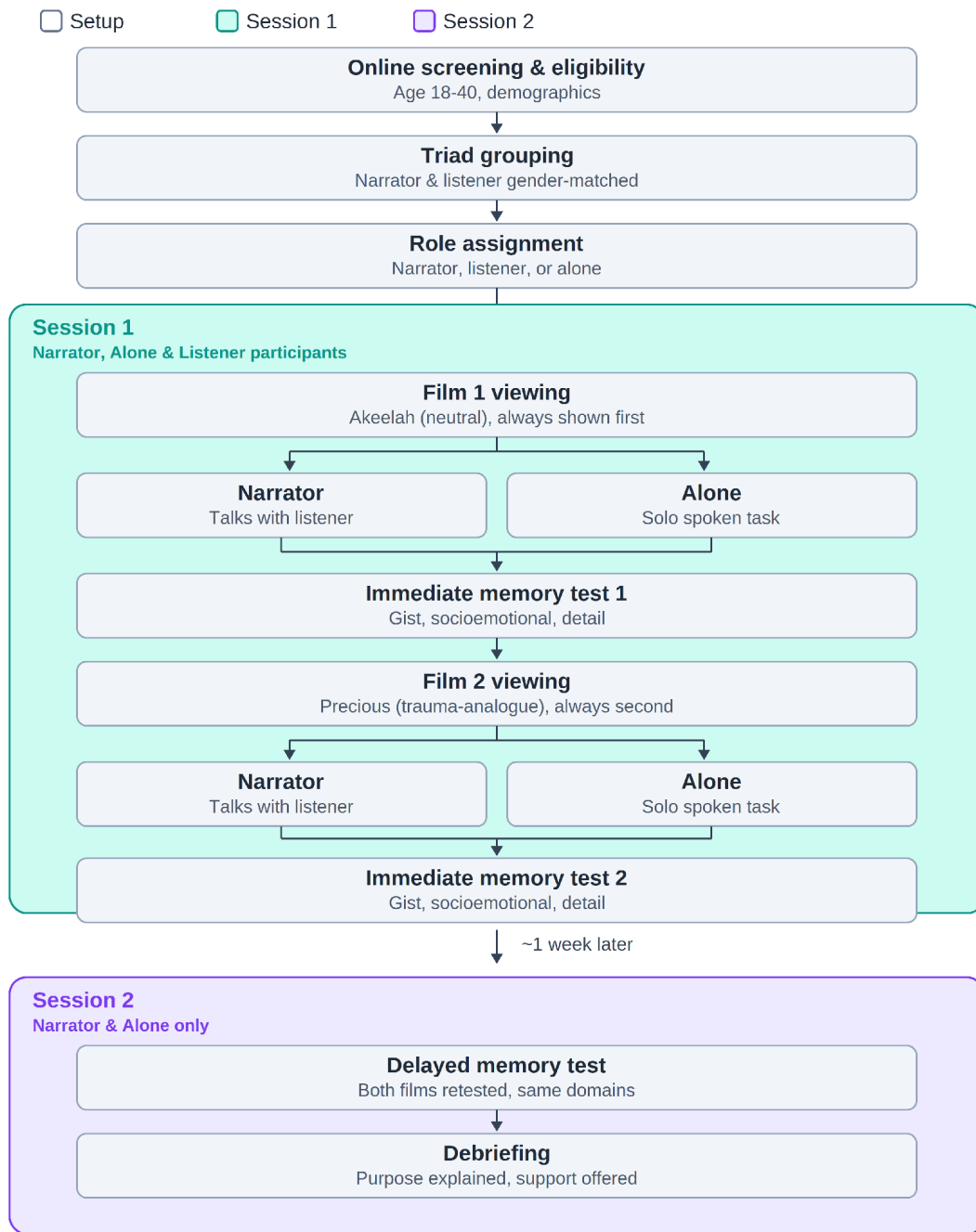


Figure 4.1. Study procedure from recruitment through Session 1 and Session 2.

#### 4.4. Materials and Stimuli

Two films were used. *Precious* (Daniels, 2009) served as the trauma-analogue condition. The film follows a teenage girl living in poverty who experiences sustained physical and emotional abuse within her family, and was selected for its capacity to elicit strong negative affect while depicting realistic interpersonal trauma. *Akeelah and the Bee* (Atchison, 2006) served as the neutral condition. It follows a schoolgirl preparing for a national spelling competition, and was selected because it is emotionally engaging without containing

traumatic content, and because it shares a comparable narrative structure with a young female protagonist. Film selection followed the logic of the trauma film paradigm (James et al., 2016). Both films were edited down to approximately 20 minutes from their full theatrical length. This shorter duration was chosen to keep the overall session length manageable while still leaving sufficient time within each session for the interaction phase, the memory questionnaire, and a meaningful conversation about the film content, rather than requiring participants to recall a much longer narrative in comparably limited time.

#### 4.5. Measures

Table 4.1 summarizes each measure used in the present thesis, the construct it assessed, its format, and how it was scored.

**Table 4.1**

*Measures Used in the Present Thesis*

| Measure                      | Construct assessed                                | Format                                                                     | Scoring                                        |
|------------------------------|---------------------------------------------------|----------------------------------------------------------------------------|------------------------------------------------|
| AQ-10 (Allison et al., 2012) | Autistic traits, continuous individual difference | 10 self-report items                                                       | Summed score; used continuously (mean-centred) |
| Memory Questionnaire, Part A | Gist, Socioemotional, and Detail memory           | 15 open-ended cued recall items per session (5 per category)               | 0/1 per item against predefined target answer  |
| Memory Questionnaire, Part B | Recognition memory for film content               | True/false statements about the film                                       | 0/1 per item                                   |
| Memory Questionnaire, Part C | Temporal order memory                             | 5 scene descriptions to be sequenced                                       | 0/1 per item, correct chronological position   |
| Memory Questionnaire, Part E | Emotional response and empathy toward characters  | 1-7 Likert ratings (shame, fear, sadness, anger, compassion, joy, empathy) | Not analyzed in the present thesis             |

Part E (emotion and empathy ratings) was included only in the Precious questionnaire (Appendix C) and not in the Akeelah questionnaire (Appendix B). As noted above, Part E was not analyzed in the present thesis, so this asymmetry does not affect any reported result.

**Autistic traits.** Autistic traits were assessed using the Autism-Spectrum Quotient-10 (AQ-10; Allison et al., 2012), a brief screening measure derived from the original Autism-Spectrum Quotient (Baron-Cohen et al., 2001). The AQ-10 comprises 10 items covering attention to detail, attention switching, communication, and social interaction. Scores were treated as a continuous measure of individual differences rather than as a diagnostic classification.

**Memory performance.** Memory was assessed using study-specific questionnaires developed for this project and tailored to the exact film scenes shown, following a cued recall and recognition format for narrative film content (Furman et al., 2007) with content-based categorisation of recalled information (Levine et al., 2002). In both Session 1 and Session 2, the cued recall section (Part A) contained 15 open-ended items divided equally across three content categories: Gist (e.g., "What does Precious say she dreams of becoming when she grows up?"), Socioemotional (e.g., "What made Precious' mother angry while Precious was cooking?"), and Environment/Details (e.g., "What is Precious cooking?"). Part B assessed recognition memory using true/false statements about the film. Part C assessed temporal order memory, in which participants arranged five scene descriptions into their correct chronological sequence. Part E collected emotion and empathy ratings on a 1 to 7 Likert scale, including shame, fear, sadness, anger, compassion, joy, and empathy toward specific characters (see Table 4.1).

**Counterbalanced questionnaire versions.** Two matched versions of the memory questionnaire were created, each covering the same film scenes and content categories but using different individual items. Version assignment was counterbalanced across participants, so that each version was administered at Session 1 to half the sample and at Session 2 to the other half. This ensured that differences between the two versions could not be confounded with the immediate-versus-delayed comparison. Questionnaire version was included as a covariate in all analyses.

## **4.6. Procedure**

**Initial introduction phase.** Before the main experimental task, the Narrator and Listener took part in a brief, unstructured introductory conversation lasting approximately 3 to 5 minutes, after which they reported to the experimenter one thing they found interesting about their partner and any similarities they identified. This step was included to establish familiarity

within the dyad before the recall task. Because Alone participants had no interaction partner, this step did not apply to their condition.

**Session 1.** Narrator and Alone participants viewed the first film individually using headphones at separate stations, while the Listener waited in a separate room without exposure to the film. Film order was fixed rather than counterbalanced: *Akeelah and the Bee* (the neutral film) was always shown first, followed by *Precious* (the trauma-analogue film), for every participant in both sessions. This order was chosen so that participants first experienced the procedure with lower-intensity material before encountering the more emotionally demanding film, and so that heightened arousal from the trauma film would not carry over and contaminate responses to the neutral condition. A limitation of this design choice is that natural versus trauma content is fully confounded with presentation order, meaning any effect attributed to film content cannot be fully separated from an order or fatigue effect; this is addressed further in the Discussion.

After the film, participants completed an interaction phase consisting of two five-minute segments: one focused on general feelings and thoughts about the film, and one on the single moment or theme that had affected them most. Narrator participants completed these reflections in conversation with the Listener, who was instructed to listen attentively, respond with empathy, and ask open-ended questions without directing or judging. Alone participants completed the same two reflection segments by speaking aloud independently. The underlying prompts and example questions for both segments were identical across the Narrator and Alone conditions (Appendix A); the only manipulated difference between conditions was the presence of a Listener, not the content participants were asked to reflect on. Full instruction sheets for all three roles are provided in Appendix A.

Following the interaction phase, Narrator and Alone participants completed the memory questionnaire assessing immediate recall. The same structure was then repeated for the second film. The Listener took part in both interaction phases and was dismissed after the second one.

**Session 2.** Session 2 took place approximately one week after Session 1. Only Narrator and Alone participants returned. They completed the delayed version of the memory questionnaire, covering the same three memory domains for both films.

## 4.7. Data Preparation and Scoring

***Cued recall.*** Open-ended items were scored using a predefined target-answer approach. For each question, one specific target response was identified in advance based on the relevant film scene. A response received a score of 1 if the required target content was present and accurate, and 0 if the information was absent, incorrect, or too vague to identify. To make this concrete: synonymous phrasings that conveyed the target content were accepted as correct, so a participant who wrote "scared" where the target answer was "afraid" received full credit, and functionally equivalent character labels (such as "teacher" and "coach" for the same character) were treated as interchangeable. By contrast, a response that named the correct scene but omitted the specific target content, or that described it too generally to distinguish it from other scenes, was scored 0. All scoring decisions of this kind were fixed in advance in a written answer key and applied identically to every participant.

***Recognition and temporal order.*** Recognition items were scored using the same binary logic, with correct responses receiving 1 and incorrect responses 0. Temporal-order items were scored in binary form, with a score of 1 when a scene was placed in the correct chronological position and 0 otherwise.

## 4.8. Ethical Considerations

The study was approved by the ethics committee of the Faculty of Psychology at Ruhr University Bochum (EK-Antrag 963, approved 7 January 2025). This application was submitted under the broader research project conducted within Prof. Axmacher's lab, and the present thesis was carried out under this same approval. All participants provided written informed consent before taking part. They were informed that some of the film material could be emotionally intense, that participation was voluntary, and that they could withdraw at any point without giving a reason and without penalty. Data were pseudonymised using participant identification codes, with identifying information stored separately from experimental data. All participants received a full debriefing at the end of Session 2, including information about the purpose of the study and access to mental health support resources.

## 4.9. Statistical Analysis

GistScore, DetailScore, and CharacterEmotionScore are bounded count variables, ranging from 0 to 5 correct items per session, rather than continuous scores. Because linear models assume that a one-point difference carries the same meaning at every point on the scale, an assumption that does not necessarily hold for a small-range count like this, ordinal regression was used in place of linear regression for all three memory domains. Ordinal regression estimates the probability of a participant falling into a higher versus a lower response category, without requiring equal spacing between categories.

Because each participant was measured four times, the models can include a term (a random intercept) that accounts for stable differences between people in overall memory ability. Preliminary linear mixed models showed that such differences were substantial for GistScore, where roughly 23% of the variance was attributable to the participant rather than the specific session or film ( $ICC = .225-.229$ ). For DetailScore and CharacterEmotionScore this value was effectively zero ( $ICC \approx .000$ ), meaning participants showed no stable personal level on these outcomes and the model had no genuine between-person variance to estimate. GistScore was therefore modelled as a mixed cumulative link model retaining a random intercept for ParticipantID, while DetailScore and CharacterEmotionScore were modelled as standard (non-mixed) cumulative link models.

All three models included the following fixed effects: Role (Narrator vs Alone), Session (S1 vs S2), Film (Neutral vs Trauma), questionnaire counterbalancing order (Nom\_Group), and autistic traits (measured by AQ-10, continuous, mean-centred), together with the interactions between autistic traits and Role, autistic traits and Film, Role and Film, and the three-way interaction among autistic traits, Role, and Film. Session was retained as a main-effect covariate only; interaction terms involving Session were not included, as no specific hypotheses concerned Session as a moderator, and including such terms was judged to add unnecessary model complexity relative to the sample size ( $N = 40$ ). For DetailScore and CharacterEmotionScore, where the interaction between autistic traits and Role showed a trend

toward statistical significance, simple effects of autistic traits were subsequently examined separately within each Role. Models were estimated in Jamovi (Version 2.6) using the GAMLj module.

#### **4.10. Analytic Strategy: Rationale for Each Methodological Choice**

Before presenting the results, this section explains the reasoning behind every methodological decision made in the analysis, so that each choice can be evaluated on its own merits rather than taken on faith.

##### **Why ordinal regression rather than ordinary linear regression?**

GistScore, DetailScore, and CharacterEmotionScore are counts of correctly recalled items, bounded between 0 and 5. A linear model treats such a variable as continuous with equal intervals, assuming the distance between scores of 0 and 1 is identical to that between 3 and 4. This is difficult to justify for a 6-point recall count. Cumulative link models (ordinal logistic regression) avoid the assumption by modelling the probability of falling into each ordered category, estimating a separate threshold between adjacent categories rather than assuming even spacing. This is the more appropriate model for bounded count data, and is why the analysis was re-specified as ordinal after preliminary linear mixed models.

##### **Why a mixed model for GistScore but not for DetailScore or CharacterEmotionScore?**

Each participant contributed up to four observations (two sessions  $\times$  two films), so a naïve model that ignores this repeated-measures structure would overstate the true amount of independent information in the data. The standard solution is to include a random intercept for ParticipantID, which allows each participant to have their own baseline level and estimates how much of the total variance is attributable to stable differences between people (the intraclass correlation, or ICC). Preliminary linear mixed models showed that this random intercept was well-estimated for GistScore (ICC = .225–.229 across specifications) but collapsed to a value indistinguishable from zero for DetailScore and CharacterEmotionScore, producing an "almost singular fit" warning. A near-zero ICC indicates that, for these two outcomes, participants do not show a stable, trait-like level of performance: their scores vary more according to the specific session and film than according to who they are. Including a random intercept in this situation adds a parameter with nothing genuine to estimate, which can produce misleadingly small standard errors and inflated significance. Following standard practice, the random intercept was therefore retained only for GistScore (fitted as a mixed

cumulative link model) and dropped for DetailScore and CharacterEmotionScore (fitted as standard, non-mixed cumulative link models). This distinction also explains a difference in how model fit is reported below: GistScore, as a mixed model, is summarised with conditional and marginal  $R^2$  (reflecting variance explained with and without the random intercept), while DetailScore and CharacterEmotionScore, as non-mixed models, are summarised with a single  $R^2$  alongside the omnibus  $\chi^2$ . The difference in reporting format follows directly from the model type rather than from any difference in how the results were selected or presented.

### **Why these specific predictors, and why no Session interactions?**

All three models included Role (Narrator vs Alone), Session (S1 vs S2), Film (Neutral vs Trauma), questionnaire counterbalancing order (Nom\_Group), and autistic traits (AQ-10, continuous), together with the interactions between autistic traits and Role, autistic traits and Film, Role and Film, and the three-way interaction among all three. This selection reflects the study's central hypothesis: that the relationship between autistic traits and memory depends on social recall context (Role) and may further depend on the emotional content of the film (Film). Interaction terms involving Session were deliberately excluded: the study had no specific hypothesis predicting that Session would moderate the effect of autistic traits, and adding further interaction terms would have increased model complexity substantially relative to the available sample size ( $N = 40$ ), reducing the statistical power available for the primary comparisons of interest. Session was therefore retained only as a main-effect covariate.

### **Why mean-centre autistic traits before analysis?**

Autistic traits (AQ-10) were centred on the sample mean (2.83) in every model. Centring does not change the interaction effects, but it makes the lower-order terms interpretable: the Role main effect then describes the Narrator–Alone difference at an average level of autistic traits rather than at a score of zero. This is standard practice whenever interaction terms are included.

### **What a Wald chi-square test is, and why it is used here**

Each predictor is tested using a Wald chi-square ( $\chi^2$ ) test, the ordinal-regression equivalent of the F-test in linear models: a large  $\chi^2$  relative to its degrees of freedom, with a small p-value, indicates the predictor reliably improves prediction of the outcome category.

### **What "simple effects" are, and why they were examined**

An interaction indicates that the effect of one predictor differs by level of the other, but not where that difference lies. Simple effects analysis re-estimates the effect of autistic traits separately within the Narrator and Alone groups. This was carried out for DetailScore and CharacterEmotionScore, the two outcomes for which the Role  $\times$  autistic-traits interaction showed a trend toward statistical significance.

### **How to read the figures in this section**

Each figure in this section plots the mean memory score against autistic-trait level, shown separately for the two recall conditions. Participants are split at the sample mean into lower and higher trait groups for display purposes only; the models themselves treated autistic traits as a continuous, mean-centred variable throughout. Vertical bars show the standard deviation, indicating how much scores varied within each group. A steeper downward slope means memory declined more sharply as autistic traits increased, so comparing the slope of the Narrator line against the Alone line shows, at a glance, whether the relationship between autistic traits and that memory type differs between the two recall conditions.

## 5. Results

### 5.1. Descriptive Statistics

The final analytic sample comprised 40 participants (20 Narrators, 20 Alone), each contributing complete data across both sessions and both films (160 observations in total). Table 5.1 presents means and standard deviations for the three memory outcomes across each combination of Role, Session, and Film. Two broad patterns are visible at a glance: gist memory rose from Session 1 to Session 2 in every condition, while socioemotional memory fell over the same interval in every condition — a divergence that recurs throughout the inferential results below.

**Table 5.1** Means (M) and Standard Deviations (SD) of Memory Scores by Role, Session, and Film Type

| Role     | Session | Film    | GistScore |      | DetailScore |      | CharacterEmotionScore |      |
|----------|---------|---------|-----------|------|-------------|------|-----------------------|------|
|          |         |         | M         | SD   | M           | SD   | M                     | SD   |
| Alone    | S1      | Neutral | 1.50      | 1.32 | 1.45        | 0.76 | 2.35                  | 0.99 |
|          |         | Trauma  | 2.00      | 1.17 | 1.55        | 0.83 | 2.35                  | 1.23 |
|          | S2      | Neutral | 2.50      | 1.00 | 1.00        | 0.80 | 1.80                  | 0.83 |
|          |         | Trauma  | 2.15      | 1.18 | 2.20        | 1.28 | 1.35                  | 1.04 |
| Narrator | S1      | Neutral | 1.75      | 1.12 | 1.95        | 0.76 | 2.60                  | 0.99 |
|          |         | Trauma  | 1.85      | 0.88 | 1.25        | 0.97 | 2.05                  | 0.94 |
|          | S2      | Neutral | 2.20      | 0.95 | 1.20        | 0.77 | 2.10                  | 0.91 |
|          |         | Trauma  | 2.70      | 1.17 | 1.90        | 0.97 | 1.55                  | 1.32 |

Note. N = 40 (Alone n = 20; Narrator n = 20), all with complete data across both sessions and both films. GistScore, DetailScore, and CharacterEmotionScore each range from 0 to 5.

## 5.2. Memory Profiles by Level of Autistic Traits

Table 5.2 presents memory scores by level of autistic traits (High vs Low), Role, and Session, collapsed across Film. For descriptive purposes, participants were classified as High (above the sample mean of 2.83,  $n = 23$ ) or Low (at or below the mean,  $n = 17$ ); continuous, mean-centred scores were used in all inferential models.

**Table 5.2** Memory Scores (M and SD) by Level of Autistic Traits, Role, and Session, Collapsed Across Film Type

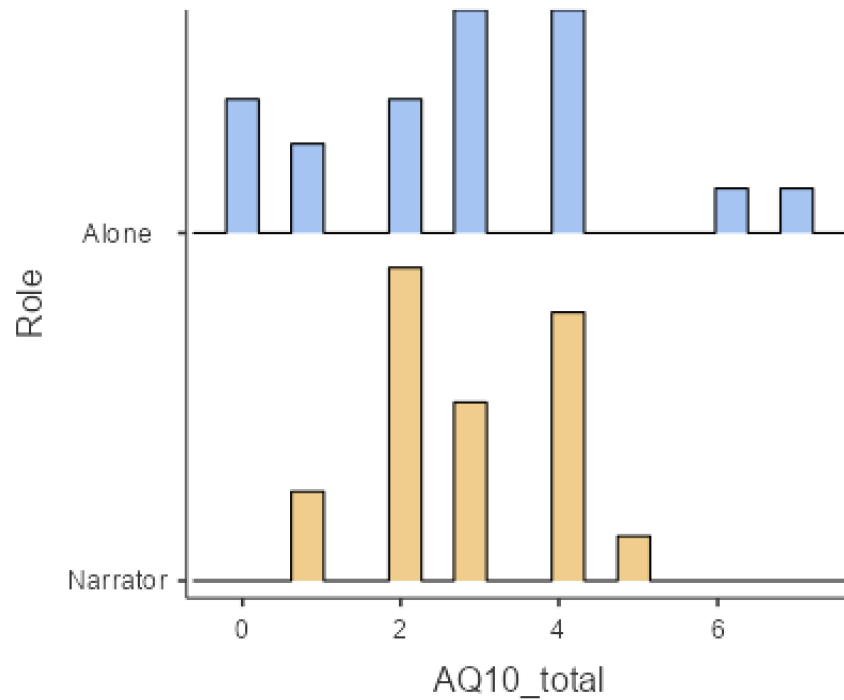
| Trait Level | Role     | Session | Gist M (SD) | Detail M (SD) | Char/Emotion M (SD) |
|-------------|----------|---------|-------------|---------------|---------------------|
| High        | Alone    | S1      | 1.29 (0.86) | 1.50 (0.66)   | 2.21 (0.83)         |
|             |          | S2      | 2.04 (1.16) | 1.54 (1.41)   | 1.38 (0.97)         |
|             | Narrator | S1      | 1.50 (0.96) | 1.50 (0.91)   | 2.00 (0.87)         |
|             |          | S2      | 2.00 (0.98) | 1.32 (0.95)   | 1.55 (1.01)         |
| Low         | Alone    | S1      | 2.44 (1.46) | 1.50 (0.97)   | 2.56 (1.41)         |
|             |          | S2      | 2.75 (0.86) | 1.69 (0.87)   | 1.88 (0.89)         |
|             | Narrator | S1      | 2.17 (0.92) | 1.72 (0.96)   | 2.72 (1.02)         |
|             |          | S2      | 3.00 (0.97) | 1.83 (0.86)   | 2.17 (1.25)         |

Note. High = above sample mean ( $> 2.83$ ,  $n = 23$ ); Low = at or below sample mean ( $\leq 2.83$ ,  $n = 17$ ). Values are collapsed across Film type. Char/Emotion = CharacterEmotionScore.

Participants with lower autistic traits obtained higher gist and socioemotional scores than those with higher autistic traits across nearly every Role and Session combination. This gap was largest for Narrators at Session 2: participants with low autistic traits showed the highest gist score of any cell in the table ( $M = 3.00$ ,  $SD = 0.97$ ), while those with high autistic traits recalled a full point less ( $M = 2.00$ ,  $SD = 0.98$ ).

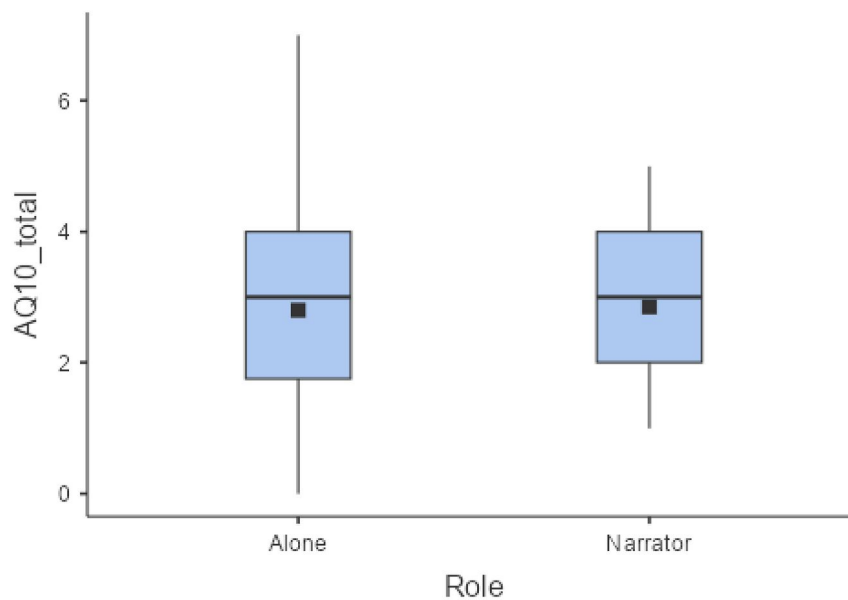
## 5.3. Sample Characteristics: Autistic Traits by Role

Before testing the main hypotheses, the distribution of autistic traits was examined by Role to confirm the two groups did not differ systematically on this variable prior to any experimental manipulation. Figure 5.1 shows the distribution of AQ-10 scores by Role as a histogram, and Figure 5.2 shows the same data as a boxplot.



**Figure 5.1** Distribution of AQ-10 Scores by Role

Note. Blue bars = Alone; orange bars = Narrator. Both groups show a similar, broadly overlapping distribution centred around the sample mean.



**Figure 5.2** AQ-10 Scores by Role (Boxplot)

Note. Boxes show the interquartile range; the horizontal line is the median and the black square is the mean. Alone:  $M = 2.80$ ,  $SD = 1.88$ , range 0–7. Narrator:  $M = 2.85$ ,  $SD = 1.14$ , range 1–5. The two groups did not differ significantly in autistic traits,  $t(38) = 0.10$ ,  $p = .92$ . Levene's test indicated no significant difference in the variability of scores between groups,  $F = 2.15$ ,  $p = .15$ , confirming that any subsequent Role-related differences in memory cannot be attributed to a pre-existing imbalance in this variable.

#### 5.4. Inferential Analyses: Ordinal Regression Models

Three cumulative link models examined the effects of Role, Session, Film, questionnaire counterbalancing order, and autistic traits on the three memory outcomes. Models were estimated in Jamovi (Version 2.6) using the GAMLj module.

Model 1: GistScore (mixed cumulative link model). The model converged successfully and retained a meaningful random intercept for ParticipantID (Variance = 0.977, ICC = .229), confirming that stable between-person differences were appropriately captured for this outcome (conditional  $R^2 = .412$ ; marginal  $R^2 = .237$ ; both  $p < .001$ ). Table 5.3 presents the omnibus tests.

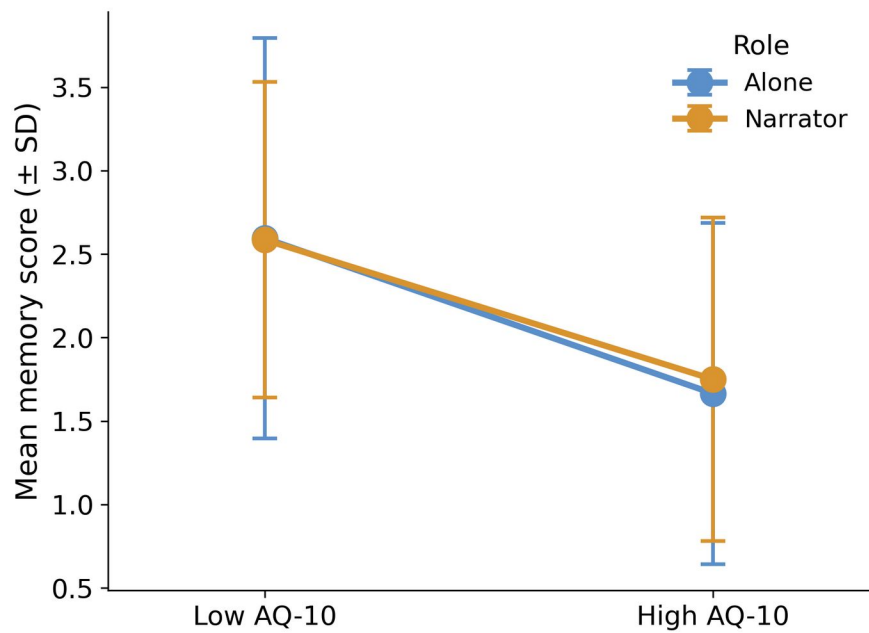
**Table 5.3** Omnibus Tests for the Mixed Cumulative Link Model for GistScore

| Predictor                                   | $\chi^2$ | df | p      |
|---------------------------------------------|----------|----|--------|
| Role                                        | 0.089    | 1  | .766   |
| Session                                     | 16.546   | 1  | < .001 |
| Film                                        | 1.871    | 1  | .171   |
| Questionnaire order (Nom_Group)             | 8.082    | 1  | .004   |
| Autistic traits (AQ-10)                     | 3.662    | 1  | .06    |
| Film $\times$ Autistic traits               | 0.597    | 1  | .440   |
| Role $\times$ Autistic traits               | 1.575    | 1  | .21    |
| Role $\times$ Film                          | 0.416    | 1  | .519   |
| Role $\times$ Film $\times$ Autistic traits | 2.258    | 1  | .13    |

Note.  $\chi^2$  = Wald chi-square test statistic. All covariates were mean-centred. ICC = .229.

Session was by far the strongest predictor of gist memory,  $\chi^2(1) = 16.55$ ,  $p < .001$ : gist recall rose significantly from Session 1 to Session 2 in every Role and Film combination (see Table 5.1). Questionnaire counterbalancing order was also significant,  $\chi^2(1) = 8.08$ ,  $p < .01$ , with participants who received the Nom.2 (exchanged) version recalling significantly less gist than those who received the Nom.1 version. Autistic traits showed a trend toward statistical significance,  $\chi^2(1) = 3.66$ ,  $p = .06$ , pointing toward lower gist recall among participants with higher autistic traits. None of the interaction terms involving autistic traits reached significance in this model (all  $p > .133$ ).

Figure 5.3 shows the marginal mean GistScore by autistic-trait level (Low/High AQ-10 split) and Role.



**Figure 5.3**

Marginal Mean GistScore by Autistic-Trait Level (Low/High AQ-10 Split) and Role

Note. Means shown are descriptive (High/Low AQ-10 split at the sample mean, collapsed across Session and Film), corresponding to Table 5.2. Continuous, mean-centred AQ-10 scores were used in the inferential model; this figure is provided for illustrative purposes.

Model 2: DetailScore (cumulative link model). Because the linear mixed model for DetailScore had shown negligible between-person variance, a standard cumulative link model without a random intercept was used. The overall model approached but did not reach significance,  $R^2 = .039$ ,  $\chi^2(9) = 16.5$ ,  $p = .06$ . Table 5.4 presents the omnibus tests.

**Table 5.4** Omnibus Tests for the Cumulative Link Model for DetailScore

| Predictor                       | $\chi^2$ | df | p    |
|---------------------------------|----------|----|------|
| Film                            | 6.516    | 1  | .011 |
| Questionnaire order (Nom_Group) | 1.216    | 1  | .270 |
| Session                         | 0.164    | 1  | .685 |
| Autistic traits (AQ-10)         | 0.999    | 1  | .32  |
| Role                            | 2.675    | 1  | .102 |
| Role $\times$ Autistic traits   | 2.878    | 1  | .09  |

|                               |       |   |      |
|-------------------------------|-------|---|------|
| Film × Autistic traits        | 0.002 | 1 | .968 |
| Film × Role                   | 4.138 | 1 | .042 |
| Film × Autistic traits × Role | 0.224 | 1 | .636 |

Note.  $\chi^2$  = Wald chi-square test statistic. No random effect was included in this model. Overall model fit did not reach the conventional significance threshold ( $p = .06$ ); individual predictors are nonetheless interpretable and are reported below.

A significant effect of Film was found,  $\chi^2(1) = 6.52$ ,  $p = .01$ : detail memory was higher for the trauma film than for the neutral film (see Table 5.1). A significant Film × Role interaction was also observed,  $\chi^2(1) = 4.14$ ,  $p = .04$ , indicating that this trauma-film advantage in detail memory was present for Alone participants (S1:  $M = 1.55$  vs  $1.45$ ; S2:  $M = 2.20$  vs  $1.00$ ) but essentially absent for Narrators, whose detail recall was similar or lower for the trauma film than the neutral film. The interaction between Role and autistic traits showed a trend toward statistical significance,  $\chi^2(1) = 2.88$ ,  $p = .09$ .

Because this interaction showed a trend toward statistical significance, simple effects of autistic traits were examined separately within each Role. Table 5.5 presents these results.

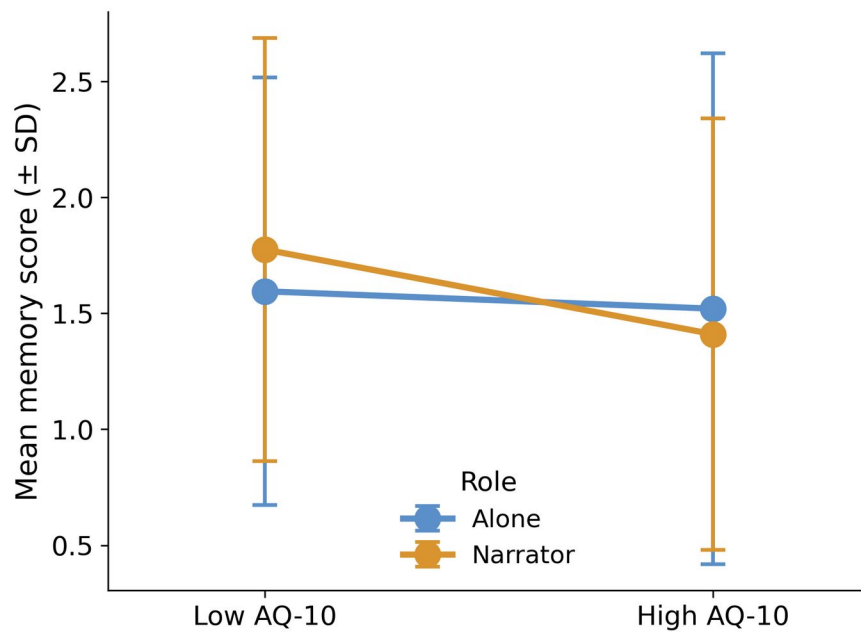
**Table 5.5** Simple Effects of Autistic Traits (AQ-10) on DetailScore, by Role

| Role     | $\chi^2$ | df | p   | Estimate |
|----------|----------|----|-----|----------|
| Alone    | 1.95     | 1  | .16 | +0.163   |
| Narrator | 5.79     | 1  | .02 | −0.468   |

Note. Estimate = ordinal regression coefficient (log-odds); positive values indicate higher autistic traits predict a greater likelihood of a higher DetailScore category, negative values the opposite. To give these coefficients a concrete scale: an estimate of  $-0.468$  corresponds to an odds ratio of  $\exp(-0.468) \approx 0.63$ , meaning that each additional AQ-10 point reduces the odds of reaching a higher memory-score category by roughly one third.

The simple effect of autistic traits was not significant among Alone participants,  $\chi^2(1) = 1.95$ ,  $p = .16$  (estimate =  $+0.163$ ). Among Narrators, however, autistic traits significantly predicted detail memory,  $\chi^2(1) = 5.79$ ,  $p = .02$ , with a negative coefficient (estimate =  $-0.468$ ): higher autistic traits were associated with significantly lower detail recall specifically in the social recall condition. This finding was essentially unchanged from the smaller preliminary sample (previously estimate =  $-0.470$ ,  $p = .02$ ), indicating that it is a robust feature of the data rather than an artefact of any single participant.

Figure 5.4 shows the marginal mean DetailScore by autistic-trait level (Low/High AQ-10 split) and Role.



**Figure 5.4**

Marginal Mean DetailScore by Autistic-Trait Level (Low/High AQ-10 Split) and Role

Note. Means shown are descriptive (High/Low AQ-10 split at the sample mean, collapsed across Session and Film), corresponding to Table 5.2. Continuous, mean-centred AQ-10 scores were used in the inferential model; this figure is provided for illustrative purposes.

Model 3: CharacterEmotionScore (cumulative link model). As with DetailScore, CharacterEmotionScore had shown negligible between-person variance in the linear mixed model and was therefore modelled using a standard cumulative link model. The model fit the data well,  $R^2 = .086$ ,  $\chi^2(9) = 40.7$ ,  $p < .001$ . Table 5.6 presents the omnibus tests.

**Table 5.6** Omnibus Tests for the Cumulative Link Model for CharacterEmotionScore

| Predictor                       | $\chi^2$ | df | p      |
|---------------------------------|----------|----|--------|
| Film                            | 1.993    | 1  | .158   |
| Questionnaire order (Nom_Group) | 8.589    | 1  | .003   |
| Session                         | 17.408   | 1  | < .001 |
| Autistic traits (AQ-10)         | 0.037    | 1  | .85    |
| Role                            | 1.785    | 1  | .182   |
| Role $\times$ Autistic traits   | 2.414    | 1  | .12    |

|                               |       |   |      |
|-------------------------------|-------|---|------|
| Film × Autistic traits        | 0.781 | 1 | .377 |
| Film × Role                   | 0.888 | 1 | .346 |
| Film × Autistic traits × Role | 0.421 | 1 | .516 |

Note.  $\chi^2$  = Wald chi-square test statistic. No random effect was included in this model.

Session again emerged as a highly significant predictor,  $\chi^2(1) = 17.41$ ,  $p < .001$ : socioemotional memory decreased significantly from Session 1 to Session 2 in every condition, directly mirroring, in the opposite direction, the Session effect observed for GistScore. Questionnaire counterbalancing order was also significant,  $\chi^2(1) = 8.59$ ,  $p < .01$ , again with lower scores among participants who received the Nom.2 (exchanged) version. The interaction between Role and autistic traits showed a trend toward statistical significance,  $\chi^2(1) = 2.41$ ,  $p = .12$ .

As with DetailScore, simple effects of autistic traits were examined separately by Role. Table 5.7 presents these results.

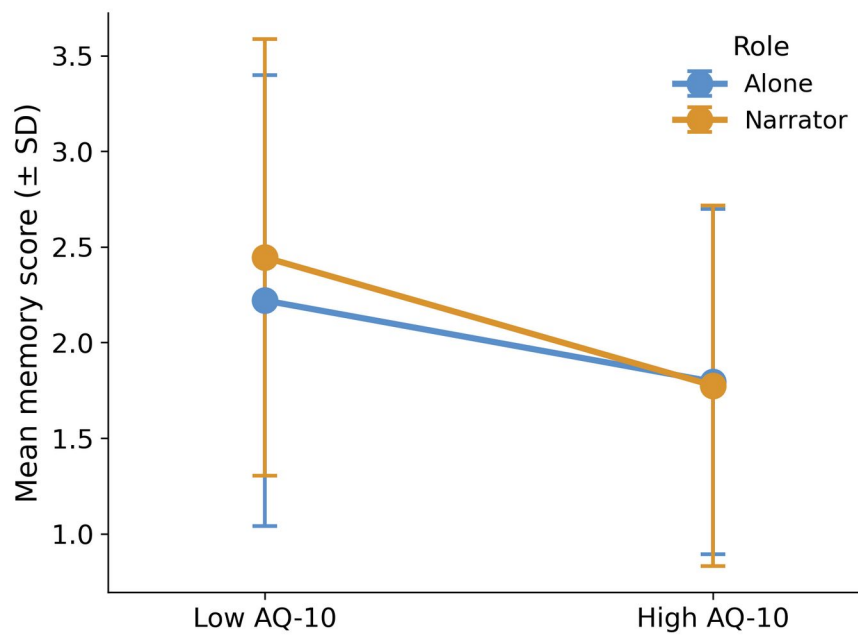
**Table 5.7** Simple Effects of Autistic Traits (AQ-10) on CharacterEmotionScore, by Role

| Role     | $\chi^2$ | df | p   | Estimate |
|----------|----------|----|-----|----------|
| Alone    | 0.367    | 1  | .54 | −0.067   |
| Narrator | 4.057    | 1  | .04 | −0.378   |

Note. Estimate = ordinal regression coefficient (log-odds).

Among Alone participants, autistic traits did not significantly predict socioemotional memory,  $\chi^2(1) = 0.37$ ,  $p = .54$ . Among Narrators, the effect remained significant,  $\chi^2(1) = 4.06$ ,  $p = .04$ , again with a negative coefficient (estimate = −0.378): higher autistic traits were associated with significantly lower socioemotional memory specifically among participants who recalled the films in conversation with an empathic listener. As with DetailScore, this finding changed only marginally from the preliminary sample (previously estimate = −0.386,  $p = .04$ ), again indicating a stable rather than fragile effect.

Figure 5.5 shows the marginal mean Socioemotional score by autistic-trait level (Low/High AQ-10 split) and Role.



**Figure 5.5**

Marginal Mean CharacterEmotionScore by Autistic-Trait Level (Low/High AQ-10 Split) and Role

Note. Means shown are descriptive (High/Low AQ-10 split at the sample mean, collapsed across Session and Film), corresponding to Table 5.2. Continuous, mean-centred AQ-10 scores were used in the inferential model; this figure is provided for illustrative purposes.

## 5.5. Summary of Findings Across Models

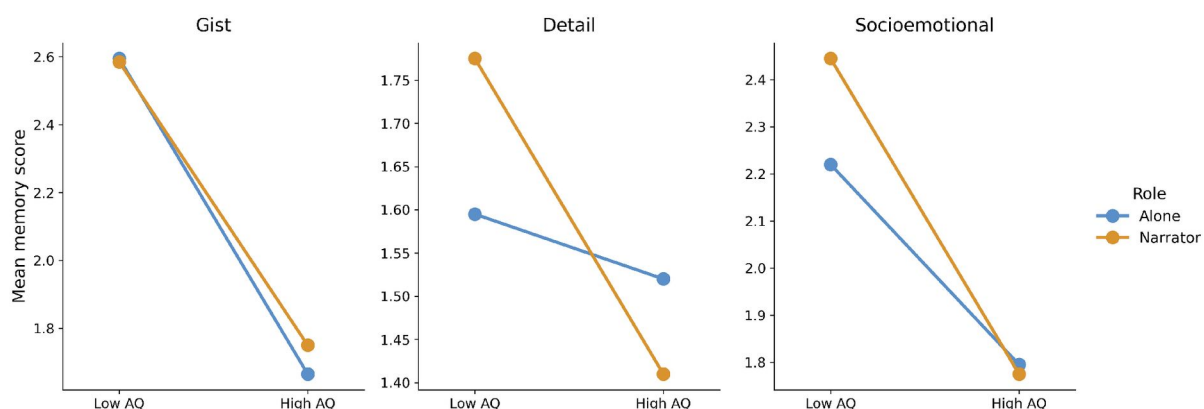
Table 5.8 summarises the findings relating to autistic traits across all three ordinal models, including the Role-specific simple effects for DetailScore and CharacterEmotionScore.

**Table 5.8** Summary of Autistic-Trait Effects Across the Three Ordinal Regression Models

|                                   | GistScore | DetailScore | CharacterEmotionScore |
|-----------------------------------|-----------|-------------|-----------------------|
| Autistic traits — main effect (p) | .06       | .32         | .85                   |
| Autistic traits × Role (p)        | .21       | .09         | .12                   |
| Simple effect — Alone (p)         | —         | .16         | .54                   |
| Simple effect — Narrator (p)      | —         | .016*       | .044*                 |

Note. \*  $p < .05$ . AQ-10 = Autism-Spectrum Quotient (10-item), the measure of autistic traits used throughout. Simple effects were only computed for DetailScore and CharacterEmotionScore, for which the omnibus interaction between autistic traits and Role showed a trend toward statistical significance. GistScore retained a mixed-model structure ( $ICC = .229$ ); DetailScore and CharacterEmotionScore were modelled without a random effect.

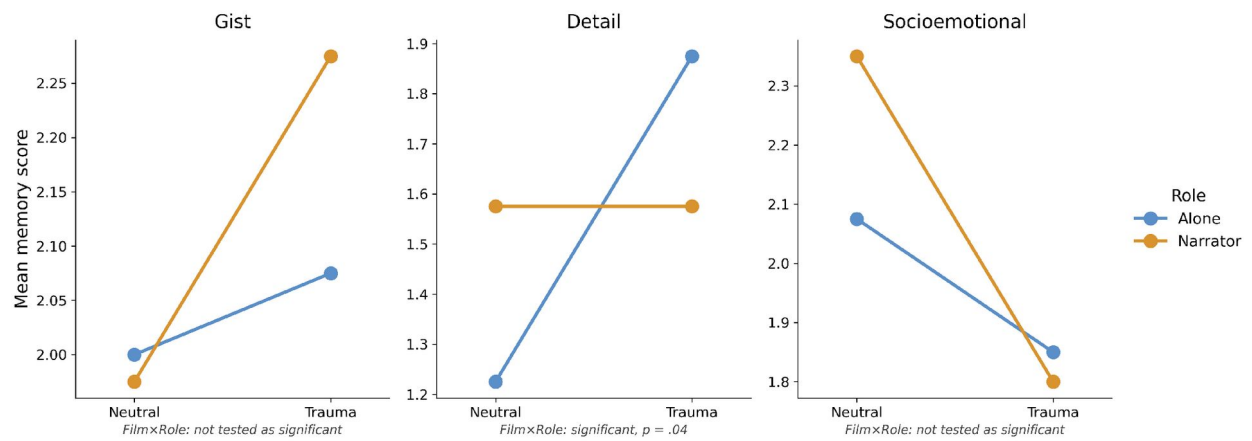
Considered together, the three ordinal regression models show a consistent pattern. Simple-effects tests showed that autistic traits significantly and negatively predicted memory among Narrators (Detail:  $p = .02$ ; Socioemotional:  $p = .04$ ), but not among Alone participants (Detail:  $p = .16$ ; Socioemotional:  $p = .54$ ). This pattern is visible directly in the marginal-means figures: the Narrator lines fall more steeply across trait level than the Alone lines. Both Narrator-specific effects were essentially unchanged after the addition of a fortieth participant's complete data, suggesting the pattern is a stable feature of the sample rather than one driven by a small number of cases. No correction for multiple comparisons was applied across the three outcome models; this pattern is interpreted further in the Discussion.



**Figure 5.6**

Descriptive Mean Memory Scores by Autistic-Trait Level (High/Low Split) and Role, Across the Three Memory Domains

Note. Means shown are descriptive (High/Low AQ-10 split at the sample mean, collapsed across Session and Film), corresponding to Table 5.2. Continuous, mean-centred AQ-10 scores were used in all inferential models; this figure is provided for illustrative purposes only.



**Figure 5.7**

### Descriptive Mean Memory by Film Type and Role, Across the Three Memory Domains

Note. Means shown are descriptive (collapsed across Session), corresponding to Table 5.1. Only the Detail panel corresponds to a statistically significant Film  $\times$  Role interaction ( $p = .04$ ); the Gist and Socioemotional panels are shown for comparison and were not significant.

## 6. Discussion

### 6.1. Goals and Assumptions

The aim was to determine whether people higher in autistic traits remember experiences differently depending on what kind of information is involved, the overall gist, the emotional and character content, or the specific perceptual details, and whether that depended on whether they had shared the experience with an empathic listener or gone through it alone.

### 6.2. The Central Finding: Autistic Traits and Memory Under Empathic Narration

The clearest result in this study concerns when autistic traits mattered, rather than whether they mattered at all. It had been predicted that higher autistic traits would mean remembering less about what characters felt and did, regardless of how the memory was recalled. No such main effect was found. What emerged instead depended on the recall condition. Among participants who told their story to an empathic listener, higher autistic traits predicted worse memory for socioemotional content ( $p = .04$ ). Among those who recalled the film alone, nothing significant appeared ( $p = .54$ ).

Detail memory followed the same shape. Higher autistic traits predicted worse detail recall among Narrators ( $p = .02$ ) but not among Alone participants ( $p = .16$ ). Two different memory domains, the same conditional pattern.

An important caveat applies to both. The formal interaction test, which asks directly whether the two conditions differ from one another, did not reach significance in either domain ( $p = .12$  for socioemotional memory,  $p = .09$  for detail). A significant effect in one group alongside a null effect in the other is not the same as a demonstrated difference between the groups. The third hypothesis therefore received partial support rather than confirmation: the predicted pattern is visible, but this study lacked the power to establish it formally.

Before reading anything into that pattern, a simpler explanation had to be ruled out. Because roles were assigned randomly, the two groups might have differed in autistic traits by chance. They did not. Mean AQ-10 scores were almost identical between Narrators ( $M = 2.85$ ,  $SD = 1.14$ ) and Alone participants ( $M = 2.80$ ,  $SD = 1.88$ ),  $t(38) = 0.10$ ,  $p = .92$ , and the spread of scores did not differ either, Levene's  $F = 2.15$ ,  $p = .15$ . Whatever produced the Narrator-specific pattern, it was not group composition.

This conditional pattern is what connects the present results to several existing findings that otherwise look unrelated. Losh and Gordon (2014) reported that narrative differences between autistic and non-autistic speakers emerged most clearly in the more interpersonally demanding of two narrative tasks. Jones et al. (2011) found that social and communication difficulty predicted performance on an everyday memory battery embedded in social demand, while showing no relationship with a standard word-recall task. Both describe the asymmetry found here: a relationship that appears when another person is involved and disappears when they are not.

The same logic resolves what looked like a contradiction earlier in this thesis. Bessé et al. (2025) found no link between autistic traits and memory using decontextualised laboratory tasks. The Alone condition here is the closest analogue to their design, and it produced the same null result ( $p = .16$  for detail,  $p = .54$  for socioemotional content). Rather than contradicting Bessé et al., these findings suggest a reason for their null result: the relationship may simply not exist in solitary recall. It became visible only once a listener was added, which their design did not include.

Fujiwara et al. (2021) offer a partial account that the data do not fully support. They proposed that emotional arousal disrupts the binding of separate elements of an experience into a coherent memory. Were arousal acting alone, socioemotional memory should have dropped for the trauma film relative to the neutral one for everyone, irrespective of role. It did not. Socioemotional memory declined, but Role was the clearer driver. Arousal-driven binding disruption may contribute without being sufficient on its own. One possibility is that the mechanism Fujiwara et al. describe emerges fully only when a social sharing demand is layered on top of emotional arousal.

### **6.3. The Prediction That Failed: Detail Memory Was Not Protected**

Weak Central Coherence makes a specific and falsifiable prediction about detail memory. If autistic cognition is biased toward local processing at the expense of global integration, memory for perceptual detail should hold up even as gist and socioemotional memory suffer (Happé & Frith, 2006; Schwarzkopf et al., 2014). The fourth hypothesis tested exactly this.

Detail memory was not protected. It declined alongside the other two domains for Narrators ( $p = .02$ ), the opposite of what WCC predicts. This is the point where the results push back on theory most directly.

Two readings are possible. Either the detail-preservation prediction does not hold, or it holds only under conditions this study did not recreate. The second reading has some force. WCC was built on evidence from tasks like finding a shape hidden in a larger figure or spotting an error in a proofreading passage. Those tasks are quiet, solitary, and perceptual, with no social demand attached. Narrating a story aloud is a different proposition: it requires holding an account together, monitoring how it lands, and managing one's own delivery while retrieving the memory itself. Doing that well is a social-communication skill, precisely the area where autism-spectrum traits are most directly associated with difficulty. Those demands may exceed what a quiet detail-spotting task ever imposes, which would explain why the protected-detail pattern did not survive the addition of a real conversation.

Minshew and Goldstein (1993) described something close to what emerged here, although their study was originally cited in this thesis as a complication for WCC rather than a description of it. Testing autistic participants on the California Verbal Learning Test, they found reduced organisation of recalled material with no compensating advantage anywhere else. That is the present pattern: gist, socioemotional, and detail memory all declined together for Narrators, with nothing spared. A finding introduced as an exception to WCC turned out to predict these results more accurately than WCC's own central claim.

One further result concerning detail memory deserves a brief note. The trauma film improved detail memory for participants who recalled it alone but produced no such improvement for Narrators, a significant interaction ( $p = .04$ ). Because this concerns film content rather than autistic traits, it sits outside the central question of this thesis and is not developed further here.

#### **6.4. Gist Memory and Change Across the Week**

Gist memory behaved differently from the other two domains, and the difference is informative. Higher autistic traits predicted weaker gist memory as a trend that did not reach conventional significance ( $p = .06$ ), and this trend did not depend on recall condition. With 40 participants, the study had limited power to detect an effect of this size, so the absence of

significance is as easily explained by sample size as by the absence of a real effect. The result is reported as a trend and not interpreted further.

What matters for the wider argument is the contrast. Detail and socioemotional memory showed trait-related differences only under narration, while gist showed a weak relationship regardless of condition. Had every domain behaved like detail and socioemotional memory, one might reasonably suspect that narration is simply harder for everyone and that autistic traits index general task difficulty. Gist behaving differently makes that account less likely.

The gist result also aligns loosely with Justus et al. (2025), who found that adults diagnosed with ASD did not show the memory advantage for emotionally arousing content that non-autistic adults typically show. The present trend runs in the same direction. The comparison is imperfect, since they compared a diagnosed group against controls while this study treated autistic traits continuously in a non-clinical sample, but the general shape is consistent: something about how emotional content is remembered shifts as autistic traits increase.

Memory also changed over the week between sessions. Gist memory rose significantly ( $p < .001$ ) while socioemotional memory fell significantly over the same period ( $p < .001$ ), moving in opposite directions, which is what memory transformation theory predicts as specific representations fade and gist-based ones consolidate (Sekeres et al., 2018; Krenz et al., 2023). Detail memory showed no significant change ( $\chi^2(1) = 0.16, p = .69$ ). Two of three domains behaved as the theory predicts and one did not, making this a partial correspondence rather than a clean confirmation.

## **6.5. Making Sense of the Pattern: Empathic Conversation and Cognitive Load**

The pattern across these results points toward a different explanation than a pure detail-versus-gist trade-off. Empathic conversation, though, is not only a demand. When it goes well, a listener who responds with warmth and understanding can do real work on behalf of the person remembering: prompting elaboration, signalling what matters, helping organise a loose account into a coherent one, and reducing the emotional weight of the material being shared (Muir et al., 2015). A supportive listener may function as a kind of external scaffold for recall. If that scaffold is easier to make use of for some people than others, the same conversation could help one person and burden another: for someone who finds social

communication effortful, the support on offer may be harder to take up, and the coordination cost of the exchange may outweigh what it gives back. One way to make sense of the present findings, then, is to consider what narrating demands alongside what it can offer. Telling a story to a listener means holding the story together, tracking how it is landing, and managing one's own delivery, all while also retrieving the memory itself. This reading fits the conclusion Cooper and Simons (2019) drew from the neuroimaging literature: recollection difficulties in autism reflect altered coordination between neurocognitive systems rather than dysfunction in any single region, which predicts that the most coordination-intensive recall conditions should show the largest trait-related differences. Narrating to a listener, which requires retrieving, integrating, and communicating at once, is exactly such a condition, and it was precisely there that the effects in this study emerged. This is a heavier cognitive load than quietly remembering something alone. If autistic traits relate to how much spare mental capacity someone has for this kind of layered, socially demanding task, it would make sense that memory suffers across every domain at once, not just the big-picture ones WCC points to, once that extra social burden is added on top.

This does not mean WCC is wrong. It may still hold up well in the kinds of quiet, solitary, perceptual tasks it was originally built on. What this thesis can say is that WCC's detail-preservation prediction was not supported within this specific paradigm, an emotionally arousing, socially demanding recall task; it cannot establish that WCC's predictions fail generally in socially demanding recall situations, since a single study and paradigm is not sufficient grounds for that broader claim. One candidate explanation raised by these results is that a fuller account of autism-related memory differences may need to say something about social-cognitive load alongside processing style, but this is a possible mechanism suggested by the pattern observed here, not one the data can be said to have demonstrated; testing it directly would require a design that manipulates cognitive load independently of social context.

## **6.6. Strengths and Weaknesses**

This study has a few real strengths worth naming. Instead of relying on flat, decontextualized memory tasks such as word lists, as in Bessé et al. (2025), this design used full emotional narrative content, an actual film, watched and then either shared or held privately, a much closer match to how memory works outside a lab. It also brought together three things usually studied separately, autistic traits, social context, and how memory shifts over time, in a single

design, making it possible to see how they interact rather than inferring from three separate literatures. And when the Narrator-specific pattern showed up, it was not simply accepted; this was checked directly by testing whether it might be a fluke of who ended up in which group by chance, and it was not. A further strength concerns the nature of the manipulation itself. Listeners followed a detailed, standardized instruction script (Appendix A) specifying tone, permitted question types, and behaviors to avoid, but individual Listeners still varied in warmth, pacing, and engagement, as real people delivering empathy always do. That variation is part of what empathic conversation looks like in practice, so the Narrator-specific effects reported here reflect memory formed during genuine empathic exchanges rather than during a single standardized stimulus.

The clearest weakness is sample size. With only 40 people split across two roles, twenty each, this study had limited power to detect anything but fairly large effects, and several results sat right at the edge of significance ( $p = .06, .09, .12$ ) rather than clearly crossing it. A larger sample might have turned some of these trends into confirmed effects, or might not have; this cannot be determined from the current data. Related to this, no correction was applied for running three separate memory models, which raises the chance that at least one of these significant results is a false positive; this should be kept in mind when weighing confidence in any single p-value. The questionnaire counterbalancing was also not perfectly clean: which version someone received significantly affected their scores in two of the three models, suggesting the two versions were not quite matched in difficulty despite the intention to make them equivalent. We addressed this limitation directly by including questionnaire version as a covariate in every model, so that any difference between versions is statistically separated from the effects of interest rather than left to contaminate them. On the measurement side, the AQ-10 is a short, 10-item screening tool. It produces a single, broad composite score, which is well suited to capturing overall trait level but cannot distinguish between the different facets that make up autistic traits, such as social skill, communication, and attention to detail; a longer measure, such as the full 50-item Autism-Spectrum Quotient, would allow those facets to be examined separately rather than collapsed into one number. And because only one film represented each condition, neutral and trauma, it is not fully possible to separate the effect of trauma content in general from something specific about this particular film, *Precious*, unrelated to trauma as a category.

Another real limitation is that this study never actually tested autobiographical memory, memory for something that happened to the person themselves. What people watched was a

film, someone else's story, however emotionally gripping. A real personal memory carries things a film scene cannot: being physically present, having something at stake, knowing it actually happened to you. So while these results say something meaningful about memory for an emotionally intense narrative, it remains an open question whether the same pattern would hold for something that actually happened in someone's own life, which is what much of the theory this thesis relies on, including Weak Central Coherence, was originally built to explain.

The sample also limits how far this can generalize. Participants were mostly women (65%), recruited online, and nobody in the study had an actual autism diagnosis; everyone sat somewhere on the trait continuum, skewed toward the lower end overall. Whether this pattern holds for men, for older adults, or for people who are clinically autistic rather than higher in autistic-like traits is not something this study can answer.

A further limitation should be acknowledged: the film scenes were not selected using any formal, structured process. A few colleagues watched candidate scenes and gave verbal feedback on how they felt about them. There was no rating scale involved, nothing written down or scored. This was a reasonable, practical starting point, but it means the trauma and neutral labels rest on an informal foundation, closer to an informal judgement than a formally validated procedure.

A related statistical limitation concerns the DetailScore and CharacterEmotionScore models specifically. Each participant contributed up to four observations, yet these two models were fitted without a participant-level random effect, on the grounds that a preliminary linear mixed model showed an intraclass correlation indistinguishable from zero for these outcomes. This choice was statistically motivated rather than arbitrary, but it does not fully rule out residual non-independence among repeated observations from the same participant, and the resulting standard errors and significance tests should be interpreted with this in mind.

And one last honest gap: the open-ended recall items were scored against a predefined answer key by a single coder, without a second, independent coder checking agreement. This does not mean the scoring was inaccurate, but without an inter-rater reliability check, there is no way to formally confirm how consistent the coding really was.

## 6.7. Future Research

A natural next step would be to bring this same design into an fMRI scanner. This thesis leaned on neural evidence from other studies, such as reduced hippocampal-prefrontal connectivity linked to autistic traits (Richter et al., 2017) and stronger, more localized visual cortex responses tied to detail processing (Schwarzkopf et al., 2014), to explain the behavioral pattern found here. But no one has actually observed brain activity while someone with higher autistic traits told a story to a listener versus recalled it alone. Scanning participants during the actual narration task, not just during passive viewing, would show directly whether the hippocampal-prefrontal coordination this thesis only inferred is really what breaks down, and whether that breakdown is specific to the social, narrating condition. This would move the explanation from a plausible mechanism borrowed from other studies to something tested directly in the same people, doing the same task.

A few other directions follow from this study's limitations. Testing autobiographical memories, real personal experiences rather than a film, would show whether this pattern holds for memories that actually happened to someone, closer to what theories like WCC were originally meant to explain. Including a clinically diagnosed autistic sample alongside the trait-based one used here would show whether these findings extend to the more severe end of the spectrum, not just the subclinical range captured in this study. And a larger sample, ideally with a formal correction for testing three separate memory outcomes, would help clarify which of the trends found here ( $p = .06, .09, .12$ ) reflect real effects and which reflect chance variation this study is underpowered to distinguish.

## 7. Conclusion

This thesis examined whether autistic traits related to memory for an emotionally intense film differently depending on the type of memory involved and on whether people recalled the experience by narrating it to a listener or by remembering it alone. Three components of memory were assessed: the overall gist of what happened, memory for specific perceptual details, and memory for characters' actions and emotions.

Across the four hypotheses, a consistent pattern emerged rather than four independent stories. Autistic traits showed a trend toward predicting lower gist memory overall, close to but not reaching conventional significance. For both detail memory and socioemotional memory, autistic traits were not related to performance when people recalled the film alone, but significantly predicted lower memory for both domains when people had shared their experience with a listener. This meant that the third hypothesis, predicting that social recall context would strengthen the relationship between autistic traits and memory, received partial support for socioemotional memory, the domain it was written to predict: the pattern emerged clearly within the Narrator condition, though the formal interaction test did not reach conventional significance ( $p = .12$ ), making this finding suggestive rather than fully confirmed. Detail memory showed a strikingly similar Narrator-specific pattern (interaction  $p = .09$ ), but since detail memory falls under the fourth hypothesis rather than the third, this result is better read as evidence against the fourth hypothesis than as further support for the third. The fourth hypothesis, predicting that detail memory would remain protected in line with Weak Central Coherence theory, was not supported: detail memory declined alongside gist and socioemotional memory rather than being spared. Two further patterns emerged that had not been specifically predicted: memory transformed across the week between sessions, with gist strengthening and socioemotional memory fading, and the usual memory boost from emotionally intense content was present only for people who recalled the film alone, not for those who narrated it.

Taken together, these findings only partly support Weak Central Coherence theory as originally framed. The theory's central prediction, that detail-focused processing would be protected while global, meaning-based processing declined, did not hold once social narration was introduced. Instead, the results point toward autistic traits interacting with the added cognitive demands of social sharing itself, producing broader memory difficulty across domains rather than the selective dissociation WCC predicts. This suggests that WCC's

account may describe autism-related cognitive style well in quiet, solitary tasks, but does not fully extend to socially demanding recall situations of the kind tested here.

This thesis was limited by its sample size of 40 participants, which restricted the power available to detect several of the trends observed, and by its reliance on a single film per condition, an informally piloted stimulus selection process, and a single coder for scoring open-ended responses. The design also tested memory for a film rather than for autobiographical experience, leaving open whether the same pattern would hold for memories that happened to participants themselves.

Future research bringing this same design into an fMRI setting could test directly whether the neural mechanisms proposed here, reduced hippocampal-prefrontal coordination and a socially demanding narration task, actually explain the pattern observed behaviorally. Testing autobiographical memory, including a clinically diagnosed sample, and replicating this design with greater statistical power would further clarify how robust and how general these findings are.

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## Appendices

### Appendix A: Interaction Phase Instructions

The following pages contain the standardised instruction sheets distributed to participants in each role during the interaction phase. Three versions were used: Solo (Alone condition), Narrator, and Listener.

#### A.1 Solo Version (Alone Condition)

##### SOLO VERSION — Participant speaks alone

##### Interaction Phase — Participant Instructions

You will now complete two separate reflection phases, each lasting 5 minutes. Please speak out loud the entire time, as if you are telling your thoughts and feelings to someone else. There are no right or wrong answers — we want to hear your genuine personal reactions.

---

##### Phase 1 (5 minutes): General Feelings and Thoughts

For the next five minutes, talk freely about your feelings and thoughts regarding the movie you watched. Focus on your internal experience, not just on describing the plot.

You may consider questions such as:

- *What feelings came up for me during the movie?*
- *What thoughts or associations did it bring to mind?*
- *What touched or affected me?*
- *Did any part remind me of something from my own life?*
- *How do I feel right now as I think about it again?*

These questions are only suggestions — please keep speaking until I stop you.

---

##### Phase 2 (5 minutes): One Meaningful Moment or Theme

Now we will move to the second phase. Please choose the moment or theme from the movie that touched you the most — the part that felt personally meaningful or stayed with you most strongly.

For the next five minutes, speak in depth about that moment or theme.

You may consider questions such as:

- *Why did this moment or theme touch me?*
- *What feelings did it bring up?*
- *What about it felt personally meaningful?*
- *Does this connect to any experience from my own life?*
- *Can I remember a similar moment or situation?*

These questions are only guides. Please continue speaking freely until I stop you.

## **A.2 Narrator Version**

### **NARRATOR VERSION — Participant speaks with a Listener**

#### **Interaction Phase — Participant Instructions**

You will now complete two separate reflection phases, each lasting 5 minutes. Please speak out loud the entire time. There are no right or wrong answers — we want to hear your personal reactions.

---

#### **Phase 1 (5 minutes): General Feelings and Thoughts**

For the next five minutes, please talk freely about your feelings and thoughts regarding the movie you watched. Focus on your internal experience, not just on retelling the plot.

You may consider questions such as:

- *What feelings came up for me during the movie?*
- *What thoughts or associations did it bring to mind?*
- *What touched or affected me?*
- *Did any part remind me of something from my own life?*
- *How do I feel right now as I think about it again?*

These questions are only suggestions — talk freely and continuously until I stop you.

---

#### **Phase 2 (5 minutes): Focus on One Meaningful Moment or Theme**

We will now begin the second phase. Please choose the moment or theme from the movie that touched you the most — the part that felt most meaningful or stayed with you the strongest.

For the next five minutes, talk in depth about why this moment or theme mattered to you.

You may consider questions such as:

- *Why did this moment or theme affect me?*
- *What feelings did it bring up?*
- *What about it felt personally meaningful?*
- *Does it relate to something I have experienced in my own life?*
- *Can I recall a similar experience or situation from my past?*

These questions are only here to guide you. Please continue speaking freely until I stop you.

## A.3 Listener Version

### LISTENER VERSION — Instructions for the Listener

#### Listener Instructions

During both phases, your role is to listen carefully, respond with empathy, and help the speaker reflect more deeply. Your task is not to direct, judge, or lead — but to support, clarify, and encourage.

You will participate in two separate 5-minute phases, parallel to the speaker's task.

---

#### Phase 1 (5 minutes): Listening to General Feelings and Thoughts

In this phase, the speaker will talk about their overall feelings and thoughts about the movie.

Your role is to:

- Be attentive and present
- Use a warm, supportive tone, and show empathy and curiosity
- Ask gentle, open-ended questions that help them explore their feelings and thoughts
- Feel free to comment briefly from your own experience only if it helps them feel understood

You may ask questions like:

##### About general reactions

- *"What part touched you?"*
- *"What emotions came up for you?"*
- *"What thoughts came to mind as you were watching?"*

##### About personal associations

- *"Did any part remind you of something in your own life?"*
- *"What did this bring up for you?"*

##### About the current moment

- *"How do you feel now, thinking back on it?"*

These are only suggestions — feel free to respond naturally and empathetically.

---

#### Phase 2 (5 minutes): Focusing on One Meaningful Moment or Theme

In this phase, the speaker will choose the moment or theme from the movie that touched them the most.

Your role is to:

- Stay supportive
- Help them go deeper into why this moment or theme mattered
- Encourage them to explore feelings, personal meaning, and connections to their own life

You may ask questions like:

**About why it mattered**

- "What was it about this moment (or theme) that touched you?"
- "Why do you think this part stayed with you the most?"

**About emotions**

- "What feelings did this bring up for you?"
- "Was there a moment when the emotion felt strongest?"

**About personal meaning**

- "Why do you think this moment or theme feels important to you?"
- "What does it connect to in your life or experiences?"

**About similar experiences**

- "Have you ever had a similar experience?"
- "Does this remind you of something you have gone through?"

**About the present moment**

- "How do you feel right now as you talk about it?"
  - "What part of it stays with you at this moment?"
- Appendix B: Memory Questionnaire —  
Akeelah and the Bee

The following questionnaire was administered after viewing the neutral film (Akeelah and the Bee). Session 1 and Session 2 each contained 15 unique open-ended items (Part A), a recognition memory section (Part B), and a temporal order task (Part C). Items are presented here in examiner version with correct answers indicated.

**B.1 Session 1****Part A — Cued Recall (15 items)**

(G = Gist · C = Socioemotional · E = Environment/Detail)

1. (G) What does the teacher offer Akeelah when she speaks to her alone in the classroom?  
→ *She encourages Akeelah to participate in the school spelling bee.*
2. (C) Why does Akeelah throw away the paper the teacher gives her?  
→ *Because she does not want to join the spelling bee at first.*
3. (E) What is the colour of Akeelah's school bag?  
→ *Pink.*
4. (E) Where does Akeelah see her first big spelling competition?  
→ *On the TV screen.*
5. (G) What new opportunity does the principal offer Akeelah after she agrees to participate in the bee?  
→ *To practice with Dr. Larabee, the spelling coach.*
6. (C) Who motivates Akeelah to push herself to join the spelling bee outside the school's staff?

- *Her brother tells her that their father would be proud of her.*
7. (G) What moment on the stage shows Akeelah's first public success?  
→ *The bell rings, showing she spelled the word correctly.*
8. (C) Why does Akeelah yell at her sister while she is on stage?  
→ *Because her sister's baby is crying loudly.*
9. (E) What is the main object on the stage that stands out?  
→ *The microphone.*
10. (G) What does Dylan's father tell him at the birthday party?  
→ *He insists that Dylan must win the spelling bee this year.*
11. (C) What does Javier ask Akeelah after he kisses her?  
→ *He asks her if she wants to sue him for harassment.*
12. (E) How does Akeelah style her hair when she complains to Larabee about the heavy book?  
→ *In "bunny-ear" puffs.*
13. (G) During the national championship, what final outcome ends the competition?  
→ *Akeelah and Dylan both spell perfectly and tie for first place.*
14. (C) Why does Akeelah try to spell incorrectly in the final round?  
→ *Because she wants Dylan to become the winner.*
15. (E) What is the shape of Akeelah's earrings in the final competition?  
→ *Small gold circles.*

#### **Part B — Recognition Memory (Yes/No)**

1. Akeelah yelled at her sister in at least one scene. → **Yes**
2. Dylan's competition number in the first spelling test was 28. → **Yes**
3. Everyone looked bored while Akeelah and Dylan were playing at the birthday party. → **No**
4. Akeelah's teacher told her she needs to work harder. → **No**
5. Akeelah has a lot of confidence about being a spelling bee participant. → **No**
6. The teacher is sitting during the conversation with Akeelah. → **No**
7. Akeelah's brother went on a trip with his friends. → **No**
8. Akeelah asks for a different word. → **No**
9. Kids laugh and talk while playing games at the party. → **Yes**
10. Akeelah and Dylan shake hands before hugging. → **Yes**
11. The judge rings a bell when a contestant is incorrect. → **Yes**
12. Dylan's father smiles warmly when he joins the birthday group. → **No**
13. Akeelah was wearing a blue watch. → **Yes**
14. The number card at the final competition was yellow. → **Yes**

15. Akeelah watches a spelling competition on the office TV. → **No**

### Part C — Temporal Order

Participants ranked five scenes in chronological order. Correct order: B → A → C → D → E

- A. She listens to the principal explain how she can advance.
- B. Akeelah stands in her classroom while the teacher cleans the board.
- C. Akeelah stands on stage wearing a number card at the community bee.
- D. She plays Scrabble with friends at Javier's birthday party.
- E. Akeelah and Dylan face the final word at the national championship.

## B.2 Session 2

### Part A — Cued Recall (15 NEW items)

1. (G) With whom did Akeelah first discuss the spelling competition?  
→ *With her teacher.*
2. (C) Who disturbs Akeelah and her friend on the sidewalk after school?  
→ *A drunk neighbourhood man who demands money from Akeelah.*
3. (E) What game is Akeelah playing at home during this time period?  
→ *Scrabble.*
4. (G) What does the principal explain Akeelah must do before entering higher competitions?  
→ *She must practice regularly with a coach.*
5. (C) What accusation does Akeelah's brother make about the real reason she refused to participate?  
→ *He says she is afraid.*
6. (E) What was the colour of Akeelah's blanket at home?  
→ *Gray.*
7. (G) What question does Akeelah ask the judge before spelling her word for the first time?  
→ *She asks for the meaning of the word.*
8. (C) When Javier tells Akeelah she was very good at spelling, what does she answer?  
→ *She says, "I just was lucky."*
9. (E) What colour were the curtains on the stage?  
→ *Yellow.*
10. (G) During which occasion are Akeelah and her friends playing Scrabble?  
→ *Javier's birthday party.*
11. (C) Who won the birthday Scrabble game between Akeelah and Dylan?  
→ *Dylan won at the end.*

12. (E) What decoration shows it is a birthday celebration while Dylan and Akeelah are playing Scrabble?

→ *Balloons and colourful streamers.*

13. (G) When Dylan spells his last word and becomes one of the winners, how does Akeelah show she is happy for him?

→ *She starts clapping.*

14. (C) When the audience cheers, how does Akeelah react physically?

→ *She laughs nervously and wipes tears from her face.*

15. (E) What object appears behind the contestants on the final stage that was not shown before?

→ *A large National Spelling Bee banner.*

### **Part B — Recognition Memory (15 NEW items)**

1. The teacher gives Akeelah a paper while standing beside her desk. → **Yes**

2. Akeelah keeps her hands in her pocket while the teacher talks to her. → **No**

3. There is a large window directly behind the teacher. → **Yes**

4. The principal shows Akeelah a folder containing competition papers. → **No**

5. Akeelah sits quietly without interrupting while the principal explains her opportunities.  
→ **No**

6. There is a computer on the principal's desk during their conversation. → **Yes**

7. Akeelah walks to the microphone before the judge says her word. → **Yes**

8. Akeelah holds her hands tightly in front of her body while she is spelling. → **No**

9. A white number card is pinned to the front of Akeelah's shirt. → **Yes**

10. During the Scrabble game, Akeelah places a word tile on the board. → **Yes**

11. Dylan leans forward while watching Akeelah's move during the Scrabble game. → **Yes**

12. There is a birthday cake visible on a table in the garden. → **No**

13. A judge announces that Akeelah and Dylan will spell the same final word. → **No**

14. Akeelah looks at her family in the audience before spelling the last word. → **Yes**

15. Bright stage lights shine on Akeelah and Dylan during the final round. → **Yes**

### **Part C — Temporal Order**

Correct order: B → A → C → D → E

- A. She listens to the principal explain how she can advance.
- B. Akeelah stands in her classroom while the teacher cleans the board.
- C. Akeelah stands on stage wearing a number card at the community spelling bee.
- D. She plays Scrabble with friends at Javier's birthday party.
- E. Akeelah and Dylan face the final word at the national championship.

## Appendix C: Memory Questionnaire — Precious

The following questionnaire was administered after viewing the trauma-analogue film (Precious). Session 1 and Session 2 each contained 15 unique items across Parts A, B, and C, plus an emotion and empathy rating section (Part E) administered in Session 1.

### C.1 Session 1

#### Part A — Cued Recall (15 items)

1. (G) What does Precious dream about during the opening scene?  
→ *Being a dancer.*
2. (C) Why does Mary become angry with Precious at the beginning?  
→ *Because Precious did not buy cigarettes for her.*
3. (E) What food does Precious steal and eat while walking?  
→ *A fried egg.*
4. (E) What does the principal say Precious must complete to be placed at the alternative school?  
→ *A math and reading test.*
5. (G) What does the principal offer Precious as an alternative to staying at her current school?  
→ *Enrolment at an alternative school called "Each One Teach One."*
6. (C) What does the boy on the street do to Precious?  
→ *He pushes her to the floor.*
7. (E) What does the boy on the street steal from Precious?  
→ *Her bag of candy.*
8. (G) What does Precious reveal in her first written entry about what happened to her?  
→ *That her father raped her.*
9. (C) What does Mary throw at Precious during their confrontation at home?  
→ *Her wig.*
10. (G) What serious illness does Precious learn she has contracted?  
→ *HIV.*
11. (E) How many children does Precious have by the end of the story?  
→ *Three (3).*
12. (C) What does Precious do to protect her baby after learning she has HIV?  
→ *She stops breastfeeding him.*
13. (C) What does Precious do during Mary's confession to Ms. Weiss?  
→ *She says nothing — she remains silent.*
14. (G) Why does Ms. Weiss look shocked during Mary's confession scene?  
→ *Mary admits she allowed the abuse and blamed Precious for it.*

15. (E) What colour is the wall behind Precious during her final classroom scene?  
→ *Green.*

### **Part B — Recognition Memory (Yes/No)**

1. The principal tells Precious she is pregnant again and must leave school. → Yes
2. Precious takes a placement test at "Each One, Teach One." → Yes
3. During the social-worker visit, her grandmother was in the kitchen. → Yes
4. The mother tells Precious the father died from Parkinson. → No
5. Mary cries while telling her story to Ms. Weiss. → Yes
6. Precious smiles happily after she understands she couldn't get back to school. → No
7. Precious speaks politely to the receptionist of the "Each One, Teach One" when she checks in. → Yes
8. Mary blames Precious for her own suffering. → Yes
9. Ms. Rain hugs Precious in the class. → No
10. Mary refuses to take responsibility and continues blaming Precious. → Yes
11. The classroom is noisy and full of laughter. → No
12. Precious wears a red jacket in one of the scenes. → Yes
13. Mary was a smoker. → Yes
14. There is background music during the last confrontation. → No
15. The Ms. Weiss chair is green. → Yes

### **Part C — Temporal Order**

Participants ranked five scenes in chronological order. Correct order: C → B → A → D → E

- A. Precious takes a placement exam at "Each One Teach One."
- B. The social worker visits Precious's home.
- C. Precious speaks to the principal about her pregnancy.
- D. Precious learns about AIDS and shares the news in class.
- E. Mary gives her confession during the office interview.

### **Part E — Emotions and Empathy Ratings**

Participants rated the following emotions on a 7-point Likert scale (1 = Not at all, 7 = Extremely), referring to their personal emotional experience while watching the film.

- Shame
- Fear
- Sadness
- Anger
- Compassion
- Joy

- Empathy for Precious
- Empathy for the mother
- Overall emotional reaction
- Feeling that the film relates to my own life

## C.2 Session 2

### Part A — Cued Recall (15 NEW items)

1. (G) Why does the principal say Precious cannot stay in school at this time?  
→ *Because she is pregnant again and the school requires additional evaluation.*
2. (C) What does Precious feel toward the boy who disrupts the classroom?  
→ *Angry.*
3. (E) What specific object does the principal hold while talking to Precious?  
→ *A pen at first, then nothing.*
4. (G) When does Precious go to "Each One Teach One"?  
→ *After the principal finds out she is pregnant and she leaves her old school.*
5. (C) What was the secretary doing before seeing Precious when she first arrived at "Each One Teach One"?  
→ *She was on the phone.*
6. (E) What colour are the chairs in the testing area?  
→ *Black.*
7. (G) What does the social worker ask Mary first about Precious's child when she enters the apartment?  
→ *About the child's medical condition and development.*
8. (C) What does Precious say when the social worker asks her how she is doing during the home visit?  
→ *She says she is doing well / good.*
9. (E) What item of furniture does the social worker sit on during the visit?  
→ *A worn couch.*
10. (G) What difficult news does Precious learn from her mother?  
→ *That her father died from AIDS.*
11. (C) What does Ms. Rain decide to do regarding the writing task after Precious refuses to do it?  
→ *She insists that Precious finish her task.*
12. (E) During the classroom writing scene, where is one of the students sitting instead of at her chair?  
→ *One of them is lying next to the window.*
13. (G) When was the first time the father raped Precious?  
→ *When she was three years old.*
14. (C) How does Mary explain why she never stopped her partner from raping Precious?  
→ *She says she needed someone to love her and was afraid he would leave her if she intervened.*
15. (E) What colour is Mary's scarf during the meeting with Precious and Ms. Weiss?  
→ *Black.*

**Part B — Recognition Memory (15 NEW items)**

1. Precious keeps her backpack on her lap in the principal's office. → **No**
2. The principal raises her voice angrily at Precious. → **Yes**
3. Precious is standing near the principal's desk during most of the conversation. → **No**
4. Precious fills out a form before taking the placement test. → **No**
5. The testing room is crowded with many students when she enrolls at "Each One Teach One." → **Yes**
6. Precious sits at a single desk with papers in front of her. → **Yes**
7. Mary acts polite only when the social worker is watching her during the home visit. → **Yes**
8. The social worker sits on a couch inside the apartment. → **Yes**
9. The social worker asks Mary whether Precious's daughter has been attending medical check-ups. → **Yes**
10. Precious cries while talking in front of Ms. Rain's class. → **Yes**
11. Precious smiles at any point during these scenes. → **No**
12. The classroom has students sitting on desks and chairs in a semicircle. → **No**
13. Ms. Weiss raises her voice at Mary during the confession. → **No**
14. Precious leaves the meeting room while her mother and Ms. Weiss are there, carrying her baby. → **No**
15. The office room has a large wooden desk between Mary and Ms. Weiss. → **Yes**

**Part C — Temporal Order**

Correct order: C → A → B → D → E

- A. Precious takes a placement exam at "Each One Teach One."
- B. The social worker visits Precious's home.
- C. Precious speaks to the principal about her pregnancy.
- D. Precious learns about AIDS and shares the news in class.
- E. Mary gives her confession during the office interview.

**Part E — Emotions and Empathy Ratings (Session 2)**

Participants rated the following emotions on a 7-point Likert scale (1 = Not at all, 7 = Extremely).

- Shame
- Fear
- Sadness
- Anger
- Compassion
- Joy
- Empathy for Precious
- Empathy for Caregiver
- Overall emotional activation
- Feeling that the film relates to my own life

## **Appendix D: Post-Interaction Experience Questionnaire**

After each recall interaction, Narrators and Listeners separately completed an 8-item interaction quality questionnaire. Items were rated on a 7-point Likert scale (1 = Strongly disagree, 7 = Strongly agree). Emotional distress was additionally rated on a visual analogue scale (0 = Not at all, 100 = Extremely). The questionnaire was administered twice: once after the neutral film interaction, and once after the trauma-analogue film interaction.

### **Narrator Version**

The following items refer to your experience during the interaction with the other participant. Please indicate the extent to which you agree with each statement.

- I felt comfortable with the other participant.
- I enjoyed the interaction with the other participant.
- I felt that the other participant was attentive and empathetic toward me.
- I felt that I was attentive and empathetic toward the other participant.
- I would like to take part in additional interactions with the other participant.
- I like the other participant.
- I feel close to the other participant.
- I feel that the other participant likes me.

Additionally: How distressing did you find this interaction? (VAS: 0–100)

How well did you know the participant you were paired with prior to the experiment? (1 = I just met them today, 5 = We are close friends)

### **Listener Version**

The listener version contained equivalent items, reworded to reflect the listener's perspective (e.g., "I felt that the speaker was willing to open up to me").

## **Appendix E: Participant Consent Form**

The following consent form was provided to and signed by all participants prior to their participation in the study.

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### **Participant Consent Form**

**Study Title:**

The Transformation of Autobiographical Memories Through Empathic Interactions

**Institution:**

Department of Neuropsychology, Ruhr University Bochum

**Principal Investigator:**

Prof. Nikolai Axmacher

**Researchers:**

Dr. Oded Mayo, Fatemeh Aminikafiabad

**Contact:**

interactions.memorystudy@gmail.com

**Purpose of the Study**

To examine the effect of social interactions on episodic memory.

**Procedure**

If you agree to participate, you will:

- Watch a short film clip (some emotionally intense, others neutral).
- Engage in a short conversation with another participant, or reflect on your reactions on your own, depending on your assigned role.
- Complete short questionnaires and a memory task assessing your recall, emotions, and thoughts related to the films.

Session 1 will take approximately 150–180 minutes. If you are assigned to the Narrator or Alone role, you will be invited to a shorter follow-up session of approximately 40 minutes about one week later. You will receive course credit for your participation (one credit per hour), recorded through the university's course-credit system.

**Possible Risks and Discomforts**

Some film clips may include emotionally intense or distressing content (e.g., depictions of conflict, shame, or difficult social interactions). Please note:

- You are not required to watch or continue any scene that makes you uncomfortable.
- You may pause or stop participation at any time without giving a reason and still receive partial credit.
- After the session, a debriefing will be offered to explain the study and provide support resources if needed.

**Eligibility and Safety**

Before participating, please confirm that:

- You are at least 18 years old.
- You do not have any known psychiatric or trauma-related conditions that could make viewing emotionally intense material distressing.
- You are comfortable participating in an experiment involving such materials.

If you are unsure or feel sensitive to emotionally charged content, please inform the researcher before beginning.

### **Confidentiality**

Your data will be pseudonymised using a participant ID code. Identifying information will be stored separately from your experimental data and will not be linked to your responses in any analysis or publication. Data will be stored securely and used only for scientific and educational purposes.

### **Voluntary Participation**

Your participation is entirely voluntary. You may withdraw at any point without penalty or loss of compensation.

### **Compensation**

You can choose between monetary payment or course credits for your participation:

- 15 € per hour, or
- 1 course-credit point per hour.

If you withdraw before completing the session, you will not receive any compensation.

### **Consent**

By signing below, you confirm that:

- You have read and understood the information above.
- You freely agree to participate in this study.
- You confirm that you are comfortable watching emotionally intense film scenes.
- You understand that you can withdraw at any time without consequences.

Participant Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Researcher Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

## **Appendix F: Ethics Approval**

The study received ethics approval from the Ethics Committee of the Faculty of Psychology, Ruhr University Bochum (EK-Antrag 963), submitted 19.11.2024 and approved 07.01.2025. The approval is valid for a period of four years.

### **RUHR-UNIVERSITÄT BOCHUM**

Fakultät für Psychologie | Ethikkommission

Sehr geehrte Frau Steinemer,

die Ethikkommission hat Ihren am 19.11.2024 eingereichten Ethikantrag 963

*"The Transformation of Autobiographical Memories Through Empathic Interactions"*  
zwischenzeitlich geprüft.

Die Kommission hält Ihr Vorhaben für ethisch unbedenklich.

Mit freundlichen Grüßen

Dr. Andreas Utsch

Stellvertretender Vorsitzender der Ethikkommission der Fakultät für Psychologie

#### **Approval Details**

- Approval date: 07.01.2025
- Application submitted: 19.11.2024
- Ethics reference number: 963
- Signed by: Dr. Andreas Utsch, Deputy Chair of the Ethics Committee, Faculty of Psychology
- Validity: 4 years from date of approval
- Contact: [ethikkommission-psychologie@ruhr-uni-bochum.de](mailto:ethikkommission-psychologie@ruhr-uni-bochum.de)

## **Appendix G: Screening and Demographic Questionnaire**

Before their laboratory visit, all prospective participants completed an online screening questionnaire assessing eligibility, trauma history, general health, and demographic information. The questionnaire consisted of five parts.

### **Part 1: Participant Information**

- Please enter your Participant ID code.
- Please indicate your age.
- Please select your gender.
- Please provide your email address.

### **Part 2: Life Experiences and Trauma Screening**

Sometimes things happen to people that are unusually or especially frightening, horrible, or traumatic. For example: a serious accident or fire; a physical or sexual assault or abuse; an earthquake or flood; a war; seeing someone be killed or seriously injured; having a loved one die through homicide or suicide.

- Have you ever experienced this kind of event?

In the past month, have you...

- ...had nightmares about the event(s) or thought about the event(s) when you did not want to?
- ...tried hard not to think about the event(s) or went out of your way to avoid situations that reminded you of the event(s)?
- ...been constantly on guard, watchful, or easily startled?
- ...felt numb or detached from people, activities, or your surroundings?
- ...felt guilty or unable to stop blaming yourself or others for the event(s) or any problems the event(s) may have caused?

### **Part 3: General Health and Preferences**

- Do you have any current, diagnosed health conditions (physical or mental) you would be willing to report?

Follow-up (if applicable): Are you currently diagnosed with or receiving treatment for any of the following?

- Major Depression
- Generalized Anxiety Disorder (GAD)
- Social Anxiety
- Panic Disorder
- Psychosis
- Bipolar Disorder (including a history of mania)
- ADHD (Attention-Deficit/Hyperactivity Disorder)
- Learning Disorder or Dyslexia
- Neurological condition (e.g., epilepsy, traumatic brain injury)
- Are you currently taking any psychiatric medications?
- Is this medication for ADHD?
- Have you been advised to avoid visual triggers due to photosensitivity?

- The current study includes emotionally intense movie clips. Do you agree to watch them?

**Part 4: Preferences in Social Situations (AQ-10)**

For each of the statements below, please indicate to what extent it describes your feelings, using one of five response options.

**Part 5: Language Background**

- German Language Proficiency
- English Language Proficiency