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Infantile Amnesia

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Abstract: ***Childhood amnesia which is also called as infantile amnesia, is the inability of adults to receive and revive episodic memories which are memories of various events which comes under declarative memory, before the age of about 2–4 years, as well as the period before age 10 of which adults retain fewer memories than might be expected of them. A detailed screening of 12 of these articles was done. This finding highlights the importance of considering what the term "forgetting" actually means—is it merely the absence of behavioral expression or is it when even "implicit" effects on later performance are no longer observable. We suggest that forgetting, at least nonreversible and permanent forgetting, occurs when both of these characteristics are observed.***

Keywords: Children, childhood, memories

1. Introduction

Childhood amnesia which is also called as infantile amnesia, is the inability of adults to receive and revive episodic memories which are memories of various events which comes under declarative memory, before the age of about 2–4 years, as well as the period before age 10 of which adults retain fewer memories than might be expected of them.(1)The development of a human being is also thought by some to have an effect on encoding and storing early memories. Some researchers have demonstrated that children can start remembering most of the events from the age of 1, but that these memories may fade away slowly as children get older.[2][3][4]Most psychologists differ in defining the offset of childhood amnesia but some define it as the age from which a first memory can be retrieved around 3-4 but can range from 2 to 8 years[5],changes in encoding, storage and retrieval of memories during early childhood are all important when considering childhood amnesia.[6] Differences in gender and culture, is important in the development of language and personality. Childhood amnesia is particularly important to consider in regard to false memories and the development of the brain in early years. Explanations of childhood amnesia were given by Freud's trauma theory, neurological development, development of the cognitive self, language and emotion.

2. Search

The phrase "infantile amnesia" ,a literature search was done via pubmed and wileys online library for the various articles published .The search revealed a total number of 63 articles. A detailed screening of 12 of these articles was done. These articles were based on infantile amnesia in children. Of the 63 articles found, 12 of which were found most informative and most applicable were used. Most of the information came from the United States, but European, Canadian, Australian, New Zealand and Chinese sources are also shown. Most of the articles gave a hypothesis on infantile amnesia. Some of the articles were based on the implications of infantile amnesia, it's methods of retrieval, few articles explained about its history.

3. Discussion

Methods of retrieval

The method of memory retrieval can have a great impact on what has to be recalled[12]When asked to recall any possible memory. Whether an individual is asked to remember a specific event, given more general guidelines, or asked to recall any memory possible, the cued method generates different results.

Cued recall

This method is used to retrieve many memories .[7] In this method, the person who is experimenting gives the participant a word, and the participant responds and reacts with whatever memory they have of that particular word.[8]Due to this method ,the age of offset can be approximated to 3–5 years but may vary. But there were many objections to this method. One memory is recorded per every cue word, so it can be difficult to know whether this memory is their earliest memory or the first memory that comes into the mind. There may be a issue if the participants are not asked to record the first memory they can recall which relates to the cue. The age can be estimated at 2-8 years[8] ,if the demonstrator asks the participant to specifically use childhood memories or the first known memories associated with a cue. Even with this measure, cued recall is only useful for bringing to mind memories formed several months after the introduction of that word into the participant's vocabulary. One study performed by Bauer and Larkina (2013) used cued recall by asking children and adults to state a personal memory related to the word and then state the earliest time that it occurred.[3] The researchers found that the younger children required more help or more prompts. The earliest memory retrieval for children and adults was both found to be about 3 years.[4]

Free recall

It refers to the specific paradigm in the psychological study of memory where the participants study a particular set of items on a specific trial, and are then able to recall the items in any given order. Free recall, in regard to infantile amnesia or childhood amnesia, is the process by which the demonstrators ask individuals for their first memories, and allow the participant to respond calmly and freely.[8]There is no significant difference when people are instructed to recall their first memories with cued recall compared to free recall;

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however, it is thought that a major advantage of free recall is that there is an answer to every question which may in turn elicit memories from an younger age.[8]

Exhaustive recall

In this method of retrieval, the participants are asked to record and remember all the memories that they are able to access before a specific age.[8]This method, like free recall, is dependent on participants to come up with memories without cues. Exhaustive recall gives a better understanding than others on the amount of memories surviving from early childhood[8], but can be demanding for the subjects who often have to spend many hours trying to remember events from their childhood.

Accessible and inaccessible memories

The amount of early childhood memories a person can recall is dependent on many factors, including emotion (feelings) associated with the event, their age at the time of the remembered event and the age at the time they are asked to recall an early memory.[4]People feel that not recalling a childhood memory or the earliest memory means they have forgotten about that event, there is a difference between availability and accessibility. The idea that the memory is intact and is in memory storage is known as availability of a memory. Accessibility of a memory is dictated by the moment in time that a person attempts to recall that particular memory. Therefore, cues may influence which memories can be accessible at any given point of time even though there may be many more available memories that have not been accessed. [8]Some other research have suggested that people's first memories dates back to the ages of 3 or 4 years. J. A. Usher and U. Neisser reported that some particular events, like the birth of a sibling and a planned hospitalization, can be easily remembered if they had occurred at age 2. An alternative hypothesis is that these apparent memories are the result of educated guesses, general knowledge of what must have been, or external information that had been acquired after the age of 2.

In a study conducted by West and Bauer, their research suggested that the emotional content was higher in earlier memories than in the later memories, and are considered less meaningful, unique, or intense. Earlier memories also do not seem to differ greatly in perspective.[8]However, certain life events can be remembered and do result in clearer and earlier memories. Adults find it easier to remember there own personal things rather than public event memories from early childhood. For eg, This means that the person would remember getting there own dog, but would not remember public events like the appearance of Halley's Comet. Some research show that the offset of childhood amnesia is about 2 years of age for hospitalization and sibling birth and 3 years of age for a death . Thus, some memories are available from a very young age in childhood than previous research has suggested.

Some research suggests that until around the age of 4, children cannot form context-rich memories. [8]Although more evidence is needed, the relative lack of episodic memories of early childhood may be linked to maturation of prefrontal cortex. It also suggest adults can access fragment memories from around age 3, whereas event memories are usually recalled at an older age. This is similar to research showing the difference between personal recollections and known events.[9]Known memories change to more personal recollections at approximately 4.7 years old.([0]

Fading Memories

Children can form and develop memories at younger ages than adults can recall those memories. While the efficiency of encoding and storage processes allows older children to remember more, younger children also have great memory capacity. Infants can remember the actions of sequences, the objects used to produce them, and the order in which the actions unfold, suggesting that they possess the precursors necessary for autobiographical memory.[7] Children's recall is 50% accurate for events that happened before the age of two whereas adults don't remember anything that occurred before that age and have no memory of it.[2]By the age of two, children can retrieve and revive memories after several weeks, indicating that these memories could become relatively enduring and can explain why some people have memories from this young age.[2][7]Children also show an ability to nonverbally recall events that occurred before they had the vocabulary to describe them, whereas adults do not. Findings such as these prompted research into when and why people lose these previously accessible memories.[11]

Some suggest that as children age, they lose the ability to recall their preverbal memories. One explanation for this maintains that after developing linguistic skills, memories that were not encoded verbally get lost within the mind. This theory also explains why many individuals' early memories are fragmented – the nonverbal components were lost. This increased ability for children to remember the things that happened to them at an early age does not start to fade until children reach double digits. By the age of eleven, children exhibit young adult levels of childhood amnesia. These findings may indicate that there is some aspect of the adolescent brain, or the neurobiological processes of adolescence, that prompts the development of childhood amnesia.[12]

4. Conclusion

Infantile amnesia is a robust and ubiquitous phenomenon; however, there are still many unanswered questions about the nature of infant memories. One of those questions is how early memories, despite being forgotten on a behavioral level, continue to have effects on the animal's physical and mental health later in life. In this review, we presented evidence suggesting a neural trace of the experience persists even when memories are no longer recalled or expressed. This finding highlights the importance of considering what the term "forgetting" actually means—is it merely the absence of behavioral expression or is it when even "implicit" effects on later performance are no longer observable. We suggest that forgetting, at least nonreversible and permanent forgetting, occurs when both of these characteristics are observed.

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