Ayanokoji FSIQ: PMH Debunk & FMA Calc

By HelloThere1089

This doc will tackle the following feats:

1. Ayanokoji's PMH Debunk
2. Ayanokoji's FMA Calc

Discord: hellothere1089

PMH Debunk

This section will primarily tackle the claims made in this doc. The doc is quite wordy and there are a few claims I would like to tackle. As always, props to the original creator.

The Claims

1. *"Ayanokoji's LT Memory works as if it were his Working Memory"*

> Perfect Memory means exactly what the name would imply, that his memory is perfect in its ability to retain and recall information, however in practice it offers far more value than that. Due to the nature of how Ayanokouji's memory is shown to work, he can utilize his entire LT Memory as if it were his Working Memory.

> can store at one time. However, this isn't the case for Ayanokouji, he has likened recalling LT memories to just opening the drawers of his memories and can recall any memory from his LT memory instantly with the same efficiency as if it were stored in his WMI. This is because his Perfect Memory allows his LT

> memory to function as working memory, meaning that he can perform cognitive tasks using LT memory instead of what would normally be considered working memory. This concept is called Long-Term Working Memory (LTWMI).

2. *"Ayanokoji utilizes Long-Term Working Memory"*

> memory to function as working memory, meaning that he can perform cognitive tasks using LT memory instead of what would normally be considered working memory. This concept is called Long-Term Working Memory (LTWMI).

> Long-Term Working Memory (LTWMI) in further detail, is a cognitive concept that blends aspects of both long-term memory and working memory. It encompasses the idea that certain information can be readily accessed within the working memory system over extended periods of time. Unlike normal working memory, which typically only holds information temporarily which is then used for some kind of cognitive processing, LTWMI allows for the retention and retrieval of information over longer periods of time. This phenomenon is supported by research in multiple fields of science which suggests that the brain's working memory capacity can be expanded through repeated use. In essence, LTWMI allows for the use of LT Memory in cognitive processes in the way that traditional working memory is used. (Cowan N. Working Memory Maturation)

3. *"Ayanokoji passively stores everything he perceives"*

> employee from a name tag that happened to pass through his peripheral vision. From these examples we can see that his memory is constantly taking in information around him even when he isn't directly observing something. This includes his subliminal perception which accounts for every detail observed by his 5 senses that he is not directly aware of at the time.

This ties into a calc later on in the doc.

4. *“Ayanokoji has perfect control over his memories”*

However, he has far more control over exactly what information he recalls than normal. We have seen multiple times that Ayanokouji decides whether something interests him or not, and he makes no effort to recall information he deems irrelevant.

5. *“PMH affects WMI, PSI, VSI, and VCI”*

We can now focus on how exactly Ayanokouji’s Perfect Memory impacts his scaling. The main indices that Perfect Memory impacts are WMI, PSI and VSI due to the quantity of data he is manipulating and the speed at which he does so. That being said, it also impacts his FRI and VCI as well. Manipulating his memories and his thought processes are both novel and unlearned processes so reasoning through how he can utilize them showcases his FRI. A prime example of this would be when he reordered his thought

6. *“He recalled his entire life in a few seconds”*

This took place in Y1V5 after Ayanokouji first met with Sakayanagi. After she says the words “White Room” Ayanokouji immediately recalls all his memories at once in order to search for any trace of Sakayanagi in them. After his search he concludes two things. 1. He is certain that he isn’t missing “ANY” of his memories. 2. He met Sakayanagi for the first time at ANHS.

> “This is a reunion. I just wanted to come give you a proper greeting.”
> Reunion? Though I kept my back to Sakayanagi, I turned my head to look at her. I had never seen her before. I didn’t remember this girl, and I wasn’t missing any memories of my past. I had met Sakayanagi for the first time at school. There was no arguing with that fact.

For him to have confirmed both of those things with absolute certainty, as he did, he would have needed to think through his entire life’s memory from infancy in that instant. In the time it took him to turn his

Since Ayanokouji turned 16 on the following October 20th, we can safely say he is 15 years and 11 months old. While in the WR he maintained a schedule of waking up at 7:00AM and going to sleep at 10:00PM meaning he slept for 9 hours a day. So, this leaves 15 hours of awake consciousness every day of information for him to recall. Since his earliest memories are from his infancy his searched memories contain the entirety of this time.

7. I know there is a rebunk attempt as well, however none of the arguments there will have anything to do with mine because I am not going to use the same arguments.

What is WMI?

WMI or Working Memory Index is a subcategory of FSIQ. It is the ability to retain and manipulate information in one’s short-term immediate memory. Note that by definition, it needs to be short-term immediate memory. It is also separate from Long-Term Memory and a quick LTM recall has no direct correlation with WMI. People with bad LTM recall can perform well on

WMI tests. While the opposite is also evident where people with good LTM can perform badly in WMI tests. Studies also prove that LTM recall is separate from WMI.

What is LTM?

Long-term memory is a vast storage of memories accumulated throughout one's life. As the name suggests, these memories can be retained for a long period of time. It is considered fairly separate from short-term memory. It is controlled mainly by the hippocampus while working memory is controlled by the prefrontal cortex. Long-term memory recall also bypasses WM, with the recalled information staying within activated LTM rather than WM. There is also the case of HSAM, where people with exceptional long-term memory recall have average scores in FSIQ. All of these sources support the notion that long-term recall has no significant effect on WMI, PSI, or VSI.

What is LTWMI?

LTWM or long-term working memory is a skill honed by experts where they use retrieval cues in their LTM to facilitate efficient LTM recall. However some might hear the phrase "working memory" and associate this concept to WMI. This has no bearing on Short term working memory or WMI at all.

"The Ericsson and Kintsch theory postulated that experts and skilled readers generated integrated memory representations in long-term memory, not in short-term working memory."

Since WMI as measured by FSIQ only measures traditional Working Memory which is Short Term Working Memory.

"Working Memory Index: This index reflects an individual's ability to take in and hold information in **immediate awareness** and then perform a mental operation on that information. It also measures the mental manipulation of number operations."

Immediate here by definition means short-term.
"Working Memory index WMI (Gsm short-term memory: the ability to memorize information for a short period)"

WMI is a measure of raw cognitive ability while LTWM is a skill developed by experts to mimic WMI so that they can recall long-term memories quickly.

*"Ericsson and Kintsch (1995) proposed that skills or behaviors could be learned to use LTM as a **substitute** for ordinary working memory."*

There is no strong enough correlation between LTWM and WMI to suggest that they are operated by the same parts of the brain. Not to mention, this is a skill that needs to be learned by the individual and doesn't appear naturally. It is described as making retrieval structures in the LTM by making connections between information in the LTM and new information.

Is long-term memory recall PSI and WMI?

Based on how WMI, LTM, and LTWM are defined, there is no proven way to connect any form of LTM recall to PSI and WMI. Because either the memory is recalled using the usual LTM recall process, which has no verifiable connection to FSIQ as I stated above, or the memory is recalled using LTWM which too has no proven connection to FSIQ. In fact it is explicitly stated to not involve short-term memory. While WMI in FSIQ specifically measures the working memory within short-term memory. Just because both have the phrase "working memory" doesn't mean they operate using the same brain functions, especially when one is a raw cognitive aptitude, while the other is a skill acquired through practice.

Long-term memory ⇒ Long-term working memory
Short-term memory ⇒ Working memory index

The reason people have a confusion here is because both are called "working memory". However this is an etymological fallacy and a nominal

fallacy. You can't assume both refer to the same concept. Even if you say that both are parts of working memory, it would still not affect WMI at all because WMI specifically measures short-term working memory. Thus, there is no strong enough correlation between the two that I could find. Ayanokoji can be good at one and bad at the other.

	Long-term working memory (LTWM)	Working memory index (WMI)
1.	It is a skill acquired through practice	It is a measure of the raw capacity of the brain
2.	It is completely governed by long-term memory	It is completely governed by short-term memory

Does LTWM increase WMI?

No. There is nothing that suggests that this is true. LTWM is a skill developed to mimic WMI without actually increasing the brain's capacity. In fact, even though skill and domain expertise can improve recall of long-term memories, WMI remains as an important factor of intelligence precisely because it handles new information presented. This is the reason FSIQ measures WMI. LTWM will be of no use in this situation. Thus, WMI remains a separate metric when compared to LTWM.

The Debunk

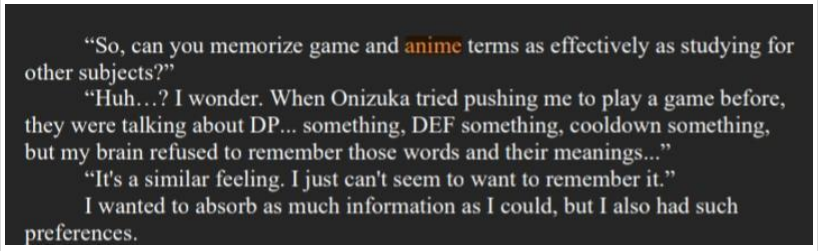
I would like to preface this by saying that I do think Ayanokoji has exceptional long-term memory recall. However to connect this to FSIQ, the original doc has made quite a few logical leaps.

A. Ayanokoji utilizes long-term working memory
B. Long-term working memory is correlated with WMI, PSI, VSI
C. Ayanokoji ran through his entire life in his mind to find Sakayanagi

I would like to dissect these leaps step by step. I will refer to the specific claims of the original doc using the numbers I have listed in the "The Claims" section above.

1. ***“Ayanokoji’s LT Memory works as if it were his Working Memory”*** There is no reason given for why this is the case. The original doc uses the metaphor of opening drawers as sufficient evidence to claim that it works like WM. Why? How does accessing memories as if he was opening drawers imply that his LTM worked like WM? All it means is that his LTM recall is easy for him to do and he can do it quickly. The doc also states ***“can recall any memory from his LT memory instantly with the same efficiency as if it were stored in his WMI”***. Just because the memory recall is instantaneous and efficient, doesn’t mean it is stored in WMI. There are real world people with exceptional LT memory recall that score average in WMI. So the connection the doc tried to make using speed, efficiency, and the drawer metaphor, is flawed. It has no logical basis. All these things mean that Ayanokoji has exceptional LTM recall. That’s all.
2. ***“Ayanokoji utilizes Long-Term Working Memory”*** This is never actually stated in any scan that the doc presents. LTWM is a skill that is developed by experts in a domain after practice. Assuming Ayanokoji was using LTWM skill would be the same as assuming he has the Memory Palace technique without any statement or evidence. What Ayanokoji did isn’t domain specific or practiced. He was using autobiographical memory recall (recounting episodes of his life). If Ayanokoji recalls information specific to a domain of study he is an expert in, using retrieval cues, then he is using LTWM. Looking through one’s own life to try and recall someone is autobiographical memory. LTWM is not the same as autobiographical memory.
3. ***“Ayanokoji passively stores everything he perceives"*** This is actually not true. In Y2V11 when he couldn’t recall gaming terms, he stated that there are limits to his information absorption. He can only absorb what he finds interesting. This also ties into the calc in the doc because it assumes Ayanokoji recounted his entire life like a video recording. This is false as it assumes Ayanokoji found everything he saw interesting. This goes against the concept of LTWM as well because it functions on retrieval cues created to recall specific

concepts in a domain. That would mean Ayanokoji actively creates retrieval cues for everything he experiences. This is not passive and has no basis in the text.


"So, can you memorize game and anime terms as effectively as studying for other subjects?"
"Huh…? I wonder. When Onizuka tried pushing me to play a game before, they were talking about DP... something, DEF something, cooldown something, but my brain refused to remember those words and their meanings..."
"It's a similar feeling. I just can't seem to want to remember it."
I wanted to absorb as much information as I could, but I also had such preferences.

4. ***"Ayanokoji has perfect control over his memories"*** While I do think he has exceptional control over his memories because of the drawer metaphor, this kinda goes against the claim that he used LTWM to access his autobiographical memories. If he has perfect control, then he doesn't need retrieval cues.
5. ***"PMH affects WMI, PSI, VSI, and VCI"*** I think this was already covered in my "Is long-term memory recall PSI and WMI" section. In short, it does not affect those categories. Regardless of if you consider it to be generic autobiographical memory recall like in the case of HSAM, or if you think Ayanokoji somehow used LTWM to do it, none of those options actually affect any FSIQ categories. WMI explicitly measures short-term working memory, and PSI scores remain average even among people with HSAM (which proves that these two systems are separate). There is also no connection between recalling visual memories from LTM and VSI. I can see the argument for VCI though since standard VCI testing does measure long-term memory and knowledge on the topic.
6. ***"He recalled his entire life in a few seconds"*** In point 3 I pointed out how Ayanokoji doesn't encode everything he experiences. So he couldn't have done this logically speaking. Secondly, the entire basis of this assumption is that he stated he was not missing any memories. Due to Sagan's standard, I would say an extraordinary claim like this would require extraordinary evidence pointing to the claim that he actually recounted his entire life in sequence in those few seconds.

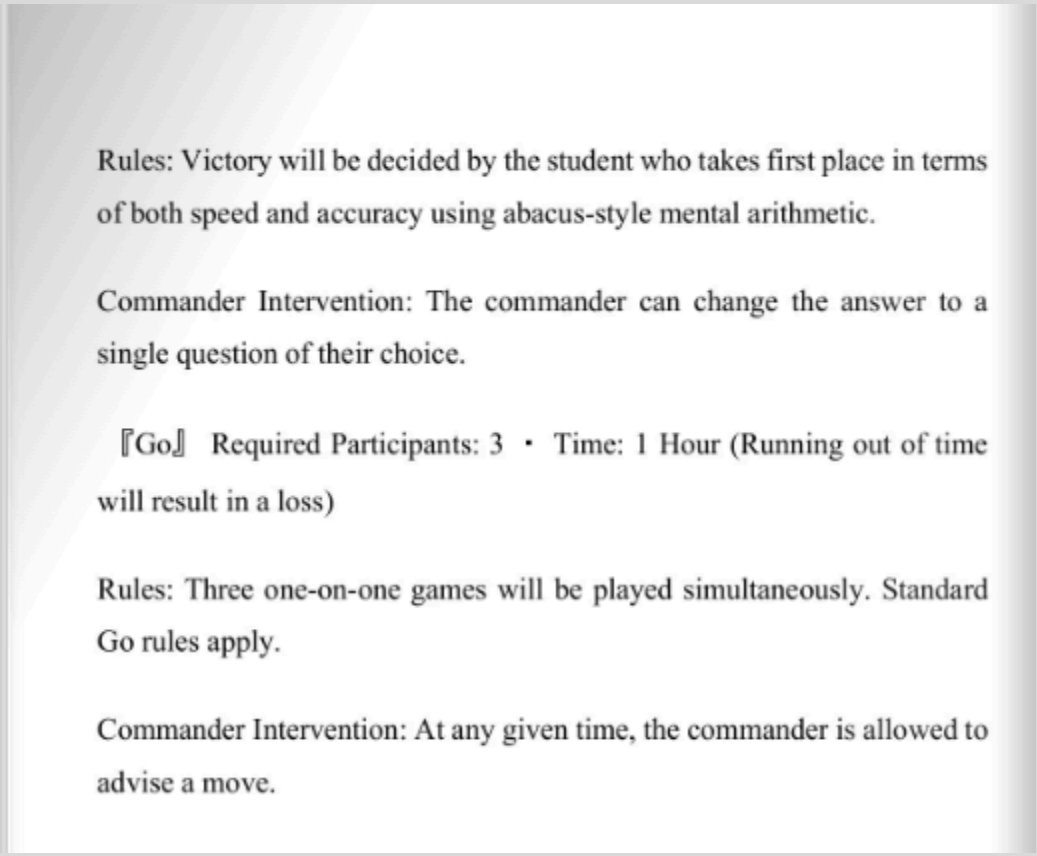
Conclusion

In conclusion, I do not think Ayanokoji's PMH has any strong enough correlation with his PSI, WMI, or VSI. So it's best to not scale it to those subcategories.

FMA Calc

What is Flash Mental Arithmetic or Flash Anzan?

FMA works by flashing 15 sets of 3 digit numbers in intervals of 0.3 seconds. The methodology used by the participants is by mentally visualizing and manipulating an abacus. Each digit represents at least one change in the abacus. The same methodology was used in COTE as well.



Rules: Victory will be decided by the student who takes first place in terms of both speed and accuracy using abacus-style mental arithmetic.

Commander Intervention: The commander can change the answer to a single question of their choice.

『Go』 Required Participants: 3 ・ Time: 1 Hour (Running out of time will result in a loss)

Rules: Three one-on-one games will be played simultaneously. Standard Go rules apply.

Commander Intervention: At any given time, the commander is allowed to advise a move.

Benchmarking FMA Proficiency

The world record for Flash Mental Arithmetic is 1.61 seconds.

Number of operations: 15x3 = 45 Operations
Timeframe: 0.3x14(between the 15 numbers)+1.61(at the end) = 5.81 Seconds

This brings the peak human at 7.7 Operations/Second during FMA.

The Feat

The tenth and final question in the Flash Mental Arithmetic event began.

It consisted of 3 digit numbers in 15 rounds over 1.6 seconds.

One by one, the 15 numbers flashed on and off of the screen in quick, rapid succession.

For a moment, everything fell silent.

Whether it be Katsuragi, Matsushita, or Tamiya, none of them even managed to pick up their pen. They all just sat there in mute amazement at the question that had just passed them by.

The interesting part of this is that the numbers are stated to have been flashed in 15 rounds over the course of 1.6 seconds. The wording seems to imply that the total time available to Ayanokoji for viewing the numbers was just 1.6 seconds. This is further supported by the statement that “none of them managed to pick up the pen”. It would be silly to suggest that there were 1.6 seconds between each round and that they couldn’t lift their pens in 22.4 seconds.

The Calc

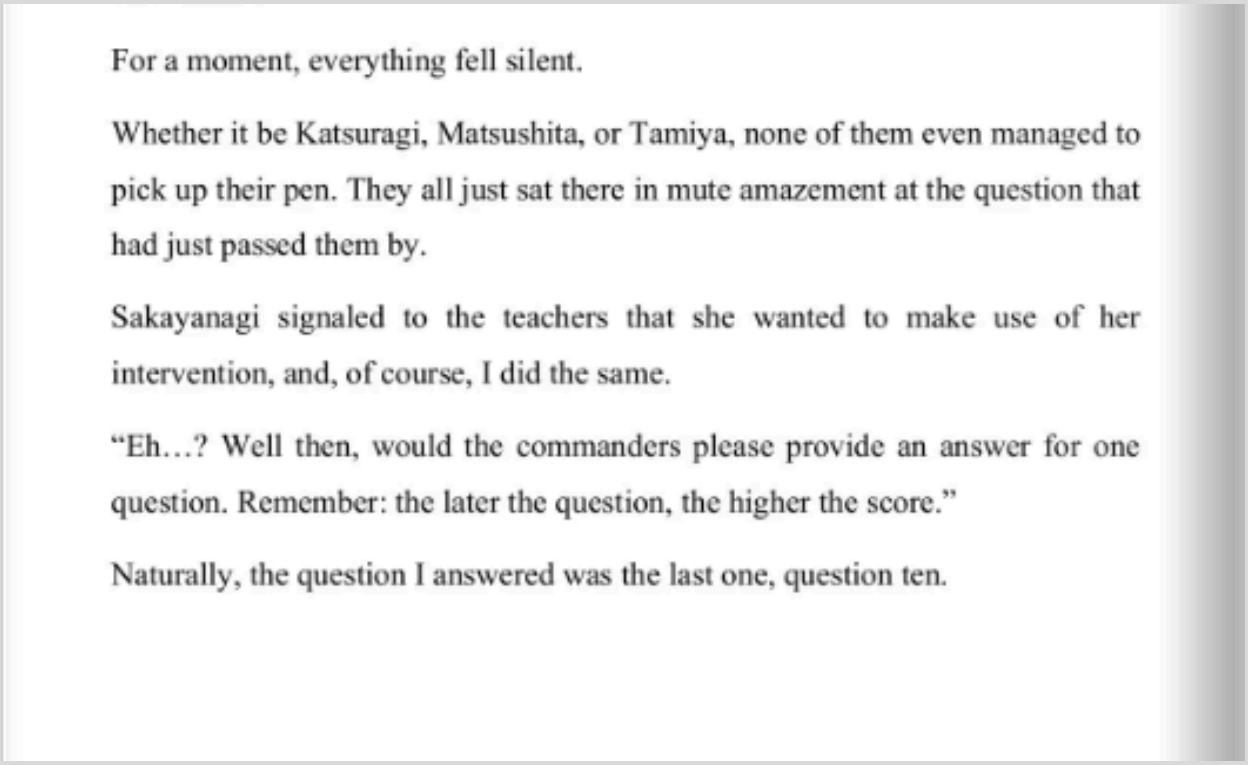
High End Interpretation

I will be using two interpretations here. The first one will be a high end interpretation. This one assumes that immediately after the numbers stopped flashing in front of Ayanokoji, he had the answer ready.

Number of operations: 15x3 = 45 Operations
Timeframe: 1.6 Seconds
PSI: 28.125 Ops/Sec
WMI: Keeping the mental abacus in mind while making small changes to it
VSI: Visualizing the abacus in his mind while rapidly manipulating it according to the numbers flashed before him.

Low End Interpretation

This one is a more conservative end. In this one, we take the entire time between when the numbers started flashing and the moment Ayanokoji revealed his answer or was at least writing his answer as the timeframe.



For a moment, everything fell silent.

Whether it be Katsuragi, Matsushita, or Tamiya, none of them even managed to pick up their pen. They all just sat there in mute amazement at the question that had just passed them by.

Sakayanagi signaled to the teachers that she wanted to make use of her intervention, and, of course, I did the same.

"Eh…? Well then, would the commanders please provide an answer for one question. Remember: the later the question, the higher the score."

Naturally, the question I answered was the last one, question ten.

As we can see here, there is little text between when the flash anzan stopped and when Ayanokoji gave his answer. It is tough to estimate how long it would have taken just from the text. However we have some facts that we can use. After the flash anzan stopped and before Ayanokoji gave his answer, the following events happened:

1. Ayanokoji describes how the students sat there in amazement
2. Sakayanagi signals to the teacher and so does Ayanokoji
3. The teacher gives an entire dialogue asking them to choose the question

Out of these, the 3rd point is a good bare minimum timeframe that should be added to the 1.6 seconds because he at least had this much time to do it in his head as well. Whether he used it or not is up to interpretation, however to stay in the safe zone, I will calculate an end for this as well.

The teacher utters 22 words. Japanese people speak at around 240 words per minute. This would bring the time taken by the teacher to say her dialogue to 5.5 seconds. So at the low end, Ayanokoji did:

Number of operations: 15x3 = 45 Operations
Timeframe: 1.6 + 5.5 Seconds = 7.1 Seconds
PSI: 6.34 Ops/Sec
WMI: Keeping the mental abacus in mind while making small changes to it
VSI: Visualizing the abacus in his mind while rapidly manipulating it according to the numbers flashed before him.

Conclusion

The high end puts Ayanokoji's PSI at **3.65x peak human PSI**. The low end puts Ayanokoji's **PSI** at **0.82x peak human PSI**. Both ends put him in the ball park of peak humans in PSI. His WMI also remains the same since the number of elements sustained or manipulated by him mentally should stay the same in both cases, i.e., the mental abacus. The same goes for his VSI. Both his **WMI** and **VSI** are at **peak human level** as well since IRL humans have replicated feats at the same level.