

Developing Emotional Salience Using Flash Cards

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Abstract: Salience is an object's ability to be classified as noticeable or important in a person's mind. When the language learner's study becomes salient, they have a higher potential for memorization, recall, and acquisition as the target words have been observed as important. Through a methodical study technique using flashcards, any target language has the chance to become salient. This paper shares the success of an action research project which utilized emotional salience to enhance target language acquisition using flashcards.

Keywords: Emotional Salience; Acquisition; Memorization.

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Hunt (2009) defines "salience as a subjective experience that follows perception of an event that violates the prevailing context (p. 50)." Salience in short is a quality of being noticeable in a person mind. Once noticed, an item or concept becomes isolated in the mind and manipulated for further contemplation. Otani, Von Glahn, Libkuman, Goernert, and Kato (2014) suggest that isolated items elicit salience (p. 35). Hunt (2009) concurs that the isolation effect evokes a subjective experience of salience and this attracts additional processing of the experience; which should result in superior memory formation (p. 49). Unfortunately, Hunt (2009) asserts that no direct evidence exists to support that salience brings about greater processing; moreover, that some convincing evidence contradicts that salience leads to greater processing (p. 49). Hunt (2009) states that an isolated item or concept becomes salient as a list of contexts unfolds, and attention brings added processing to the item, thus creating better memory (p. 50). Hunt (2009) continues to suggest that as an isolate becomes more salient, rehearsal of the isolate would occur more prominently because of conscious processing (p. 50). As such, Hunt (2009) scathingly concludes that the mechanisms of the mind make the subjective experience of salience unnecessary for memory development (p.50). Hunt (2009) further adds that the extra processing of a salient isolate is a byproduct of memory recall and comprehension of the event in which an isolate became perceived salient (p.52). Simply put, "because perception and comprehension logically must precede salience, all the processing necessary for memory of the event is completed before salience can occur (Hunt, 2009, p. 52)." Where salience falls short in producing greater memory formation, emotional salience perseveres.

Otani, Von Glahn, Libkuman, Goernert, and Kato (2014) disagree that perceptual salience is not necessary for memory as negative emotions have been found to enhance memory (p. 37). Emotions have a strong influence on memory (Rendell, Phillips, Henry, Brumby-Rendell, de la Piedad Garcia, Altgassen,

& Kliegel, 2011, p. 917). “Emotionally salient information is more likely to be recalled and attended to than emotionally neutral information (Rendell, Phillips, Henry, Brumby-Rendell, de la Piedad Garcia, Altgassen, & Kliegel, 2011, p. 917).” Madan and Spetch (2012) claim that in day-to-day life, people will remember rewarding experiences better than less rewarding experiences; in consequence, rewards enhance memory as people will deliberately priorities their memory for the higher-value experience (p. 343-344). The most positive and most negative experience produce the greatest emotional salience compared to intermediate positive and negative experiences (Madan & Spetch, 2012, p. 344). Madan and Spetch (2012) further suggest that the most and least rewarding items are remembered because the reward salience attributed to each item is relative to the range of values experienced and cannot be driven by the negative and positive intrinsic values of the target concept or experience (p. 348). Madan and Spetch (2012) conclude that memory is not only driven by reward, but also by emotional salience (p. 349). Rendell, Phillips, Henry, Brumby-Rendell, de la Piedad Garcia, Altgassen, and Kliegel (2011) found that negative emotional valence was not detrimental to prospective memory, though positive emotional valence offered greater benefits for older participants in their study (p. 922). Rendell, Phillips, Henry, Brumby-Rendell, de la Piedad Garcia, Altgassen, and Kliegel (2011) suggest that when little emotional connection is formed with a task, motivation is reduced (p. 917). As a result, Rendell, Phillips, Henry, Brumby-Rendell, de la Piedad Garcia, Altgassen, and Kliegel, (2011) found that emotionally positive tasks were easier to remember for older adults (p. 916). If one increases the emotional salience in a task, the task performance will improve for both young and old in prospective memory tasks as well as in other cognitive domains. (Rendell, Phillips, Henry, Brumby-Rendell, de la Piedad Garcia, Altgassen, & Kliegel, 2011, p. 917).

Quigley (2015) explains that the central executive or intake processor of memory in the mind is controlled by two main systems which temporally store data while the brain processes whether to keep the information or discard it (n.p.). The phonological loop, which takes in written and auditory information, and the visuo-spatial sketch pad, which takes in visual and spatial information, work together by processing input data in the working memory (Quigley, 2015, n.p.). The episodic buffer, which communicates between the working memory and long-term memory functions as the gatekeeper of long-term memory input (Quigley, 2015, n.p.). The brain stores information and experiences by adjusting the connection strength of synapses between neurons (“The Truth About Memory”, 2016, n.p.). As such, if a group of neurons are activated at the same time due to the mind’s perception of a target concept, the connections between synapses and neurons associated with that target perception grow stronger and with each activation of the target neurons, associated neurons and connecting synapses are also more likely to activate and solidify connections (“The Truth about Memory”, 2016, n.p.). This means that memory is flexible and it does not need the exact same trigger to recall a fact or experience so long as the target neuron shares a synapse with the perceived trigger; moreover, the more one recalls and retrieves a memory or information, the more the synapses connected to that neuron and associated neurons will strengthen and grow; resulting in learning or a better ability to recall and retrieve that perceived information in the future (“The Truth About Memory”, 2016, n.p.).

The intake of salient information into the central executive will be encoded and processed at different

speeds depending on the needs of the brain in question. For example, Burns, Hart, Kramer, and Burns (2014) theorize that “natural selection might have shaped memory structures to be especially equipped to retain information presented in survival-relevant contexts (p. 36).” Burn, Hart, Kramer, and Burns (2014) state that the survival process is not a result of extreme emotional arousal, but its own distinctive process (p. 47). Survival processing gives great advantages to many cognitive functions (Burns, Hart, Kramer, & Burns, 2014, p. 36). A mortality-salient state produces a vast array of behavioral and emotional changes in individuals (Burns, Hart, Kramer, & Burns, 2014, p. 37). Mortality salience stimulates cognitive encoding for deeper processing, gathering information and retention associated with survival processing (Burns, Hart, Kramer, & Burns, 2014, p. 37). Mortality salience has been shown to increase cognitive exploration, motivation to provide structure or organization, and under certain conditions, reading comprehension (Burns, Hart, Kramer, & Burns, 2014, p. 37). “Mortality salience ...provided convincing evidence that thoughts of death enhance item specific processing (Burns, Hart, Kramer, & Burns, 2014, p. 44).” Burns, Hart, Kramer, and Burns (2014) further state that mortality salience “facilitates retention of information by motivating information processing” and gives enhanced abilities in both incidental and intentional recall (p. 46). “Mortality salience increases item-specific processing and that this additional processing is responsible for the retention advantage (Burns, Hart, Kramer, & Burns, 2014, p. 47).”

When we consider helping language learners develop their language skills we cannot force them into life threatening situation to help them study. But there is a strong correlation of survival needs and what target language learners will become proficient in first. This is seen in a language learner’s ability to learn the language needed to meet their needs. From how to order food, or pay for goods in the target language to asking where the bathroom is, or what their medical diagnosis is. Whatever is important or emotionally salient to the language learner will be the first thing in which they want to master.

Otani, Von Glahn, Libkuman, Goernert, and Kato (2014) state that emotional salience is different from perceptual salience (p. 38). Negative stimuli was found easier to recall even after engaging in dividing attention tasks (Otani, Von Glahn, Libkuman, Goernert, & Kato, 2014, 37). Otani, Von Glahn, Libkuman, Goernert, and Kato (2014) further explain that emotional stimuli is distinctive in the following three ways: “primary distinctiveness – when stimuli naturally stands out against neutral stimuli; Secondary distinctiveness – when the stimuli provided emotions which are unusual in daily life; and emotional distinctiveness – when the emotional stimuli elicits physiological and orienting responses (p.37-38).” Emotional salience has a significant range of features which allows for stimuli overlap and to have extra processes for long-term memory (Otani, Von Glahn, Libkuman, Goernert, & Kato, 2014, p. 38). Otani, Von Glahn, Libkuman, Goernert, and Kato (2014) conclude that even emotional words are more distinctive and stand out when compared to neutral words unrelated to the extra processing of the emotional salience (p. 44). This though of course is all very subjective to the language learner and what their mind determines to be emotionally salient at any given moment or time.

Regardless of salience, the brain will function practically. With the use of the controlling executive functions of the brain, information will be processed. This process is vital for the language learner to understand and comprehend all aspects of sensory input. This natural process of inductive learning helps

people accumulate a great deal of knowledge as they are exposed to exemplars and categories which can demonstrate commonalities to define the concept perceived (Birbaum, Kornell, Bjork, & Bjork, 2013, p. 392). “Such inductive learning is critical in making sense of events, objects, and actions—and, more generally, in structuring and understanding our world (Birbaum, Kornell, Bjork, & Bjork, 2013, p. 392).” When specifically contemplating second language acquisition one must be able to recall what was previously perceived in the target language. A person cannot use a word that has not been registered in the brain. Even the mere act of reading an unfamiliar word for the first time will call upon skills previously acquired in the target language which will then act as help to solve the newly encountered word.

The process of language acquisition must also involve production of the target language. For the brain to trigger the mouth, hand, or mind to produce the target language the brain must first recognize, recall, or retrieve the information from the long-term memory or the acting memory. Mama and Icht, (2016) state that distinct types of production affect recall and recognition (p. 177). Mama and Icht, (2016) continue to say that production leads to the creation of better memory traces as it requires more encoding processes for the synapses and neurons (p.177). For example:

“When the study words are visually presented, reading aloud involves (1) visual processing (reading the words), (2) motor processing (articulating), and (3) auditory processing (hearing oneself saying the words). Obviously such a rich encoding procedure results in better memory relative to silent reading, which involves only visual processing (Mama & Icht, 2016, 177).”

“On the other hand, when the study words are aurally presented, writing involves more distinct encoding processes (than silent reading and even than vocalization): (1) auditory processing (hearing the words), (2) motor processing (writing), and (3) visual processing (reading one’s own handwriting). Any unique process provides a distinctive cue that participants can use... to help remember the studied words. The production that involves the greater number of unique encoding processes leads to the best memory [retention] (Mama & Icht, 2016, 177).”

The best memory formation is one that involves the most activated synapse and neuron traces. But this process is very complex and can become a burden on the mind if the episodic buffer has not sent the data in the working memory into long-term memory.

Recall is typically harder than recognition as it requires more self-initiated processes (Mama & Icht, 2016, p. 183). Recognition is easier due to the fact one can see the target word and the cognitive resources required to process the seen target word is reduced (Mama & Icht, 2016, p. 183). Mama and Icht (2016) suggest that there is a recall cost when words become reencoded into formed memory subset (visual input subset, visual-auditory inputs subset, etc) and that this cost, though none exists when reencoding occurs within the original subset, produces negative interference when the target reencoded source moves from an old subset into a new subset (p. 179). This can be seen when a language learner reads a word for the first time, and then later that very same word is spoken for the language learner to hear. The first subset was a visual subset, and when the language learner heard the word previously read, it was recalled and reencoded

into an audio subset. Once reencoded, when a language learner hears the word they will also have a trace of synapses and neurons back to the written word. And over time, with more and more synapses and neuron traces established in the language learner's mind, the traces will be strong enough to form a connection to long-term memory and the episodic buffer will store the target language permanently.

When considering the retroactive interference of processed information, the ability to retrieve memories or target language may become impeded by newly encoded data. This happens most often when the retrieval target is strongly associated and share similar retrieval cues with the new learning (Mama & Icht, 2016, p. 178-179). Sometimes this is a good thing because when studying in a content category in a block, forgetting specific content items is not so important as any item in the block could be similar and serve as a reminder as each item would have a trace of synapses connecting it to another item in the same category which may in fact be the target language needed to be recalled (Birnbaum, Kornell, Bjork, & Bjork, 2013, p. 398). With this complex system, Mama and Icht (2016) state that retrieval is more accurate when information processes are followed by dissimilar events and contents (p.179). Birnbaum, Kornell, Bjork, and Bjork, (2013) claim that allowing time for target content to be forgotten is vital to learning as it makes the retrieval of previously encoded content from memory more difficult to recall and retrieve which will then create stronger traces in the brain of the target content when retrieval is successful (p. 398). Quigley (2015) also suggests that longer intervals between retrieval will strengthen and enhance the capacity to remember and retrieve that information in the future (n.p.).

Birnbaum, Kornell, Bjork, and Bjork (2013) question why interleaving practices of study are more effective as intuitively, studying concepts in a single category or block would be more promising as learners could notice similarities within the concepts of the category (p. 393). If studying concepts in a block enhances a language learner's ability to notice similarities among intra-category exemplars, than interleaved studying should enhance a language learner's ability to notice differences that separate one category's exemplar from another; therefore, creating learning through discrimination, an encoding method that would create more processes in the mind and form more traces of synapses as concepts are manipulated and considered in juxtaposition in the brain (Birnbaum, Kornell, Bjork, & Bjork, 2013, p. 393). With more opportunities for the brain to highlight features of exemplars, the brain will form more traces to differing neurons to help the mind distinguish categories; furthermore, for the ability to classify new exemplars into appropriate categories it is imperative that the brain knows what distinguishes the target content features from content categories already in the mind (Birnbaum, Kornell, Bjork, & Bjork, 2013, p. 393).

Birnbaum, Kornell, Bjork, and Bjork (2013) state that interleaving exemplars of dissimilar categories enhance inductive learning as the differing target content is highlighted during the encoding process which offers more traces to form thus providing greater probability of target content retention (p. 392). Birnbaum, Kornell, Bjork, and Bjork (2013) state that target content once encoded, and then restudied after a delay is better recalled in the long term than target content that is encoded and then studied and restudied in rapid succession (p. 393). Only through distinctive contrast and enlisting juxtaposition of exemplars will inductive learning be successful (Birnbaum, Kornell, Bjork, & Bjork, 2013, p. 401). The difficulties of

using systematic gaps in study and encoding processes of differing target content are desirable as it keeps pushing the brain to grow and create sturdy synapses and neuron traces of the target content in long-term memory (Birnbaum, Kornell, Bjork, & Bjork, 2013, p. 401).

Varma and Schleisman (2014) also postulate that interleaved learning, or spaced learning, offers a better chance for content to be stored in long-term memory as processed information created a semantic content of the item as well as a context in which the information was encoded, such as place, time, and state of the learner (p. 223). When spaced learning is employed, a higher chance of retrieval is possible as the retrieval context may overlap with one of the multiple encoding contexts and conditions that occurred while the language learner studied (Varma & Schleisman, 2014, p. 223-224). Wissman, Rawson, and Pyc (2012) also stresses the importance of creating longer gaps in between encoding processes and practice sessions (p. 568). By implementing lagged systematic encoding sessions in between practice sessions self-testing becomes a very effective tool for developing the target content in memory (Wissman, Rawson, & Pyc, 2012, p. 568). Another advantage to spaced learning is interleaving effects that focus a language learner to encode old and unknown items together which will cause the mind to encode the distinctiveness of the new item which will juxtapose the old item; therefore, creating a greater synapses and neuron trace in the encoding process which will strengthen a language learner's ability to retrieve and produce the items being studied (Varma & Schleisman, 2014, p. 223-224). Varma and Schleisman (2014) suggest that spaced practice enhances the salience of items through distinct memory traces and encoding experiences which contrast old and new information thus creating a systematic pattern that perpetually provides language learners with an optimal intake verse review study method (Varma & Schleisman, 2014, p. 224-225).

A hierarchy of retrieval is imposed by the brain ("The Truth About Memory", 2016, n.p.). Quigley (2015) asserts that information not salient or challenging will fail to be sent to long-term memory because the episodic buffer deemed the temporarily stored information to be inconsequential or unimportant (n.p.). Consequently, Quigley (2015) reinforces the concepts of interleaving learning as the more gaps between topics studied and the act of revisiting previously studied information in random and in an almost unpredictable manner forces the brain and episodic buffer to keep all the information because it can no longer discriminate what may or may not be needed for retrieval; therefore, the mind will retain what is studied at a much greater capacity (n.p.). There will come a point when so much information is being storied in the working memory that the episodic buffer will send everything to long-term memory so that it can make room for new information. But this transfer to the long-term memory can only happen when there is a constant need to retrieve the information being stored in the working memory. Otherwise, much like when a language learner crams for a test, the episodic buffer will dump all the information and store nothing as the information is no longer valuable to the mind.

With an understanding of the mind's processes, we can now look at self-testing using flash cards as an amazing and versatile language acquisition tool. Sage, Rausch, Quirk and Halladay (2016) suggest that individual motivation and self-regulation is required to successfully learn material (p. 432). For a method to be a successful tool of learning, language learners must think that the method teaches the material, they

must find it enjoyable, and they must not be overwhelmed with its functionality (Sage, Rausch, Quirk, & Halladay, 2016, p. 432). Wissman, Rawson, and Pyc (2012) suggest that language learners primarily use self-testing to monitor how well target content has been absorbed opposed to using self-testing as a learning strategy (p. 568). Sage, Rausch, Quirk, and Halladay (2016) also assert that college language learners use flashcards to self-test only to determine how well they have learned information (p. 434). Self-testing is beneficial for learning and developing memory (Wissman, Rawson, & Pyc, 2012, p. 568). Flashcards are a great way to self-test, but the benefits of self-testing is dependent on the study ability of the language learner and their ability to engage in study conditions that facilitate learning (Wissman, Rawson, & Pyc, 2012, p. 568) Self-testing is an effective memory development tool as it forces artificial pressure on the language learner to recall and retrieve information stored in their working memory and long-term memory, so language learners are more likely to have more opportunities to activate neurons and synapses to solidify their understanding and learning of the target content (“The Truth About Memory”, 2016, n.p.). As a result, when language learners use flashcards they make advantageous decisions about practice, but fail in their ability to implement effective timing intervals (Wissman, Rawson, & Pyc, 2012, p. 577). Wissman, Rawson, and Pyc (2012) avow that teachers may be unaware themselves of the effectiveness of self-testing using flashcards and may even be unaware of factors that influence their efficiency (p. 577). Therefore, Wissman, Rawson, and Pyc (2012) recommend that instructors should teach language learners about the importance of effective timing practices when using flashcards (p. 577).

Bryson (2012) describes the conventional way of working with flash cards as writing a question on one side of the flash card and then writing the answer to that target question on the opposite side of the same flash card (p. 25). Once enough flash cards are created a person can assess their memory by testing themselves by looking at the question and guessing the answer or by looking at the answer and guessing the question (Bryson, 2012, p. 25). Wissman, Rawson, and Pyc (2012) assert that the two critical factors that affect the efficacy of self-testing are the amount of practice and the timing of practice (p. 568). By increasing the number of times a target is retrieved and recalled during practice will benefit later retention as each successful recall, and retrieval strengthens the target synapses and neuron traces in memory (Wissman, Rawson, & Pyc, 2012, p. 568). Correctly recalling an item more than once during the encoding process significantly improves recall later; moreover, the more one practices and successfully recalls the target flashcard the greater their ability to retrieve and recall its content in the future (Wissman, Rawson, & Pyc, 2012, p. 569).

Griffin and Joseph (2015) state that flashcard drills are an effective and low cost method to supplement general curriculum which help language learners acquire and practice skills (p. 422). By presenting a set of flashcards (usually about 10) a language learner can master these unfamiliar words by repeatedly drilling the set and once they can correctly and effortlessly read or comprehend the contents within a three second time frame a language learner can effectively and efficiently acquire knowledge using flashcards (Griffin & Joseph, 2015, p. 422). Griffin and Joseph (2015) explain that interspersal flashcards methods include mixing unfamiliar words with known words so that language learners do not become so overwhelmed and discouraged; therefore, allowing language learners to engage in the flashcard drills

longer (p. 422). In the interspersal procedure method a technique of folding in unfamiliar words systematically into the known flashcard set is possible; furthermore, incremental rehearsal method utilizes this method at a 1 to 9 ratio of unknown verses known flashcards (Griffin & Joseph, 2015, p. 422-423). Another frequent practice of studying with flashcards requires that when a target flashcard is easily recalled it is reviewed less frequently and more difficult target flashcards are reviewed more often to strengthen the synapse and neuron traces of the difficult target language in memory (Bryson, 2012, p. 25). Griffin and Joseph (2015) conclude that the traditional method of using all unknown words was more efficient and effective especially if the unknown word was reviewed several times before leading into the next unknown word (p. 436).

Stitt and Pula (2013) assert that the creative process of making flashcards is very important as it allows language learners to actively create a tool for study, and can be made using different colors and sensory formats which are tailored to the language learners tastes and needs (p. 37). The use of color is also very advantageous as it allows language learner to rely on color and design to heighten their sensitivity to the information on the flashcards (Stitt & Pula, 2013, p. 37). Flashcards present a dual function as they require language learners to decipher the meaning of a word in the context of a longer text, as well as to understand the word on its own merit (Stitt & Pula, 2013, p. 38). The use of color when using flash cards can aid learning as it engages more sensory recall during the process of retrieval and can engage emotions (Stitt & Pula, 2013, p. 38). Stitt and Pula (2013) assert that when language learners are permitted to choose the colors for their flash cards, the selected colors are likely to have personal connections to the language learner; therefore, increasing the capacity for emotional salience and building bigger synapse and neuron traces in memory (p. 38). Another benefit to allowing language learners to choose their own color is that language learners can use colored text as a method of subconsciously categorizing data into patterns which helps them process information and build stronger synapse and neuron traces in their memory (p. 38). As a result, Stitt and Pula (2013) state that color did have a significant impact on the language learner's ability to recall information by stimulating sensory recall with information recall (p. 43).

Varma and Schleisman (2014) assert that the role of retrieval while using flashcards offers greater opportunities to practice memory retrieval and production (p. 225-226). Mama and Icht, (2016) demonstrate that retrieval success is enhanced by the additional experiences of attempting to retrieve the target knowledge; moreover, this creates another trace within the synapses and neurons which will then enhance the processing and encoding of the target language in the mind and influence future recall ability (p. 178). When memories are retrieved, they are susceptible to amenable change (Mama & Icht, 2016, p. 178). The simple act of retrieval creates a process to reencode and modify the memory in positive or negative forms resulting in a change of the information content and the possibility of new traces and synapses to form with new neurons (Mama & Icht, 2016, p. 178).

By understanding the mind and its function as well as common flashcard study practices, we can now come to the exciting methodology which uses emotional salience and flashcards for language acquisition. This methodology was developed in response too poor language acquisition progress and poor vocabulary test scores in a mid-level English language course in an English for academic purpose program.

Demographically the class make up was all nearly identical. The class was made up of all 19-year-old female Japanese language learners. They all had similar educational and socio-economic backgrounds. Their English intake scores were also very similar as the institute formed classes based off common language proficiency assessed during intake exams.

During class language learners were assigned vocabulary to study and flashcards to use for personal study purposes. But despite class time being given to make the flashcards and substantial academic motivation to pass exams, the language learners would perform poorly on vocabulary tests. And so, this methodology was created in the hopes of helping language learners develop better language acquisition skills using flashcards.

After a consent form was given to students to participate in the study, each week language learners were required to study 20 words using flash cards. The same goal as the previous assignments. But in this case, if a language learner could not recall the target word or recognize the target word on their flashcard, they had to restart from the beginning of their flashcard list. Naturally this method at first seems very easy, but with each inability to recall or recognize the target word on their flashcard, the language learner would be required to begin from the beginning of the stack. With more and more failures to recognize or recall the more the language learner would become frustrated and angry. In the traditional sense, it is here in frustration and anger that language learners would give up on studying. But in this case, language learners were forced to continue to receive a grade. Though discontent, the language learners persevered.

At first, one failed attempt is not so serious. The mind intakes the word, is allowed the chance to check its correct definition, and then is reexamined as the flash card set is reviewed for a second time. Having just missed the word and been able to review it, the previously failed word is correctly recalled and recognized. But as the list continues with more words reviewed, recall interference begins to set in, and memory functions becomes taxed. Soon language learners found themselves being stuck on the same words repeatedly. With anger and frustration building in their mind associated with their failure, emotional salience began to form around the failed word. This emotional salience created in the language learners a desperate need to remember and recognize the failed target word so that they would not be subjected to repeating the whole list again. Moreover, once the failed target word was successfully recalled and recognized a euphoric emotion of gratitude, pride, and satisfaction overcame the language learners and that emotional salience was attached to the target word as well: what once was an enemy now becomes a fond trophy of personal triumph.

After the language learners could run though the set of 20 words without hesitation or mistakes in recall or recognition, language learners were required to shuffle their flashcards and redo the entire process until they could review the vocabulary flashcard sets without error after two consecutive shuffles. Each week language learners received 20 more words. In this case, language learners would begin the process of developing emotional salience using the new words. Once they could accurately recall and recognized the new word after two consecutive shuffles, the older set of flashcard words would then be reconstituted into the new deck and the whole process would be repeated with the new hybrid deck. As each week language learners could find old words intermixed with their new words the synapses and neurons in the

brain could strengthen, grow, and make new connections. Moreover, the episodic buffer could not determine what was unimportant as each week the old words and the new words would be practiced and so therefore could not purge any of the target vocabulary.

For this action research study language learners were given 20 words to learn using flashcards for 4 weeks. At the end of each week language learners would be tested on their ability to retain and use the vocabulary functionally. The action research study also included a final vocabulary pop quiz given over a month later to assess how well the set of vocabulary flashcards were retained over time when not explicitly told to study.

The test results were as followed (see Figure 1):

Figure 1: Test Results of Action Research					
Score by Percentage	Vocabulary Test One (20 words) Week one	Vocabulary Test Two (40 words) Week two	Vocabulary Test Three (60 words) Week three	Vocabulary Test Four (80 words) Week four	Vocabulary Pop Quiz (Test Five – 80 words) One month after week four
90-100%	9 students	11 students	13 students	15 students	14 students
80-89%	5 students	4 students	2 students	2 students	2 students
70-79%	2 students	3 students	2 students	2 students	1 students
50-69%	3 students	2 students	1 students	1 students	0 students
0-49%	1 students	0 students	2 students	0 students	3 students

The results of the exams were very promising. Prior to the action research project, most language learners in the class were scoring in the 70-79% on their vocabulary exams. But when the emotional salient flashcard method was introduced, language learners’ ability to recall and recognized vocabulary increased substantially. The language learners’ ability to retain what was studied and continue to recall and recognize the new flashcard words each week was impressive. As Figure 1 demonstrates not all language learners were successful when taking their examinations. For the language learners with 0-49% scores, that was due to absence. To understand why some language learners did not achieve higher test results when many of the other language learners in class did a survey was conducted. This survey focused on reflecting on the emotional salient flashcard method.

The questionnaire utilized open ended questions and a Likert scale (see Appendix A [The consent form was also added to the questionnaire in Appendix A]). When the survey was submitted, oral translations were provided to language learners if understanding was not clear, but in retrospect, a written translation may have been more prudent. Some data was lost from the beginning as a few language learners did not consent to have their participation nor response be a part of this action research project while some parts of the survey were left blank by some language learners who did participate.

The result of the survey was nonetheless very helpful in understanding why some language learners maintained lower performances on their exams and why some language learners excelled. The follow data was submitted using the Likert scale (See Figure 2):

Developing Emotional Salience Using Flash Cards (Matthew Gilles)

Figure 2: Likert Scale Data					
1. I used the emotional salient flashcard method correctly.					
	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
Student Response	10	2	1	1	1
2. If I made a mistake when reviewing flashcards, I always restarted from the beginning.					
	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
Student Response	10	2	1	1	1
3. I did not stop studying the flashcards until I could recognize each word completely after shuffling and completing each set twice.					
	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
Student Response	7	4	1	1	2
4. I found the emotional salient flashcard method to be helpful in my learning.					
	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
Student Response	11	0	1	1	1
5. I will always study vocabulary using the emotional salient method in the future.					
	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
Student Response	11	1	1	1	1

The results of the Likert scale show a strong correlation between the test results and the language learners ability to agree with the statements. Which would indicate that the language learners who engaged in using the emotional salient flashcard method benefited the most from the method. When it came to the agree nor disagree question, all the data was collected from a sole source and so it may be the case that this response may not hold much bearing to the results of this action research.

The responses to the open-ended questions offered much more insight (See Figure 3).

Figure 3: Student Response to Open-ended Questions	
Original Question	1. How did you feel when you used the emotional salient flashcard method?
Student Responses:	“I don’t feel boring.”
	“It take me, most of the time it’s the best way to study vocabularies.”
	“Its fun way.”
	“I don’t feel sleepy.”
	“Sometimes I was so upset and angry.”
	“The more angry the more I wanted to achieve vocabulary .”
	“I hate it.”
Original Question	2. How did the emotional salient flashcard method help you study?
Student Responses:	“It did not help.”

“It make me think about how to remember the word so that I could move across the word and go to the new one.”
“Every time I used flashcards to study I feel like its fun.”
“Since I have problem thinking and remember so doing something while I study vocabulary will help me remember longer and deeper.”
“I feel angry because I make mistake even though I know the word but don’t know the words meaning even though I know it [<i>referring to frustration of experience of just reviewing the challenging word and yet still not being to recall despite having recognition.</i>].”

Original Question 3	3. Why would you continue to use the emotional salient flashcard method?
Student Responses:	“This is the only way to keep me stay to study new vocabulary.”
	“I tried a lot of ways before like write it down so many times to remember but it just wasted time more than used the flash cards.”
	“I think it works.”
	“I learned longer and deeper and I don’t need to go back.”
	“I feel proud that I can remember the new things.”
	“No.”

The responses given were very insightful. The data suggesting that the language learners who used the emotional salient flashcard method could engage their mind and utilize emotional salience to help them retain information in their long-term memory.

The failures of this action research project are easily seen. The first consideration to improve this action research project would have been to have a written translation of the questionnaire. This may have allowed for more language learners to be more thorough with their responses. Another consideration would have been to conduct the research with a greater number of language learner participants. The more data collected the better the findings could have been substantiated. Perhaps some qualitative data collection through interviews and journals would have been an effective way to monitor emotions and to correlate which emotion produced the greatest salience attached to a target word. The research could have asked each student which words tended to be the most emotional salience provoking. Though, the greatest shortcoming of this action research project is simplify found in the limited research available on emotional salience, and how it relates to language acquisition. It is with hope that this paper concludes that though there were plenty of short comings, with such promising results, emotional salience in flashcard use will be more thoroughly examined in greater detail and more research will be soon to come.

Though this was a simple action research project to help language learners better utilize the use of flashcards, it turned into something more. The mind is a powerful tool that has develop for as long as humans have existed. Since the dawn of mankind, emotions sought to activate the mind to put our bodies in motion and to help us cope with the world around us. Even now emotions have powerful ties to the mind and memory. As such, by using emotions to make target words salient in flashcard use, emotional salience has been shown to be a highly effective ally to develop language acquisition in the language learner.

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Appendix A

Consent Form

This is a consent form asking permission for you to participate in an action research survey in this class. The purpose of this study is to further develop a teaching methodology which may help language learners develop language acquisition skills.

If you sign this consent form your survey responses will be completely confidential and there will be no consequence to any response you have made. It is merely to collect data so that I may better serve you as a teacher. This will not contribute to your grade in any way.

CONSENT: Your signature below will indicate that you have agreed to volunteer as a research subject and that you have read and understand the information provided above:

Name: _____ Date: _____

1. I used the emotional salient flashcard method correctly.				
Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
2. If I made a mistake when reviewing flashcards, I always restarted from the beginning.				
Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
3. I did not stop studying the flashcards until I could recognize each word completely after shuffling and completing each set twice.				
Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
4. I found the emotional salient flashcard method to be helpful in my learning.				
Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
5. I will always study vocabulary using the emotional salient method in the future.				
Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree

Survey/Questionnaire

Open ended Questions

1. How did you feel when you used the emotional salient flashcard method?
2. How did the emotional salient flashcard method help you study?
3. Why would you continue to use the emotional salient flashcard method?