

WHY JINGLES IMPROVE ADVERTISING RESULTS

By Mark Dahl

The ‘Music Gene’

“As far as biological cause and effect are concerned, music is useless...I suspect that music is auditory cheesecake...” says Steven Pinker (1997). “Cute, but dead wrong” says Sandra Trehub (Crenson, 2000) of the University of Toronto. Trehub “travels the globe, studying mothers as they sing to their children... Every culture has lullabies. They are so similar that you could never mistake them for anything else...That suggests to her that music is no human invention...Music would have been adaptive because mothers who were better musicians had an easier time calming their babies...A happy baby who fell asleep easily and rarely made a fuss was much more likely to survive to adulthood-especially in primitive societies. Their cries would not attract predators, they and their mothers would get more rest, they would be less likely to be mistreated.”

“Of course, its utter speculation” says David Huron, (Crenson, 2000) professor of music at Ohio State University. “Yet Huron and many of his colleagues wonder if music might have biological roots. The ‘music gene’ would have arisen tens or hundreds of thousands of years ago, and conferred an evolutionary advantage on those who possessed it. Natural selection would have nurtured the gift of music, favoring those who possessed it with more offspring who were themselves more likely to reproduce.”

Rita Carter (1998) says “...evidence is accumulating to suggest that our brains are moulded by our genes to create and understand music rather as they are made to form language ...There is no known mechanism by which purposeless functions come to evolve. Music is therefore likely once to have had some survival benefit, and the most probable one is that it is a prototype communication system. Support for this idea comes from the fact that music appreciation seems to be wired into some of the dumbest creatures on earth-something that seems rather unlikely if it really were just a cultural

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frill.”

Carter could have been quoting Charles Darwin (1871): “Even monkeys express strong feelings in different tones...as a gibbon, one of the anthropomorphous apes, pours forth a whole octave of musical notes and may be said to sing, it appears probable that the progenitors of man...before acquiring the power of expressing their mutual love in articulate language, endeavoured to charm each other with musical notes and rhythm.”

Physical proof that humans have been using music in one form or another comes from a discovery in a cave in Slovenia: the Divje babe flute. “It (Crenson, 2000) dates back 40,000 years to a time when Europe and much of North America were mantled in ice, and humans lived side by side with Neanderthals. If the oldest instruments existed 40,000 years ago, then vocal music probably goes back twice as far, Huron speculates—perhaps even to the dawn of species.”

Words and Melody, Learning and Memory: the Evidence

Researchers at Stanford University (*New Science Magazine*, 2004) report “Hearing just a few measures of Mozart’s music can improve memory and boost learning abilities...” They “have discovered a molecular basis for music’s mental benefit... ‘Smart’ genes encouraged by the music included CREB, a learning and memory compound; BDNF, a nerve cell growth factor; and synapsin I, responsible for synapse formation. All improve function in the hippocampus, a brain area linked to learning and memory.”

Petr Janata (2002) and his research team report “recalling that” (any) “melody is the job of the part of the brain known as the rostromedial prefrontal cortex...contained in a centrally located area just behind the forehead...that part of the brain also plays a key role in learning and in the response and control of emotions ... Janata said the fact that the brain is naturally wired to appreciate and remember music suggests that the pleasant sounds were an important part of the human mind from the earliest of times.”

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According to CBS News (Smith, 2004) Harriett Ball, honored six time as ‘Teacher of the Year,’ “has created a unique technique of using multi-sensory mnemonic teaching strategies that reach and teach ‘at risk’ students...who do not perform well with traditional teaching.” Students who perform the poorest when traditional teaching methods are used “...show the highest gains...” to Ball’s mnemonic approach. “Every once in a while you may get a song stuck in your head. But...imagine if instead of just driving you batty, that song actually contained useful knowledge that could help you solve a math equation. That’s the idea behind” Ball’s “teaching techniques.”

Of course, music has been used as a teaching tool for years. My granddaughters began learning the ABC’s at the age of two by singing, as I did 50+ years ago, the letters of the alphabet to the song *Twinkle, Twinkle, Little Star*. Halpern (1984) references McKernon, saying “Even before reaching an age of two years old, children can produce spontaneous songs using distinct pitches and occasional rhythmic patterns.”

Marketers also understand the power of music as a teaching tool. Jackson (2003) says *In My Merry Oldsmobile* (music by Gus Edwards, lyrics by Vincent Bryan) is “The earliest example of a piece of music being used for the advertising and promotion of a company...in 1908, recognizing its strength as an anthem, the Oldsmobile Motor Company adopted the song for use in its marketing communications.” ‘Jingles’ have been used in advertising ever since: Chevy Trucks are “like a rock” and Campbell’s Soup is “mm mm good”.

The Research: Music as a Mnemonic

Rainey & Larsen (2002) suggest that “music could function as a type of mnemonic device. Ashcraft” (2002, *Cognition*, 3rd edition, Prentice Hall) “has described three features of successful mnemonic devices: (1) they create a structure for learning, (2) they provide a distinctive memory record so that the material is not easily forgotten, and (3) they guide the learner in the retrieval process. The rhythm and melody of a familiar song could provide a structure for learning

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unfamiliar information, and a familiar melody could provide both distinctive memory records and retrieval cues to assist recall. Thus, music appears to meet the requirements of a good mnemonic device.” They conducted two experiments. In the first, they had twelve names from each team of the 1948 Worlds Series (Braves and Indians) spoken and sung to the tune *Pop Goes the Weasel*. The objective was to determine if the subjects would learn the names quicker if sung versus spoken, and to determine what the recall of the names would be from each presentation a week later. “The first hypothesis was not supported...when the presentation rate of sung and spoken lyrics was the same, there was no difference in short-term recall. However, the second hypothesis was supported. Recall of the names a week later...was superior among those who learned the sung list.” This could be, the authors suggest, because subjects that heard the list sung learned it ‘more effectively,’ or because “...those in the sung condition practiced their list more frequently between their two sessions...” The second experiment consisted of 14 nonsense names spoken and sung to the tune *Yankee Doodle*, with the addition of a visual version. Those that saw the list learned it most quickly, but again, a week later, those that learned the list via song recalled it best.

Calvert and Tart (1993) say, “Songs present content in a form that may be easily stored, rehearsed, and retrieved from memory...Because vocal music places multiple constraints on memory, songs may assist verbatim recall more than does a verbal presentation.” Two experiments were conducted. “The purpose of study 1 was to examine students’ very-long-term verbatim recall...” The authors used subjects that had been exposed to a musical presentation of the *Preamble of the Constitution* via School House Rock (“a series of educational vignettes about different academic topics”) and subjects that had learned the *Preamble* by saying the words. “As expected, students who used singing as a strategy recalled significantly more words from the *Preamble* than those who simply said the words.” Study 2 also studied verbal versus sung recall, but added the element of repetition. “...single exposures to a song or verbal presentation of

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the *Preamble* yielded similar patterns of recall, but repeated exposure to musical formats was superior to repeated exposure to verbal formats...More importantly, the song presentation continued to be superior to the verbal presentation in the repetition conditions after 5 weeks. In fact, the level of significance between those exposed to the song versus the verbal formats became more pronounced over time in repetition conditions...Students...repeatedly reported singing the words to themselves during the retrieval task...Repetition may allow a listener to chunk the tune and words together as information is organized and represented in memory.”

Crowder, Serafine and Repp (1990) discuss organization and representation of information in memory. Their hypothesis was that words and melody are ‘integrated’: (“the two components related in memory such that one component is better recognized in the presence of the other than in its absence.”). Three experiments were conducted. “In each of the present three experiments, the critical comparison was between old songs and mismatch songs, where the latter items allowed us to test recognition on one component in the presence of a different component, which had nevertheless been heard in the presentation and was equally familiar.” In this case, folk songs were used. In experiment 1 a set of words was presented to a tune, then a different set of words was presented to the same tune. “...melody recognition was significantly better in the old-song condition than in the mismatch condition...” In other words, the way the subjects heard the melody and words *first* is the way they recalled it best, thus proving the integration effect. Experiment 2 “...consisted of folksong excerpts with nonsense texts...The results...show that the integration effect is obtainable with phonetically similar, as well as identical, nonsense used at test.” Experiment 3 “assess the degree to which a text could serve as the retrieval cue for a melody, when the two had initially been heard in closed temporal proximity” (melody was hummed while the words were spoken). The authors determined “...true temporal contiguity of melody and text was a sufficient condition for observing the integration effect.”

Peretz, Radeau and Arguin (2004) conducted four experiments to “provide a method

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to study the nature of the connections between melody and lyrics in song memory... Listeners systematically show evidence of retention of the original (studied) association between melody and text, even after a single hearing...the association between text and tune in song memory appears robust, involuntary, and related to perceptual rather than semantic similarities.” The authors study the priming (“generally defined as a modification in performance due to the prior processing of an item that is related to the target”) suggesting “...activation flows better...from lyrics to melodies than from melodies to lyrics...” Using folk songs, in experiment 1 the prime (song beginning) was sung or spoken as was the target (lyrics appearing later in the song). “...beginnings of songs facilitate the recognition of later portions of the same song whether the segments are spoken or sung.” Experiment 2 reversed the primes and targets presented in experiment 1. “...reversing the order in which prime and target naturally occur in songs did not abolish priming effects” but “It takes about half as long to recognize the lyrics of a familiar song than to recognize its music... the lyrics are likely to make contact with the memory representation earlier than the melody...by making an earlier contact, the lyrics may spread more activation than the melody.” In experiment 3 the sung lyrics were compressed to match the duration of the spoken version. The spoken targets continued to be more quickly recognized than the sung targets. Experiment 4 was identical to 3, but the spoken lyrics were embedded in noise “To eliminate the lyrics advantage...” In this case “...the text and tune were equally effective in priming each other. Therefore, the results are more compatible with the view that melody and text of songs are related by symmetrical bidirectional connections.” The authors conclude “...backward priming effects suggest that word and tunes of songs are connected by tight reciprocal links that allow automatic access from text to melody and vice versa” but “Lyrics seem easier to recognize in general.”

That the combination of words and melody foster chunking and have an integration effect makes sense because as Tom (1990) reports, “Consistently, research on memory factors has

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demonstrated that recall is dependent upon the similarity of information at input and cues at output.” Tom conducted an experiment using “three types of music being used in television commercials: (1) hit music, (2) parodies of hit music, and (3) music scored specifically for television commercials.” She discovered “Music scored specifically for the advertisement had the greatest recall, followed by parody music, with original hits being least effective...The more similar the information at the points of input and output, the more effective they are as cues for recall.”

Research conducted by McElhinney and Annett (1996) also supports the chunking and integration theory. “For material, presented either as a song or as a lecture, there was higher recall of information from the musical condition than from the traditional lecture.” Their experiment consisted of subjects listening either to a spoken or sung presentation of the lyrics to a song repeated three times: “...participants in the prose condition, unlike those in the song condition, tended to recall more single words rather than ‘chunks’ of information...As expected, using a song to aid recall of words was effective, but did not produce a significant improvement in total number of words recalled after just one trial. Over subsequent trials, however, total words recalled increased exponentially...Evidence for greater chunking of material in the song condition is available...the tune and text of song are to some degree integrated in memory rather than stored independently.”

Wallace (1994) conducted four experiments. “Music is a rich structure that chunks words and phrases, identifies line lengths, identifies stress patterns, and adds emphasis as well as focuses listeners on surface characteristics. The musical structure can assist in learning, in retrieving, and if necessary, in reconstructing a text.” All four experiments used the same three versus from two ballads. A sung and spoken version of each was prepared. In experiment 1 three versus of a song were sung (or spoken) and the subjects were asked to write down the words after trial 1, 2, and 5. A second song was presented following the same procedure. Twenty minutes later the subjects

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were asked to write down the words to the first song. “Verbatim recall was significantly greater for the sung condition...Even after a 20-minute delay...” Experiment two used the same ballads and procedure, but in this test one group heard the words sung, one heard the words spoken “with a rhythmical intonation...The sung condition resulted in better verbatim recall than the rhythmical condition” including the delayed-recall condition. Experiment three used the same ballads but “The purpose of this experiment was to determine whether hearing one sung verse” (or one spoken verse) instead of three versus “would facilitate recall in the same manner as hearing multiple versus each of which were sung” (spoken) “in the same melody.” The results showed “There was a significant effect on condition (spoken vs sung) on verbatim recall, with the spoken condition having better recall than the sung condition....Thus, for a single verse, music appeared to disrupt more than to facilitate learning and recall of the text...In summary, for initial learning, music may not always facilitate recall of text. Hearing multiple verses with the same melody facilitates acquisition, accentuates the basic melodic structure, and ensures that the melody is sufficiently learned to facilitate recall.” In experiment 4 three verses of a new ballad were sung (spoken) to three different melodies, and each verse was sung to one of the different melodies. “Hearing the same melody three times resulted in greater recall than hearing a different melody for each verse or than hearing the words spoken...music appeared to mark the beginning of a new verse and thus chunked the text...the chances of learning enough about the melodic structures to provide the necessary cues and connections to text increase as melody repeats... Melodies with simple, symmetrical melodic contours show better facilitation of text recall, presumably because they are easier to learn.”

A similar result is presented by Hyman and Rubin (1990). Using lyrics from *Rocky Raccoon* by the Beatles, they report, “We conclude that song recall is based on the same constructive processes as story recall, with the addition of more constraints that make recall more accurate. At first glance, this could appear counterintuitive; the more a person has to keep track of, the more

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accurate a person is...each new variable” (rhyme, rhythm, and meaning) “cuts down the number of words that can fit” (the context) “at any given point...Multiple constraints working together in this fashion to efficiently direct word selection for the expression of memories is precisely the type of verbal behavior that would be predicted by a parallel distributed processing model of memory.”

The final study to be considered, by Yalch (1991) says, “Advertisers appear correct in their belief that music and rhythmic sounds may facilitate learning and slow forgetting of verbal material.” The first of his two experiments consisted of aided recall and recognition tests. Subjects were presented a list of ad slogans, or with a list of ad slogans and a list of advertisers (the task being to match the two). Some of the slogans had been presented in ‘jingles’ and some had not. “The results revealed consistently greater recall of the brand names associated with advertising slogans when they had been presented in the form of a musical jingle compared to when they were merely spoken. However, this enhancement was beneficial only when subjects responded to the aided recall test...” (when the slogans were presented by themselves); “...when other information was available (slogans were provided in a matching test), the musical information did not improve memory accuracy...These findings suggest that the usefulness of presenting verbal information in the form of a musical jingle is the mnemonic value of the jingle.” Experiment 2 concerned the effect of repetition on memory. A series of ads, some presenting the ads in the form of a jingle and some without a jingle, were presented twice. “The use of a jingle increased memory accuracy relative to not using a jingle more after only one exposure than after two exposures...The finding that jingles are most useful when individuals are presented with few cues to aid retrieval or have minimal exposures to the advertising is noteworthy because it runs counter to many long-held beliefs” including the idea that a jingle is only useful with high-frequency advertising campaigns.

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Conclusion

This brief survey from the extensive research available provides *strong* evidence in support of the hypothesis that the combination of words and melody does function as a mnemonic, and as such has a significant impact on encoding (learning) and retrieval (memory). Further, this result occurs for a variety of reasons: a “musical presentation may enhance recall by promoting better organization of information” (Rainey & Larsen, 2002); “Songs present content in a form that may be easily stored, rehearsed, and retrieved from memory” (Calvert & Tart, 1993); the combination of words and melody facilitates ‘chunking’, thus allowing more material to be encoded for later retrieval (Wallace, 1994; McElhinney & Annett, 1996); the combination encourages an ‘integration’ of words with melody so that “one component is better recognized in the presence of the other than in its absence” (Crowder, Serafine & Repp, 1990); and the combination serves as a ‘cue’ assisting “in the retrieval process in situations where retrieval is difficult...because it provides a path to the desired verbal information when there are few other paths to this information” (Yalch, 1991); and priming (Peretz, Radeau & Arguin (2004).

Reverse-engineering this research allows one to argue *for* the existence of a ‘music gene’ that *did* provide an evolutionary advantage to those that possessed it since it *is* evident that the combination of words and melody *does* facilitate *learning* and *memory* by functioning as a mnemonic. For example, music may have been used to teach fire-making and geography.

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