

Note: APA no longer requires a “running head” for student papers (p. 30).

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The page numbers should appear flush right in the header (p. 32).

The title of the paper, your name, affiliation, course number and title, instructor, and due date should appear on separate, double-spaced lines beginning 3-4 lines down from the top (pp. 30-35).

Memory Retention in Infancy and Toddlerhood

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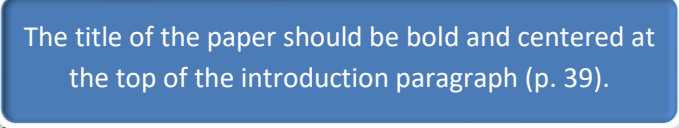
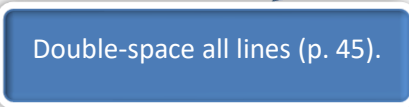
PSYC 711: Developmental Psychology

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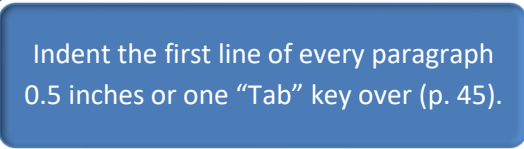
All margins should be set to 1” (p. 45).

Memory and Retention in Infancy and Toddlerhood

Just as the body is developing and changing throughout life, so is cognitive processing. The brain develops throughout early life.  cognitive processing is memory. There is a large difference between adult memory retention and that of infants and toddlers have more memory capacity than  previous generations. Infants can remember implicitly, or without conscious awareness, well. They can also be conditioned with limitations. Particularly in younger infants, the conditioning is highly contextual and slowly becomes more generalized with age. Retention is also limited by length of time. Infants also appear to lack explicit memory, including episodic or autobiographical memory. This leads to a phenomenon called infantile amnesia, where older children and adult cannot remember an event that occurred younger than three years old. Infants and toddlers have almost adult-like memory abilities with implicit memory; however, with explicit memory infants and toddlers do not have the ability to recall and possibly lack the ability to retain.

Habituation

Level 1 headings should be bold, centered, and in title case heading (p. 48).

Two of the easiest ways to judge infants' memories is through habituation and operant conditioning.  Habituation is a process by which infants learn and retain a wide variety of information (Berk, 2014, p. 163). Infants will show either a familiarity preference or a novelty preference with these objects and events. If the child sees two stimuli directly after learning one of them, the child will immediately stare at the unfamiliar stimuli, which is showing preference to it. This recovery of the new stimuli is a novelty preference, because the child recovered the memory that he or she remembers the stimuli, but showed a preference towards the new one (Berk, 2014, p. 135). Familiarity preference, on the

other hand, is when the infant sees two stimuli after a delay of learning one of them, and shows preference for the familiar stimuli (Berk, 2014, p. 135). These preferences show with habituation infants can remember stimuli and can retain memory of their environment.

Operant Conditioning

Operant conditioning demonstrates how infants and toddlers are capable of learning behaviors and retaining that behavior; this is demonstrated in the mobile test (Berk, 2014; Hitchcock & Rovee-Collier, 1996). The experiment done was to tie a ribbon to the child's ankle. When the child kicked, the mobile shook. The child learned to make the mobile move, which demonstrated positive reinforcement. Once the behavior was learned, Hitchcock and Rovee-Collier (1996) instated a forgetting period (6 to 20 days after training), a reactivation of the reward (mobile moving), and finally observed the child's response (kick). The infants showed the behavior and therefore demonstrated operant learning like adults; however, they do so for a shorter period. This is reactivated. When infants forget an operant response, it only takes a brief prompt for the infant to reinstate and extend that memory dramatically (Berk, 2014, p. 163). On their own, the duration maximum for infants to remember tasks increases linearly (Rovee-Collier & Cuevas, 2006, p. 124). Hartshorn et al. (1998) further demonstrated their experiments. A two-week child for about a month. Operant conditioning shows how infants learn implicitly and retain that memory for some time, but the length of that retention depends upon the age of the infant and the number of reactivations.

Use semicolons to divide multiple works in one citation. List the sources alphabetically (p. 263).

When the author's last name is in the text, place the year of publication in parenthesis immediately after the last name. Then, place only the location in parenthesis at the end of the sentence before the final punctuation (pp. 262-263).

For a parenthetical citation, list all three elements at the end of the sentence in parentheses. Use an ampersand in parenthetical citations with two authors (p. 266).

For works with three or more authors including the first in-text citation, use the first authors followed by "et al." (p. 266).

Level 2 headings should be bold, flush with the left margin, and title case heading (p. 48).

Implicit Memory

While infants and toddlers can retain learned behaviors, they do have limits on how well they remember these behaviors. One example is contextual cues. Another aspect of the Hitchcock and Rovee-Collier experiment was changing the context of the reactivation, in which the infants were not able to retain the learning as the

However, Hitchcock and Rovee-Collier (1996) found that infants did not generalize or able to be seen in multiple contexts as

“The year can be omitted from a citation only when multiple narrative citations to a work appear within a single paragraph” (p. 265).

dependent. Hitchcock and Rovee-Collier explained that the more retrievals made the more

generalized the memory was. For infants, their memory is highly dependent upon context. When they learn a behavior, they only perform the behavior in that context until

they learn to generalize. With extinction, the forgetting of a learned

behavior is not permanent. In a context that the learning first occurred (Rovee-

Collier, 1996), the original learning is permanent (Rovee-Collier &

Cuevas, 1996). In a variety of different contexts, infants and toddlers can

generalize. Hitchcock & Rovee-Collier, 1996). These

generalized memories happen before language development, which is crucial to much of

memory retention, which will be discussed later. Because of this, the generalized memories

demonstrated that this is a fundamental cognitive process that is not limited by age (Hitchcock &

Rovee-Collier, 1996, p. 398). Despite having a contextual limit on learning, the nature of

generalizing learning demonstrates that this implicit memory ability is present in infants and

toddlers and is not limited by age or language, although it is partly limited in the length of said

learning and retention.

APA requires location information for direct quotes and encourages it for paraphrases. The manual explains that it is “possible to cite a specific part of a source whether you are paraphrasing or directly quoting,” and the Regent University Student Handbook encourages location information to ensure proper attribution (p. 264).

The aspects of memory mentioned so far, habituation and operant conditioning, are concerning recognition, which is “noticing when a stimulus is identical or similar to one previously experienced” (Berk, 2014, p. 164). For infants, this is much easier of a task as the stimulus will be present. Berk (2014) demonstrated that what is more difficult for this age is recall: the remembering of something not present (p. 164). By the second half of the first year, infants show capabilities of recall. Berk stated that this improved with age, as one-year-old’s can remember adult-modeled and-a-half-year old’s for up to a year (pp. 164–165). However, recall does make an appearance continues to d

If you are citing multiple pages, use 2 p’s instead of 1 and “separate the page range with an ‘en’ dash (p. 270).

Explicit Memory

With implicit memory, infants and toddlers show almost adult capabilities; however, the ability to remember explicitly is significantly limited. Older children and adult can rarely remember events happening before three or four years of age. This is a phenomenon called infantile amnesia. It is normally thought of as a lack of autobiographical memory. According to Berk (2014), children can recall one-time events from both recent and distant pasts (p. 118). This is due to why infants cannot retain explicit, episodic memories. Berk demonstrated that one theory was simply that infants only had implicit memory and explicit memory developed later (p. 164). Another is based on language. Older children and adults use language for encoding memory, whereas infants and toddlers use nonverbal means, such as actions and behaviors, to encode (Berk, 2014, p. 164). This would explain why infants can learn behaviors but not retain event memories. Once language begins to be acquired, the ability for episodic memory would increase. One theory, by Rovee-Collier and Cuevas (2006), depends upon contextual cues in which:

Use the past tense when you are explaining an “action or condition that occurred at a specific, definite time in the past, such as when discussing another researcher’s work” (p. 118). Otherwise, stay in present tense.

A cue is defined as that aspect of a situation which the experimenter manipulates, and the context is defined as the relatively invariant aspects of the setting in which the response occurs that do not affect the characteristics or demands of the task. (p. 121)

Infants' memories are highly context-dependent. To create a memory the memory needs to be reinstated. Remembering an event requires a person to know the context, and they will be unable to recall the event in a new context (Rovee-Collier & Cuevas, 2006). Rovee-Collier and Cuevas showed that a limit exists on how long after an event a forgotten memory can be reactivated. Therefore, because infants are unable to retrieve the memory due to lack of recall ability as well as context dependency, infant amnesia occurs. Despite the restrictions, the infant memory shows that humans are designed with a fantastic mind, "fearfully and wonderfully made," which has great abilities early on and becomes greater through development (*English Standard Version, 2020, Psalms 139:14*).

If a quote has 40 words or more, count it as a block quote and indent the quote 0.5 inches. Do not indent the next line if it is part of the same paragraph & place the citation after the last period (p. 272).

Conclusion

Infants and toddlers have more advanced memory abilities than younger children. However, this memory ability is hindered by the need to specific context dependency and reactivations of memory. Infants can learn behaviors and retain it for a significant amount of time and with the reactivations can retain memory even longer. Although they cannot show it, there is the potential of infants having explicit memory. However, the ability to remember events is hindered by lack of language, need for context, and length of time leading to infantile amnesia. Despite the restrictions, the infant memory shows that humans are designed with a fantastic mind, which has great abilities early on and becomes greater through development.

When citing religious works such as the Bible, include the version, the year, and then the book, chapter, and verse as the location (p. 274).

Label the Reference page “References” –
“bold and centered” (p. 49).

References

Reference entries should be arranged
alphabetically, double-spaced, and use a
½” hanging indent (p. 303).

Berk, L. E. (2014). *Development through the lifespan*. Pearson.

English Standard Version. (2020). Bible Gateway.

<https://www.biblegateway.com/versions/English-Standard-Version-ESV-Bible/>

Hartshorn, K., Rovee-Collier, C., Gerhardstein, P., Bhatt, R.S., Wondoloski, T.L., Klein, P.J.,

Gilch, J., Wurtzel, N., & Campos-de-Carvalho, M. (1998). The ontogeny of long-term
memory over the first year-and-a-half of life. *Developmental Psychobiology*, 32(2), 69-

89. [https://doi.org/10.1002/\(SICI\)1098-2302\(199803\)32:2<69::AID-DEV1>3.3.CO;2-R](https://doi.org/10.1002/(SICI)1098-2302(199803)32:2<69::AID-DEV1>3.3.CO;2-R)

Hitchcock, D. F. A., & Rovee-Collier, C. (1996). The effect of repeated reactivations on memory
specificity in infants. *Journal of Experimental Child Psychology*, 62, 378-400.

<https://doi.org/10.1006/jecp.1996.0035>

Rovee-Collier, C., & Cuevas K. (2006). Contextual control of infant retention. *The Behavior*

Analyst Today, 7(1), 121-132. <https://doi.org/10.1037/h0100144>

List only the author’s first initial –
never their full first name to avoid
gender bias (p. 286).

“A reference generally has four elements:
author, date, title, and source...considering
these four elements and answering these
four questions will help you create a
reference for any type of work, even if you
do not see a specific example that matches
it” (p. 283).

PRACTICE NOW

Link 1: Citation Practice

PRACTICE NOW

Link 2: General Practice