# Belief Formation: The Interaction of Spinoza and Bartlett's Models

**John A Challoner, January, 2025.**

## Introduction

This article introduces the Spinozan Model of belief formation and Bartlett's Theory of Effort After Meaning. The interaction between them at different stages in our lives offers valuable insights into how we can better educate, protect against misinformation, and cultivate adaptability in belief systems.

Imagine a scenario where a false claim, such as the notion that certain foods can cure chronic diseases, spreads widely on social media. Many people, overwhelmed by the volume of information and lacking the time to scrutinise sources, may accept this claim as true. This automatic acceptance highlights the vulnerabilities described in the Spinozan model of belief formation. Furthermore, even when credible evidence debunks the claim, entrenched beliefs shaped by existing mental frameworks, as explained by Bartlett's theory, make it difficult for individuals to revise their understanding.

By studying how beliefs are formed and altered and addressing the vulnerabilities in these processes, we can better equip individuals to critically evaluate information, resist misinformation, and adapt to an ever-changing informational landscape.

## The Spinozan Model

The Spinozan model of belief formation has its roots in the work of Baruch Spinoza (1632–1677). He was a Dutch philosopher who proposed that the human mind naturally and automatically accepts propositions as true. This model, rediscovered and expanded upon in contemporary cognitive science, proposes that belief formation occurs effortlessly and automatically. The rejection of beliefs, however, requires conscious effort and cognitive resources.

Spinoza's foundational idea is that when individuals encounter a proposition, they inherently accept it as true unless or until they actively reject it. This is reflected in the grammatical rules of natural language. When, for example, we say that "Writing is hard work" we do not flag the proposition as being true by adding "It is true that…". Rather, it is assumed to be true. On the other hand, we *do* flag propositions as being false by saying "It is false that writing is easy". Spinoza's insight is clearly on display in the language that we use.

Without this automatic step, individuals might remain in a state of constant doubt, unable to build the foundational beliefs essential for complex reasoning and schema development. Imagine a student learning maths. If every mathematical rule (e.g., 1+1=2) were met with scepticism from the outset, they would spend excessive time verifying the rule rather than progressing to more advanced concepts that build upon it.

This mechanism, while efficient, leaves the human mind vulnerable to absorbing misinformation or falsehoods, particularly in situations of cognitive load or distraction. For

instance, exposure to fake news or misleading information often leads to initial acceptance, and rejecting these beliefs requires significant effort, focus, and mental bandwidth.

One prominent study illustrating the automatic acceptance of propositions under cognitive load was conducted by Gilbert, Tafarodi, and Malone (Gilbert et al., 1993). In their experiment, participants were asked to evaluate the truthfulness of statements while simultaneously completing a distracting task, such as memorising a string of numbers. Some of the statements were clearly marked as false, while others were not. The results revealed that participants under cognitive load were significantly more likely to remember the false statements as true compared to those that were not.

## Bartlett's Theory of Effort After Meaning

Frederic Bartlett (1886–1969), a British psychologist and pioneer in cognitive psychology, introduced the concept of effort after meaning in his seminal 1932 work, *Remembering: A Study in Experimental and Social Psychology* (Bartlett, 1932). Bartlett argued that human cognition is driven by the desire to make sense of new information by integrating it into existing mental frameworks, or schemata.

Schemata (pl. of schema) are mental structures organising knowledge and experience that serve as filters for understanding the world. Bartlett's theory suggests that individuals actively work to reconcile new information with their existing schemata, especially when there is a lack of clarity or coherence. However, as schemata grow more complex, this reconciliation process becomes increasingly difficult and can lead to the distortion of new information to fit pre-existing beliefs.

Cultural schemata significantly shape how individuals remember and interpret events, as demonstrated by Bartlett's classic "War of the Ghosts" study (Bartlett, 1932). In this experiment, British participants were asked to recall a Native American folktale unfamiliar to their cultural context. Bartlett found that as participants reconstructed the story, they altered details to fit their own cultural schemata, such as replacing unfamiliar elements like "canoe" with "boat" and omitting references to spiritual concepts they found irrelevant or confusing. This process of assimilation, i.e., modifying the story to align with their existing mental frameworks, illustrates how cultural schemas filter and reshape memory. Such findings emphasise the interplay between belief formation and effort after meaning, showing that memory is not a perfect reproduction, but a reconstruction influenced by culturally ingrained schemata.

## Interplay Between Spinoza's Model and Bartlett's Theory

Changes in the interplay between Spinoza's model of belief formation and Bartlett's theory of effort after meaning are evident as humans age and develop more complex schemata.

The schemata of young children are relatively simple and underdeveloped. Consequently, they are more open to accepting new information, whether true or false, because they lack rigid mental frameworks to challenge it. So, the Spinozan mechanism is dominant, as children readily accept information with little effort to reject or reinterpret it.

The famous saying "Give me the child until he is seven and I will give you the man" is attributed variously to St Ignatius de Loyola and Aristotle.  But whatever the source it has become

something of a truism. How many of us have smiled at the earnest and wise pronouncements of a young child, knowing that they are repeating the words of a parent or teacher?

The increasing complexity of schemas is closely tied to stages of cognitive development, as described by Jean Piaget's theory (Piaget, 1970). In early childhood, during the sensorimotor and preoperational stages, schemata are simple and centred around direct experiences and basic associations. At this stage, children readily accept new information, as they lack the elaborate frameworks to challenge or reinterpret it. As individuals progress into the concrete operational and formal operational stages in adolescence and adulthood, their schemas become more detailed and interconnected, shaped by accumulated knowledge and abstract reasoning. While this complexity allows for greater critical evaluation of new information, it also introduces rigidity, making it more difficult to accommodate contradictory evidence.

As people age, their schemata grow more complex. This has two effects. Firstly, we are better able to use accumulated knowledge to challenge new information. Secondly, however, these more detailed frameworks become harder to revise, creating resistance to new contradictory information whether true or false. Complex schemas can create a cognitive bottleneck, where individuals resist updating their frameworks even when faced with compelling evidence. This is especially true when the information conflicts with core beliefs or values tied to identity. Contradictory information can generate cognitive dissonance. Thus, effort after meaning becomes more pronounced. Adults actively strive to integrate the new information into existing schemata, often distorting it to avoid revising deeply entrenched beliefs. Finally, this distortion can become the subject of psychological defence mechanisms such as rationalisation or denial.

An example of the challenges of schema adaptation in adulthood is our adaptation to new AI technologies. For instance, many professionals accustomed to traditional workflows may find it difficult to integrate tools like generative AI or machine learning into their practices. Their existing schemas, built around years of experience with conventional methods, often create resistance to adopting these novel technologies. Instead of revising their frameworks, they may distort or oversimplify AI's capabilities, viewing it as either a complete replacement for human expertise or a tool too complex to be useful. This analogy illustrates how deeply entrenched schemata can hinder adaptation, requiring significant effort to accommodate disruptive innovations into one's mental models.

Nevertheless, when an adult is subject to new information for which they have no pre-existing schema, the Spinozan model may predominate. Examples might include first contact with the concept of quantum entanglement, cryptocurrency, blockchain, and other emerging technologies, or the cultural practices of remote communities.

## Applications

The interplay between belief formation and schema development has profound implications for education, misinformation management, and fostering the adaptability of belief systems. Below, we explore these applications and strategies for mitigating the absorption of false or unethical information.

**1. Education of Children and Young Adults**

Children and young adults are in the critical stages of schema formation. Teaching them to critically evaluate information can establish flexible, evidence-based frameworks early. We could, for example:

- introduce exercises that encourage students to question the validity of information and assess its sources;
- use activities that challenge assumptions and promote accommodation of new perspectives; and
- address common misconceptions before they solidify into entrenched beliefs, such as debunking myths about science or history.

Finland's misinformation literacy programme is widely regarded as a global model for equipping students with the critical thinking skills necessary to combat false information (OECD, 2018). Introduced as part of the national curriculum in 2014, the programme integrates media literacy across subjects rather than treating it as a standalone topic. Students are taught to critically evaluate sources, identify bias, and verify the credibility of information they encounter online. Lessons often involve analysing real-world examples of misinformation, such as doctored images or false news stories, to develop practical skills. Teachers also emphasise the emotional triggers used in propaganda, helping students recognise and resist manipulation. By fostering scepticism and encouraging evidence-based reasoning from an early age, Finland's approach not only protects against misinformation but also builds adaptable, informed citizens prepared to navigate an increasingly complex informational landscape.

We are all fond of the young children in our families, cherishing their innocence and curiosity. However, perhaps we should more carefully consider the impact of our choices on their mental and physical environments. For instance, the ever-growing heap of plastic toys in many playrooms not only contributes to environmental waste but also influences the developmental schemas of children. Does this encourage trivial overconsumption in later life? Overloaded with short-lived, attention-grabbing objects, children may struggle to cultivate deeper creative thinking or sustained engagement with fewer, more meaningful tools for play. By opting for thoughtfully chosen, versatile toys, we can foster an environment that encourages creativity and critical thinking while being mindful of the broader environmental impact.

**2. Misinformation Management**

Misinformation capitalises on the automatic belief acceptance described by Spinoza and the schema rigidity highlighted by Bartlett. To counter this, we could:

- learn to avoid the common sources of misinformation;
- prepare individuals with accurate, schema-compatible information before they encounter misinformation;
- reinforce factual information repeatedly to integrate it into schemata, countering the persistence of falsehoods;
- reduce cognitive load by presenting corrections in clear, concise formats, such as visuals or summaries.

Youth groups established by ideological movements provide a stark example of how belief systems can be shaped deliberately during formative years. Examples include the Hitler Youth

in Nazi Germany, Komsomol in the Soviet Union, and contemporary youth wings of political parties or religious organisations worldwide, all of which aim to instill specific ideologies in young, impressionable minds. These groups, often appealing to young individuals' need for belonging and purpose, create environments where ideologies are reinforced through repetition, symbolism, and community rituals. While some view these efforts as 'brainwashing,' a more nuanced perspective might describe it as 'brainsoiling', subtly planting biases and preconceptions into impressionable minds, making it harder for them to adapt to conflicting information later in life. Such tactics highlight the importance of fostering critical thinking and media literacy early, equipping young people with the tools to question and evaluate ideological messaging rather than absorb it uncritically.

Countering misinformation in digital media requires a multi-faceted approach that leverages both human and technological strategies (Vosoughi et al., 2018). Fact-checking tools play a critical role by providing users with verified information to counter false claims. Platforms like Snopes and FactCheck.org enable individuals to cross-reference dubious statements, while browser extensions and plugins flag questionable content in real time. Additionally, algorithms designed to prioritise reliable sources and downrank known purveyors of falsehoods can help reduce the visibility of misinformation. Social media platforms have begun implementing features such as warning labels on posts flagged as misleading and redirecting users to credible sources. However, these measures must be transparent and balanced to avoid accusations of bias or censorship. A complementary strategy involves improving media literacy among users, enabling them to critically evaluate content independently rather than relying solely on automated solutions. Together, these tools and strategies can create a robust defence against the rapid spread of misinformation in the digital age.

**3. Fostering The Adaptability of Belief Systems in Later Life**

In a rapidly changing world, encouraging individuals to maintain flexible, open schemata allows for better integration of new and evolving information. To facilitate this, we could:

- use safe, controlled scenarios to help individuals practice reconciling conflicting information without experiencing excessive cognitive dissonance;
- highlight examples of individuals or institutions that revised beliefs in light of new evidence, fostering a culture of open-mindedness; and
- encourage collaboration across disciplines to develop schemata that accommodate multiple perspectives and reduce resistance to change.

For example, controlled scenarios for reconciling conflicting information are widely used in professional and organisational training to foster adaptability and critical thinking. For instance, in corporate leadership development programmes, participants often engage in simulations where they must make decisions based on incomplete or conflicting data. These exercises challenge their existing schemata and encourage them to analyse information from multiple perspectives. In medical training, case-based learning is a common approach where trainees are presented with complex, ambiguous patient scenarios. They must reconcile conflicting symptoms and test results to arrive at a diagnosis, honing their ability to integrate new evidence with existing knowledge. Similarly, in fields like cybersecurity, professionals are exposed to simulated cyberattacks, forcing them to adapt to evolving threats and update their strategies dynamically. These examples illustrate how controlled environments can be used to prepare

individuals for real-world complexities by providing a safe space to practice reconciling conflicting information without fear of failure.

**4. Avoiding the Absorption of False or Unethical Information**

At all stages in life, we should recognise the tendency to accept information automatically and/or alter it to fit existing schemata. There is no shame for an adult to admit a lack of prior knowledge of a novel topic. The ability to admit this reduces the risk of acting on misinformation. So, we should:

- recognise emotional appeals in propaganda or misinformation, because understanding emotional triggers helps us to resist manipulation;
- pause to evaluate the validity of claims, especially in emotionally charged or high-stakes contexts;
- avoid making critical judgments when under mental strain or distraction but instead, revisit the matter later with a clear mind; and finally
- surround ourselves with communities that value critical thinking and factual discourse.

**Conclusion**

In conclusion, understanding and addressing the interplay between belief formation and schema development is critical in a world increasingly shaped by rapid information exchange and evolving technologies. By recognising the vulnerabilities in these cognitive processes, we can develop more effective strategies to educate, manage misinformation, and foster adaptability in belief systems across all stages of life.

For those interested in further exploring these ideas and contributing to meaningful discourse on fostering adaptability and critical thinking, consider engaging with the Motivational Reflexivity Network. This professional community provides a platform for sharing insights and strategies related to these topics. You can connect with the network on LinkedIn or Facebook to join discussions and access valuable resources. Together, we can navigate the challenges of the modern informational landscape with integrity and resilience.

## References

Bartlett, F. C. (1932). *Remembering: A Study in Experimental and Social Psychology.* Cambridge University Press.

Gilbert, D. T., Tafarodi, R. W., & Malone, P. S. (1993). You can't not believe everything you read. *Journal of Personality and Social Psychology, 65*(2), 221–233. https://doi.org/10.1037/0022-3514.65.2.221

OECD. (2018). *Education in the Digital Age: Finland's Approach to Media Literacy.* Organisation for Economic Co-operation and Development. https://www.oecd.org

Piaget, J. (1970). *The Science of Education and the Psychology of the Child.* Viking Press.

Vosoughi, S., Roy, D., & Aral, S. (2018). The spread of true and false news online. *Science, 359*(6380), 1146–1151. https://doi.org/10.1126/science.aap9559