

# Developing a functional method to apply music in branding: Design language-generated music

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**Abstract**

Manufacturers, marketing agencies, and researchers of consumer studies have handled music in a haphazard fashion. Music is often captive to financial resources, political agendas, or lack of know-how; choices rarely reflect criteria attributable to the brand. Linking music to a brand or product is a liability, as consumers' impressions can be manipulated by incongruent music, causing brand image to shift. The current study developed a strategy for applying music by employing design language as a template for composition. Two General Motors (GM) automobile brands served as products under investigation. Four studies, in two countries, recruited potential customers, sales clerks, walk-in buyers, and targeted consumers. The investigation found that consumers could decode composers' intentions to express brand characteristics and product features, and were consistently successful in designating design language-generated music to the appropriate brand. The study found both culturally specific and cultural-free brand images as expressed through music preferences.

**Keywords**

*branding, car videos, design language, marketing, music in advertising*

Connotations to brands result from various sources of information, including those seen to use the product, where they use it, and what they say/write about it (Feldwick, 2009). Clearly there is a visual identity (or distinctiveness of what consumers see) comprised of any number of graphic components (such as letters, numbers, logos, symbols, shapes, colors, and typeface), a verbal identity (or how brands are expressed through words and language) involving several name-related components (such as naming system for sub-brands, signage, and strap-line), as well as various tone/voice characteristics (including slogans and jingles) (Keller, 2008). Yet, and perhaps to an even greater extent, it is the actual experience of the product that contributes most to one's impression of a brand. Today consumers expect a brand to be tightly integrated with a unique identity (i.e., thematic integration), and anticipate that a product's features and user interactions will relate in real time and space (i.e., functional integration). Through experience, consumers have prior knowledge about various alternatives, and know which attributes

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are the most useful in discriminating between brands (Laroche, Kim, & Zhou, 1996). As the future points to the necessity for brands to emulate a *total experience*, the business of designing brands has quickly moved towards the practice of “perceptual engineering” (Franus, 2007).

It was only 35 years ago that suggesting that, one day, consumers would be able to recognize a brand from a color scheme or font style was as questionable as it seems to be today to imply that they should be able to recognize a brand from its sound (Simmons, 2005a). But nowadays all consumers can quite easily distinguish some products simply through “sonic-branding.” For example, the majority of computer users identify Microsoft’s Windows™ operating system through the “angelic sounds” heard during a boot-up sequence. Yet, while an entire sub-specialty has been established for the purposes of understanding and furthering brand image, the handling of *music* has been for the most part haphazard at best. Most certainly, the main goal of employing music within a marketing context is to align a “fit” between the values of the brand, the music, and the consumer. But in reality, music has more often been captive to financial resources and political agendas. Hence, music choices have not necessarily reflected attributes of a brand, nor have industries and market research agencies acknowledged a need to understand the overriding “power of music.” Nevertheless, as well-designed audio-branding links sounds to the brain, when not carefully orchestrated, music may simply become irrelevant clatter. If music is to eventually become an integral part of branding, then a more serious effort to construct a strategy for applying music is warranted. This was the goal of the current investigation.

## Brand image and music

Two areas where music seems to have been applied most often are: piped-in music (for retail stores and office spaces), and background music for advertising campaigns. In both of these contexts music has been reported to have influence on consumers’ emotions and their behavior (North & Hargreaves, 1997, 2005; North, Hargreaves, & McKendrick, 1999). Specifically regarding the latter, Alpert, Alpert, and Maltz (2005) delineate the process as relating to three key elements: the consumer; the musical structure; and the fit. Accordingly, *fit* is the subjective perception of the appropriateness of the music as it relates to the product. Alpert and colleagues feel the issue is rather simplistic: as market demographics can predict with fairly good levels of accuracy the musical preferences and tastes of consumers, marketing experts know with some degree of certainty “how they might perceive the appropriateness of certain musical selections with the overall message of the ad” (p. 370). In view of that, music becomes associated with the product through memory and positive feelings of liked music, and then subsequently, influences product-related behavior. For example, the ’70s AT&T advertisements featured songs such as “Feelings” that cued millions of viewers to phone dear ones.

Simmons (2003, 2005b) delineated several marketing campaigns that employed music as an ideal platform for branding. The GAP, for example, presented itself as a brand with a very clear “music DNA.” The consistency of the GAP’s television commercial style (plain white backdrops, young energetic multicultural people, and bold exciting music) resulted in promoting artists’ new tracks; subsequently, they created a music metaphor for consumers to feel great about GAP products. Another brand, Mitsubishi Motors, employed a previously obscure Dirty Vegas song, “Days Go By,” in their *Eclipse* model campaign; excessive airplay referring to “The Mitsubishi Song” not only pushed the single to chart-busting status (and a Grammy nomination), but also increased sales well beyond all expectations. Certainly, these vignettes illustrate a strategy that was mutually beneficial for the brand, the marketing campaign, and the music

partner. Nonetheless, both cases seem to exemplify an approach of employing music without a systematic understanding of how music can affect brand image; such an approach presumes that the function of music is context free (Alpert & Alpert, 1990; Stout & Leckenby, 1988), and that the outcome will no doubt boost financial gains. Yet it is quite possible that the use of music as employed above could have become a liability – especially as there was no real link between the sounds heard and the brand characteristics or product features. Empirical evidence indicates that impressions of a brand can be manipulated by specific music pieces (Hung, 2000, 2001), and that inappropriate music can affect, pollute, and even change a brand's image (Hagtvedt & Patrick, 2008).

## Design language and music

The literature related to the fields of advertising, consumer, and marketing science consistently tie music effects to three overriding paradigms: Classical Conditioning, Elaboration Likelihood Model, and Musical Fit (for reviews, see North & Hargreaves, 1997; North, MacKenzie, Law, & Hargreaves, 2004; Zander, 2006). The later concept of “fit” is especially important as studies have repeatedly demonstrated improved recall of product information when an advertisement is paired with music that fits the brand identity, and that consumers are more likely to purchase the advertised product when an advertisement features music that fits the brand (North et al., 1999, 2004). Accordingly, these effects are attributed to reduced cognitive noise allowing for brand-related knowledge to form a reference point (or cultural text) for communicating and creating relevant meanings that enhance understanding. North and colleagues conclude that the absence of music is no worse, and perhaps actually more effective, than using music that does not fit the advertised brand.

In an effort to develop specific music that can tap into the essence of the brand, common sense would encourage exploring *design language* (DL) as a template for music composition. DL is the catchphrase of a concept otherwise referred to through an assortment of expressions, such as: brand DNA, brand grammar, brand footprint, brand identity, brand personality, description grammar, design features, design semantics, design vocabulary, form vocabulary, product form, shape grammar, studio language, value-based design cues, visual brand language, visual design, visual vocabulary, etc. DL is a strategic tool which not only aids the design and selection of features and component sets in complex products, but also defines how people physically interact with and use them (Tovey, 1992). DL is an overarching scheme to orchestrate consistency and harmony of design thematic among multidisciplinary and multi-designer teams; through a process of semantic transformation from brand product characteristics (i.e., language domain) to design features (i.e., physical domain), DL helps one understand how meanings are embodied in a product (Karjalainen, 2007; McCormack, Cagan, & Vogel, 2004). As a framework guiding the selection of materials, patterns, and textures, rigorous DL can be useful for branding and in maintaining brand differentiation used to gain competitive advantage (Kreuzbauer & Malter, 2005). Leading companies, in all markets, including Apple and Starbucks, have used DL as a mechanism – and the automotive industry has not been left behind. For example, Mazda's concept vehicles were designed on “Nagare's Flow” – a surface language that expresses “emotion of motion.” Given that two GM brands – Chevrolet and Cadillac – are employed within the current investigation, a short description of brand image follows.



The American automotive giant General Motors (GM) has employed DL for some time; from 1926 the styling studio of Harley Earl dominated the design process (McCormack et al., 2004).

At its peak, GM had presence in over 200 countries, with manufacturing operations in about 50. Accordingly, each division satisfied a different consumer demand: sport (Pontiac), reliability (Buick), and elegance (Cadillac). As recently as 1980, almost one out of every two new cars sold in America were made by GM Motors (AdBrands, 2009). In 1992 Wayne Cherry developed "Brand Character Centers," in which designers were assigned to format guidelines that established emotional connections between products and customers (Bouchenoire, 2003). Then in a 1996 effort to combat erosion of market sales, which resulted from brutal competition, GM adopted a brand management approach called "Brandscape" (Keller, 2008). GM's six divisions, comprised of eight North American brands and four international subsidiaries (reflecting 65 different automobile models) each received a separate and distinct brand image; each vehicle had a unique identity involving a characteristic style, personality, advertising, pricing, and promotion (Karjalainen, 2007). In 2001, under Bob Lutz, GM moved away from the concept of separate and distinct models, regrouped the eight brands taking on a platform-orientation, and each automotive line underwent advertising campaigns that focused on their collective characteristics (Bouchenoire, 2003): the Chevrolet Brand was positioned as "American Value," while Wayne Cherry set out to leverage the Cadillac Brand "Arts and Science".

Chevrolet holds a special place in American popular culture. Arguably, the *Chevy* is the best loved car in the country's history. GM's 2001 campaign featured billboards of a red 1963 Corvette Sting Ray boasting "They don't write songs about Volvos" (see online Appendix 1).<sup>1</sup> GM compiled a list of around 200 songs that mention Chevys; the songs mostly refer to the golden age of the 1950s when GM personified a newly-found freewheeling spirit of the rock 'n' roll era. The songs were used in a 2003 Grammys Awards commercial, airing footage of The Beach Boys performing "My 409," Don McLean singing "American Pie," and Prince performing "Little Red Corvette." The advertisement reappeared in a major 2004 promotion featuring everyday Americans singing the same tunes. Subsequently, Chevrolet was re-established as "America's Best-Selling Automobile" for the first time since 1984. GM launched the New Malibu model in 2008.

Cadillac is one of the more beloved car brands in Detroit. Its profile, the prominent luxury brand in America, was seen for a time as the ultimate emblem of success: "US presidents, movie stars, industry moguls, and even royalty abroad drove, or were driven, in Cadillacs" (EdVenture Partners, 2007). Yet between 1980 and 2000, foreign imports replaced the Cadillac as the symbol of success, and for nearly two decades the Cadillac lost its edge in product technology and design development. Although the emergence of a contemporary-culture Escalade model at the turn of the millennium gave the brand a boost, two very distinct images surfaced: the "edgy urban vehicle" versus "cars for old people." Between 2002 and 2006 there was a complete renaissance of Cadillac's product portfolio referred to as the "BreakThrough" campaign. GM launched the CTS model in 2008.

GM's automotive designers, stylists, and engineers, employed common DL as a cue to plan the controls, interactions, styles, displays, and overall presentation of both New Malibu and CTS models of the Chevrolet and Cadillac brands (Seder & Wetzel, 2007). DL was used as the "brand essence" to stimulate vocabulary, and then adjectives were re-funneled back as a reference to describe the experience to be engineered. The template consisted of five principal components: Brand Metaphor, Aesthetic Message, Descriptors, Philosophy and Impression, and Surface Form Details (see Figure 1). As can be seen in Figure 1, GM developed clearly-defined protocols, charting specific profiles and characteristic features of both brands. Nonetheless, the video presentations of the New Malibu and CTS models clearly demonstrate significantly-limited insight regarding employment of background music on brand image. Most specifically,

Brand	CADILLAC 	4 3 2 1 0 1 2 3 4	CHEVROLET 
I. Brand metaphor	Perfect Diamond	4 3 2 1 0 1 2 3 4	Man
II. Aesthetic message	1. Dramatic Presence And Performance 2. Derivative Of Nothing	4 3 2 1 0 1 2 3 4	1. Damn Good Looking 2. Doesn't Try, Just Is... Great
III. Descriptors	1. Monolithic Momentum 2. Psylent Eminence 3. Mystifying Exclusivity 4. Captivating Vibrancy 5. Focused Extravagance	4 3 2 1 0 1 2 3 4	1. Casual Cool 2. Universal Appeal 3. Passionate Flair 4. Robust Assurance
IV. Philosophy and impression	1. Dramatic 2. Impressive 3. Derivative Of Nothing 4. Unknown 5. Ground Breaking 6. Daring, Pioneer Of Style 7. Awe Inspiring, At Every Level 8. Mysterious 9. Intriguing 10. Impactful 11. Attitude 12. Extravagant 13. Opulent 14. Art And Science	4 3 2 1 0 1 2 3 4	1. One Strong Theme 2. Straight Forward 3. Confident 4. Bold 5. Strong 6. Tough 7. Robust 8. Passionate Flair
V. Surface, form, and details	1. Not To Be Tied Down, Always Breakthrough 2. Powerful 3. Taut 4. Directional 5. Diamond Like Fascination 6. Focused Extravagance 7. Calculated, Strategically Placed 8. Precise 9. Intricate 10. Technology Showpiece	4 3 2 1 0 1 2 3 4	1. Powerfully Simple 2. Solid 3. Pure 4. Passionate Flair 5. Clean, Well Executed 6. Linear

**Figure 1.** Judging forms (content of GM design language)

there is no fit between soundtrack and DL. For example, one New Malibu clip (online Appendix 2) portrays a woman being attended to by robotic arms throughout various development stages (infancy, childhood, teen years, and young adulthood); she is seen mastering locomotion (crawling, standing up, and walking) and mechanisms of transport (a bicycle, rollerblades, skateboard, and Chevrolet motorcar). The message “Safety should last a lifetime/Built to last a lifetime” is dubbed after the first six lyrics of Oren Lavi’s song “Her Morning Elegance.” The music is melodic, easy going, and somewhat fitting the storyline (i.e., about a female), yet devoid of any musical reference to the Chevrolet brand DL. In a second video presentation (online Appendix 3), several robotic arms are seen constructing an automobile. The message “I’ve been waiting for an American revolution like the New Malibu” is born out from the opening lyric of the song “Lazy Eye” by Silver Sun Pickups. Yet both song lyrics and soundtrack are of the hard rock genre, which not only dilutes the brand’s image, but is also inappropriately aligned with the DL.

Ironically, there is an even greater aloofness to how music affects brand image with video presentations of the Cadillac luxury line. Most recent clips for the CTS model involve a rapidly-changing segmented visual field, of high-speed racetrack action or chase scenes in deserted locations and nighttime city centers (online Appendix 4). All of these are accompanied by loud, aggressive, and frenzied tempo music styles, including: House (“Robot Repair” by Shifty), Techno (“Soul Function” by Danny Byrd), World (by VissionBeat), Fusion, and Heavy Metal (“Black Iris” by Grinder Manners). Even GM’s more corporeal clips, featuring Kate Walsh

(online Appendix 5) with sensually-lighted anatomic shots and synthesized voice, softly murmuring double-meaning messages, such as: “The question is: when you turn the car on, does it return the favor?” are preposterously accompanied by a hardened rock soundtrack.

It should be pointed out that, for the most part, market research studies employing music stimuli have not put forward a more diligent effort beyond those of their industrial counterparts. A host of studies have indeed explored several potent areas, such as: how does music affect attitudes and perceptions of brands?; the “fit” between soundtrack and advertisement message; purchase intentions after music exposure; and congruencies between music endorser and target product. Nonetheless, the majority have engaged individuals lacking an in-depth understanding of music psychology to choose music, which they themselves unwittingly deem suitable for the products they investigate. For example, Hung (2001) recruited an industry professional to choose a teaser advertisement from a corporate reel, and self-selected a music piece to emulate high-class up-market lifestyle (“L’Amoroso” from Allegro in E major by Vivaldi) versus cutting edge anti-establishment sentiment (“Supervixen” by Garbage). North and colleagues (2004) chose two music selections, while their non-musician participants judged “fit” within the context of the experiment; the research team claimed this procedure serves as post-hoc validation. Zander (2006) recruited an advertising team who designed five make-believe products, selected pieces that were commercially available, and then judged the fit between their hypothetical products and the music they selected. Roehm (2001) compared the effects of vocal versus instrumental renditions on product recall; she selected the Beatles song “Long and Winding Road,” claiming it was not being used in any current advertisement, and further justified that 26-year-old undergraduates would have no familiarity with the song from yesteryear (and hence there would be no strong emotional connections to the music). Finally, Baker (2001) studied the effects of several variables on brand attitudes for products such as engine oil and toothpaste; he attached an audio background to each condition, choosing elevator music as “unrelated to the ad,” and further linked “thematically related” engine noise for motor oil and classical music for toothpaste.

Thus far it seems that neither specialists from the applied field or research domain have come to grips with the functional application of music. It would seem, then, that an exploratory effort is warranted to develop a new strategy for composing and validating appropriate music, music that has been generated by means of the same design language and characteristic trait attributes featured in product development. With this in mind, the current study commissioned several industrial composers to provide *design language-generated music* and implemented four field studies. The investigation took onboard two GM automobile brands for empirical exploration. The main concern of the study was to assess consumers’ perceptions of such music as the portrayal of the overall brand blueprint. Moreover, considering that brand images may be perceived via culturally-derived knowledge and experiences, the study also evaluated the extent to which such music preferences might reflect culturally-specific images of a brand.

## Pre-study development

### *Music composition*

Previous research has shown that music styles can provide dissimilar information about the same product; that is, music genre can change the focus of perception without hampering positive reactions (Zander, 2006). Accordingly, in regard to cars, a rock song might underline

consumers' belief about power, speed, and competitiveness, whereas a classical piece might emphasize beliefs about interior trim, luxury, and elegance. Therefore, from the onset the study conceived of a music test-set reflecting multiple musical styles in an effort to appeal to a wide variety of musical tastes. The study commissioned a music studio (online Appendix 6) in which a collaborative team effort of several industrial composers contributed to any number of items, whereby all music was recorded and mixed on the same console. At a two-hour training session the team received digital copies of four documents: posters of the Chevrolet and Cadillac brand; DL for each brand; 10 pictures of a New Malibu and CTS four-door sedan (five exterior and five interior views for each); and psychographic data from the General Motors Vehicle Development Lab. The last document was adapted from an approach by Rentfrow and Gosling (2003) for structuring musical material on correlates of music preferences with temperament and personality traits (see Table 1, part B). This effort is in line with several studies demonstrating that consumers associate brand image to brand personality, and typically refer to sets of human-like characteristics and attributes (Aaker, 1997; Batra & Homer, 2004; Johar, Sengupta, & Aaker, 2005; Maison, Greenwald, & Bruin, 2004). As can be seen in Table 1, part A and part C, two very distinct user profiles and music expressions surfaced. One month following the training session, the music studio provided 20 music items of two types: 17 items were designed as expressions for a specific GM brand (Chevrolet = 9, Cadillac = 8), while three were neutral "No Brand" music. The exemplars were formatted as 16-bit two-channel audio files with an average exposure length of 19 seconds ( $SD = 2.40$ ).

**Table 1.** Structuring musical materials based on brand and consumer qualities

A. General Motors R&D survey data					
Brand qualities *	Cadillac	Chevrolet	Consumer qualities *	Cadillac	Chevrolet
Reflective & complex	4	1	Extraversion	4	2
Intense & rebellious	3	2	Agreeableness	1	3
Upbeat & conventional	1	4	Conscientiousness	1	3
Energetic & rhythmic	3	2	Emotional stability	2	3
Fast	4	3	Interpersonal dominance	4	2
Slow	1	1	Social dominance	4	2
Natural	1	3	Flirtatious	4	1
Technical	4	2	Self-esteem	4	2
Clever	4	2	Openness	4	3
Dreamy	1	2	Depression	1	1
Relaxed	1	2	Politically liberal	1	3
Enthusiastic	3	3	Politically conservative	4	2
Simple	1	3	Physically attractive	4	2
Pleasant	2	4	Wealthy	4	2
Energetic	4	2	Athletic	3	2
Loud	4	2	Intelligent	3	2
Cheerful/happy	3	4	Verbal	2	3
Uplifting	3	4	Analytical	3	2
Angry	1	1			
Depressing/sad	1	1			
Emotional	2	3			
Romantic	3	2			

(Continued)

**Table 1.** (Continued)

## B. Styles of music preferences variegated by temperament (Rentfrow &amp; Gosling, 2003)

Qualities	Music styles
Reflective & complex	Classical, jazz, blues, folk styles
Intense & complex	Rock, alternative, heavy metal styles; fast tempo; electric
Upbeat & conventional	Country, soundtracks, religious, pop styles; medium tempo; acoustic
Energetic & rhythmic	Rap/hip-hop, soul/funk, electronic/dance styles, medium tempo; electric
Complex	Clever, simple, rhythmic character
Positive affect	Dreamy, pleasant, cheerful/happy, uplifting, romantic, optimistic character
Negative affect	Depressing/sad emotional character
Energy level	Enthusiastic, loud, energetic character

## C. Brand profiles

Brand	Typical consumer profile	Musical expression of profile
Chevrolet	Moderately agreeable, conscientious and open; politically liberal; emotionally stable; verbal approach to life.	Elements of country, soundtracks, religious, and pop styles; acoustic natural colors; moderately fast tempo; simple rhythms and harmonies; modest energy and enthusiasm; highly positive mood with pleasant, cheerful, happy and uplifting affects; a slight touch of somber nostalgia.
Cadillac	Highly extraverted and open; socially dominant; intelligent; high self esteem; politically conservative; wealthy, physically attractive, flirtatious, moderately athletic; analytic approach to life.	Elements of classical, jazz, blues, folk rock, alternative, heavy metal, rap/hip-hop, soul/funk, and electronic/dance styles; acoustic-electric colors; fast tempo; technical, complex, clever rhythms and harmonies; energetic, loud, and enthusiastic; moderately cheerful, happy, up-lifting, and romantic positive affects

\*Scale: 1 = least, 4 = most

### Validation

Two triple-blind procedures were undertaken to validate the composers' intentions to express GM's DL through music: the researcher was blind to which composers contributed to music items, the composers were blind to the identity of the judges, and the judges were blind to both identity of composers and music item type. In the first validation procedure, two industrial composers rated all 20 items. Both were male, 57 years old, with roughly 33 years' ( $SD = 2.12$ ) professional experience; they had extensive arranging and orchestration competencies, production skills, higher academic degrees, and long standing tertiary-level teaching appointments. The expert judges participated in a two-hour training session; each received 20 judging forms, and 20 audio files (see Figure 1). This procedure indicated a 60% inter-judge agreement for correctly designated music to GM brands (see Table 2). When looking at only correct responses, the rated *power-of-fit* between the music items and the brand was 58% ( $SD = 20.18$ ). However, when dropping items beneath chance levels ( $< 50\%$ ), the recalculated *power-of-fit* for brand expression was 77% ( $SD = 9.34$ ), and the estimated *strength-of-expression* for DL was 71% ( $SD = 11.72$ ). The valid expressions for GM brands were: Chevrolet-designed items #2 and #12; Cadillac-designed items #3, #9, and #14.



**Table 2.** Validation procedures

Music # (brand*)	Expert musician judges (N = 2)				Non-musician judges (N = 12 pairs)			
	Percent correct M%	Power of fit M%	Strength of expression M%	Grand mean M% (SD)	Percent correct M%	Power of fit M%	Strength of expression M%	Grand mean M% (SD)
01 (CA)	50				42			
02 (CH)	<b>100</b>	<b>75</b>	<b>70</b>	<b>82 (16.07)</b>	<b>53</b>	<b>78</b>	<b>73</b>	<b>68 (13.22)</b>
03 (CA)	<b>100</b>	<b>63</b>	<b>65</b>	<b>76 (20.81)</b>	<b>83</b>	<b>85</b>	<b>80</b>	<b>83 (2.55)</b>
04 (CA)	50				83	70	57	70 (13.00)
05 (CH)	100	25	25	50 (43.30)	92	73	68	78 (12.66)
06 (CH)	100	63	50	71 (25.94)	75	56	49	60 (13.45)
07 (N)	0				7			
08 (CA)	50				<b>67</b>	<b>84</b>	<b>84</b>	<b>78 (9.81)</b>
09 (CA)	<b>100</b>	<b>88</b>	<b>83</b>	<b>90 (8.74)</b>	<b>58</b>	<b>89</b>	<b>71</b>	<b>73 (15.57)</b>
10 (CH)	50				17			
11 (CH)	50				<b>92</b>	<b>52</b>	<b>38</b>	<b>61 (28.02)</b>
12 (CH)	<b>100</b>	<b>75</b>	<b>56</b>	<b>77 (22.07)</b>	<b>83</b>	<b>79</b>	<b>59</b>	<b>74 (12.86)</b>
13 (N)	50				0			
14 (CA)	<b>100</b>	<b>82</b>	<b>83</b>	<b>88 (10.12)</b>	<b>100</b>	<b>83</b>	<b>75</b>	<b>86 (12.77)</b>
15 (CA)	100	50	48	66 (29.46)	75	64	47	62 (14.12)
16 (CH)	50				<b>92</b>	<b>75</b>	<b>63</b>	<b>76 (14.57)</b>
17 (CH)	0				33			
18 (CA)	0				17			
19 (CH)	50				50			
20 (N)	0				7			

\*CH = Chevrolet, CA = Cadillac, N = neutral; Bold = final test set.

In a second validation procedure, 30 undergraduate social science majors without formal music training rated all 20 music items. They were 83% female, and roughly 25 years old ( $SD = 3.09$ ). Each was given 20 judging forms and an automated PowerPoint slide-show; on each of the 20 slides there were two car pictures, one of each brand, in either exterior or interior views, of identical color, size, lateral position, and scenic background. The judges worked in pairs. The procedure indicted a 56% ( $SD = 32.93$ ) agreement for correctly designated music to GM brands. When looking at only correct responses above chance levels, the rated *power-of-fit* between the music items and the brand was 74% ( $SD = 11.65$ ). However, when dropping three judge pairs whose scores were at chance levels, the recalculated *power-of-fit* between music and brand increased to 80% ( $SD = 6.21$ ), and *strength-of-expression* for DL was 70% ( $SD = 9.18$ ). This procedure not only confirmed the five items previously selected by the expert musician judges, but indicated music items #4, #5, #6, #8, #11, #15, and #16 as valid expressions for GM brands.

**Final test-set**

In a post-hoc effort to assemble a test-set of no more than four items per brand, all “No Brand” items were dropped (as these were rarely judged to be neutral). In addition, item #5 was removed because of thematic similarities to item #2 (whereas the latter received higher scores). Then, after a grand mean total score was calculated for each remaining item; three items with the highest scores (one Cadillac and two Chevrolet) were taken onboard (see Table 2). The final

eight-item test-set (online Appendix 7) was: Chevrolet-designed items #2, #11, #12, and #16; Cadillac-designed items #3, #8, #9, and #14.

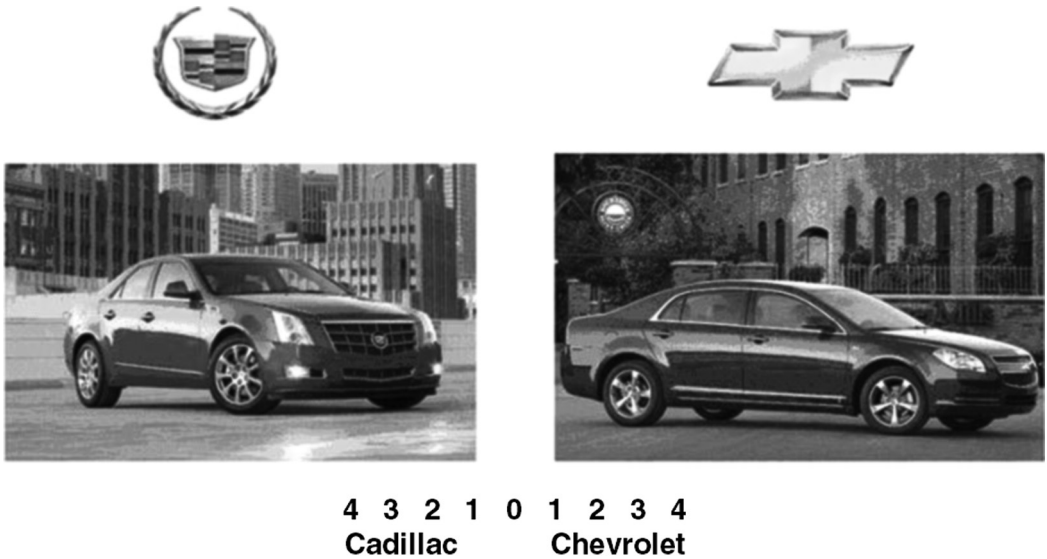
## Study I

### Method

**Participants.** Twenty-four undergraduates enrolled in music appreciation courses participated in the study; they volunteered and received extra credits. The students were 80% female, on average 25 years old ( $SD = 1.40$ , range = 22–28), with roughly six years driver's license ( $SD = 2.29$ , range = 1–11). Half of the sample drove automobiles from the Far East, eight drove European vehicles, and three drove American cars (Chevrolet, Chrysler, Ford); on average the cars were five years old ( $SD = 3.67$ , range = 1–14). By self-report, 50% of the participants had previously sat as a passenger in a Chevrolet while 17% sat in a Cadillac; 13% had previously driven a Chevrolet while only one drove a Cadillac; and 8% claimed that, funds permitting, they would consider buying a New Malibu while none would have considered purchasing a CTS.

**Equipment.** The study was implemented on a T-40 ThinkPad laptop computer (IBM) with a 14-inch monitor and onboard audio chip. The music was heard via studio quality RH-5MA Monitor Headphones (Yamaha). The experiment was designed and run with E-Prime 2 Professional software (Psychology Software Tools).

**Procedure.** Each participant was tested individually in a music psychology lab; the experiment was monitored from an adjacent room via a soundproof glass window. In Phase 1 (Learning), a GM poster for each brand (Chevrolet and Cadillac) were viewed as slides on the monitor; these were presented in balanced alternating subject order. Then, 10 slides of GM's DL were presented as text boxes underneath two digital color photographs of a New Malibu on screen right and a CTS on screen left. Both text and picture sets were presented in within-set randomized orders. In Phase 2 (Testing), two eight-item sets of identical music files were presented in a within-set randomized presentation order; they accompanied 16 digital color picture-pairs also presented in a within-set randomized order (see Figure 2). The music items were heard fixed-field through headphones at a comfortable participant-controlled sound level. Upon completion of each sound file, the participants were required to make a forced-choice decision as to whether the heard music best suited the Chevrolet brand (screen-right) or Cadillac brand (screen-left). This method follows the "Expectancy Value Model" developed by Fishbein and Ajzen (1975; Ajzen & Fishbein, 1980), whereby brand attitudes are viewed as a multiple function of the salient beliefs about brand attributes and the evaluative judgment regarding these beliefs. That is, overall brand attitudes depend on the "strength of association favorability" of attributes or beliefs. Within the context of the current study, when a particular GM brand was selected, the participants indicated assignment by rating the associated power-of-fit between the music and GM's DL on a nine-point bi-polar response scale (1 = Poor Fit [25%]; 4 = Best Fit [100%]). As can be seen in Figure 2, the mid-scale position "0" reflects "neither brand." The rating scale was fastened on the bottom row laptop keyboard. In the final Phase 3 (Recognition), a 20-item DL vocabulary memory test was randomly presented as text boxes in the center of the monitor screen; participants designated association to either GM brand by depressing the right or left "4" key. The full procedure lasted 60 minutes.



**Figure 2.** 2008 New Malibu and CTS 4-door sedan models of the Chevrolet and Cadillac brand automobiles (photos courtesy of General Motors Corporation)

*Analysis.* The dependent variables were percent correct (PCs) for assignment (i.e., correct hits of music item to brand), brand-expression-through-music (i.e., power-of-fit between music and learned DL), and percent correct for recognition of DL (i.e., memory test score). The analyses also looked at music items across exposures in a repeated measures test–retest evaluation of reliability through assessment of consistency.

## Results

The results indicated that design language-generated music was designated to the correct brand in 62% ( $SD = 18.12$ ) of the responses (see Table 3, part A). Total hits for Chevrolet were significantly lower than for Cadillac ( $M = 57\%$ ,  $SD = 18.24$  vs.  $M = 67\%$ ,  $SD = 23.01$ ;  $t = 2.27$ ,  $df = 23$ ,  $p < .05$ ). Looking at only correct responses across trials, the mean rated power for brand-expression-through-music was 67% ( $SD = 8.97$ ); the Chevrolet-designed items were significantly lower than Cadillac-designed items ( $M = 61\%$ ,  $SD = 7.63$  vs.  $M = 72\%$ ,  $SD = 6.59$ ;  $t = 2.82$ ,  $df = 7$ ,  $p < .05$ ). Further, analyses demonstrated no statistical differences between the two trial exposures. An item analysis of both trial sets indicated a grand mean 68% ( $SD = 22.39$ ) stability of responses for music items to the same car brands across trials; 39% were identical for same car brand/same power of expression (SC/SP), while 29% indicated same car brand/different power of expression. An analysis of correct items across both trial sets indicated an average 24% SC/SP response consistency (Chevrolet  $M = 23\%$ ,  $SD = 10.49$ ; Cadillac  $M = 24\%$ ,  $SD = 9.24$ ). These findings indicate that undergraduate potential customers only changed their minds as regards the designated automobile brand fit to the heard music in 33% of the trials (i.e., 2.5 out of 8 repeated items). Finally, the results indicated that the participants scored an average 89% ( $SD = 11.91$ ) on the recognition memory test; scores for Chevrolet and Cadillac brands ( $M = 87\%$ ,  $SD = 10.07$  vs.  $M = 88\%$ ,  $SD = 7.52$ ) were not statistically different.

**Table 3.** Music item analysis, Studies 1–3

Brand Item #	Percent correct hits M%	Brand expression through music M%	Response consistency SC/SP M%	Grand mean M%
A. Study 1				
Chevrolet				
02	52	60	25	46
11	34	54	8	
12	71	65	25	54
16	71	67	33	57
Cadillac				
03	61	71	21	51
08	61	75	21	52
09	75	65	36	59
14	69	80	17	56
B. Study 2				
Chevrolet				
02	66	61	46	58
11	32	64	8	
12	66	55	15	46
16	46	61	23	43
Cadillac				
03	39	62	8	
08	58	82	38	59
09	70	62	23	52
14	73	72	31	59
C. Study 3				
Chevrolet				
02	76	67	33	59
11	52	56	14	41
12	72	73	19	55
16	55	74	10	46
Cadillac				
03	52	75	14	47
08	72	83	43	66
09	50	67	0	
14	66	81	19	55

Overall, the study did not find a single music item as an ideal expression for either GM brand. Looking at mean scores across the dependent measures (i.e., PCs, power-of-fit, test–retest consistency), and considering only items with PCs above random levels (> 50%), the valid expressions for GM brands were: Chevrolet-designed items #16, #12, and #2; Cadillac-designed items #9, #14, #8, and #3.

## Discussion

The findings of Study 1 indicate that non-USA resident potential customers could successfully learn and remember brand attributes as outlined in an American manufacturer's design language. The findings show that participants could consistently decode brand characteristics and

product features as expressed within the abstract structure of music. Yet, no specific item surfaced as an ideal expression for either GM brand. In an effort to explain this null finding, the participants' self-reported consumer experience was re-examined: although half of the participants had previously sat in a Chevrolet, 83% had never been inside a Cadillac. These frequencies clearly indicate significantly limited brand exposure and familiarity, and therefore one must question whether such discrepancies may have influenced responses. Therefore, Study 2 was implemented among a more product-familiar sample.

## Study 2

### Method

**Participants.** Thirteen permanently employed GM sales clerks at the central GM dealership in Tel Aviv participated. Although blind to the actual goals of the study, they perceived that "music and GM cars" was under investigation. The participants were 62% female, on average 38 years old ( $SD = 11.5$ , range = 22–61), and had held a driver's license for roughly 20 years ( $SD = 10.17$ , range 4–40). Two participants drove automobiles from the Far East, five drove European vehicles, and six drove American cars (all Chevrolet); on average the cars were 7.5 years old ( $SD = 3.33$ , range = 2–12). By self-report, all had previously sat as a passenger in a New Malibu; 92% had sat in a CTS; 92% had previously driven the Chevrolet; while 77% drove the Cadillac; and 54% claimed that, funds permitting, they would consider buying a New Malibu but none would have considered a CTS.

**Equipment, procedure, and analysis.** The current study was identical to Study 1 except for location; the investigation was implemented in an office on-site in a real-world auto-industry showroom. The participants sat at a table alongside the experimenter, in front of a laptop computer wearing headphones.

### Results

The results indicated that the design language-generated music was designated to the correct brand in 56% ( $SD = 16.14$ ) of the responses (see Table 3, part B). Total hits for Chevrolet were just slightly lower than for Cadillac ( $M = 54\%$ ,  $SD = 23.04$  vs.  $M = 59\%$ ,  $SD = 15.63$ ). Looking at only correct responses across trials, the mean rated power for brand-expression-through-music was 66% ( $SD = 8.08$ ); the Chevrolet-designed items were significantly lower than Cadillac-designed items ( $M = 60\%$ ,  $SD = 5.06$  vs.  $M = 72\%$ ,  $SD = 6.11$ ;  $t = 6.49$ ,  $df = 7$ ,  $p < .001$ ). Further, analyses demonstrated that there were no statistical differences between the two trial exposures. An item analysis of both trial sets indicated a grand mean 60% ( $SD = 19.2$ ) stability of responses for music items to the same car brands across trials; 37% were identical for same car brand/same power of expression (SC/SP), while 23% indicated same car brand/different power of expression. An analysis of the correct hits across both trial sets indicated an average 24% SC/SP response consistency (Chevrolet  $M = 23\%$ ,  $SD = 16.62$ ; Cadillac  $M = 25\%$ ,  $SD = 13.14$ ). These findings indicate that GM sales clerks only changed their minds as regards the designated automobile brand fit to the heard music in 40% of the trials (i.e., three out of eight repeated items). Finally, the results indicated that the GM sales clerks scored an average 74% ( $SD = 10.58$ ) on the recognition memory test; scores for Chevrolet and Cadillac brands ( $M = 73\%$ ,  $SD = 11.09$  vs.  $M = 75\%$ ,  $SD = 15.06$ ) were not statistically different. Overall, the

study found no single music item as an ideal expression for either GM Brand. Looking at mean scores across the dependent measures, and considering only correct items above random levels, the valid expressions for GM brands were: Chevrolet-designed items #2, #12, and #16; Cadillac-designed items #14, #8, and #9.

## Discussion

When comparing the scores of GM sales clerks (Study 2) to those of potential customers (Study 1), very little difference surfaces: PCs were roughly the same (56% vs. 62%), and power-of-fit was almost identical (66% vs. 67%). Furthermore, the music items designated as suitable for either GM brands were similar – albeit each sample indicated an opposite order of preference. An interesting finding that did surface concerns memory scores: although the sales clerks were more acquainted with GM automobiles than potential customers, as well as more experienced (both as a passenger [96% vs. 34%] and a driver [85% vs. 9%]), their memory scores for GM's DL were notably lower (74% vs. 89%). The sales clerks tended to explain this discrepancy as follows: a personalized image of each brand, while not identical to official specifications, is that pitched to each and every customer at every opportunity, which over time seems to mask manufacturers' declared profile. If this was the case, then, the results of Study 2 may be tainted. To rule out such a possibility, Study 3 honed in on participants who, while familiar with GM brands and products, would not have developed an alternative brand image.

## Study 3

### Method

**Participants.** Twenty-one walk-in buyers entering the central GM automobile showroom in Tel Aviv were referred by sales clerks to the study; each received a small gift of \$20 value. The participants were 67% male, on average 44 years old ( $SD = 11.8$ , range = 23–64), and had held a driver's license for roughly 23 years ( $SD = 11.43$ , range = 5–45). Eight drove automobiles from the Far East, five drove European vehicles, and eight drove American cars (Chevrolet, Buick); on average the cars were six years old ( $SD = 4.61$ , range = 1–15). By self-report, 81% had previously sat as a passenger in a New Malibu; while 29% sat in a CTS; 86% had previously driven the Chevrolet; while 29% drove the Cadillac; and 81% claimed that funds permitting they would consider buying a New Malibu; while 19% would consider a CTS.

**Equipment, procedure, and analysis.** The current study was identical to Study 2, but with two exceptions. First, a debriefing sequence was added whereby the participants self-estimated their test–retest consistency score and recognition memory test score. Second, the empirical testing took place in a car showroom hall itself within full view of the public.

### Results

The results indicated that design language-generated music was designated to the correct brand in 62% ( $SD = 18.84$ ) of the responses (see Table 3, part C). Total hits for Chevrolet were just slightly higher than for Cadillac ( $M = 64%$ ,  $SD = 19.33$  vs.  $M = 60%$ ,  $SD = 22.58$ ). Looking at only correct responses across trials, the mean rated power for brand-expression-through-music

was 72% ( $SD = 9.18$ ); while Chevrolet-designed items were lower than Cadillac-designed items ( $M = 67\%$ ,  $SD = 7.67$  vs.  $M = 76\%$ ,  $SD = 8.54$ ), these differences only approached statistical significance ( $p = .09$ ). Further, analyses demonstrated no statistical differences between the two trial exposures. An item analysis of both trial sets indicated a grand mean 64% ( $SD = 17.19$ ) stability of responses for music items to the same car brands across trials; 29% were identical for same car brand/same power of expression (SC/SP), while 35% indicated same car brand/different power of expression. An analysis of correct items across both trials indicated an average 19% SC/SP response consistency (Chevrolet  $M = 19\%$ ,  $SD = 10.29$ ; Cadillac  $M = 19\%$ ,  $SD = 17.82$ ). These findings indicate that walk-in buyers only changed their mind as regards the designated automobile brand fit to the heard music in 36% of the trials (i.e., three out of eight repeated items). It is interesting to note that self-estimation of test-retest consistency was 60% ( $SD = 16.53$ , range = 30–80), which is almost identical to the actual 64% score. Finally, the findings show that the walk-in buyers almost estimated their ability to learn GM's DL compared to their actual scores on the recognition memory test ( $M = 69\%$ ,  $SD = 10.41$  vs.  $M = 73\%$ ,  $SD = 10.75$ ); the memory scores for Chevrolet were significantly lower than for Cadillac ( $M = 70\%$ ,  $SD = 12.80$  vs.  $M = 77\%$ ,  $SD = 11.89$ ;  $t = 2.88$ ,  $df = 20$ ,  $p < .01$ ). Overall, the study found no single music item as an ideal expression for either GM brand. Looking at mean scores across the dependent measures, and considering only correct items above random levels, the valid expressions for GM brands were: Chevrolet-designed items #2, #12, #16, and #11; Cadillac-designed items #8, #14, and #3.

## Discussion

Study 3 employed a sample of everyday people who clearly had an above average exposure and knowledge of GM brands. Unlike the participants in Studies 1–2, these people were not simulating a hypothetical situation, but rather they were in the real-world process of purchasing a car. Although demonstrating similar levels of correct responses and memory scores, the current sample's power ratings for brand-expression-through-music were significantly higher in comparison to participants from Studies 1–2. This difference is in line with Laroche and colleagues' (1996) finding that experienced consumers have prior knowledge about various alternatives and know which attributes are the most useful in discriminating between brands.

## Interim summary

To summarize thus far, Table 3 illustrates an overall 60% correct assignment of music to brand, with 68% power brand-expression-through-music. This finding is in itself evidence for the *efficacy* of composing design language-generated music. Taken together, the findings rule-out previously mentioned cautions regarding possible vulnerabilities of data resulting from product unfamiliarity (Study 1) or image bias (Study 2). Hence, one can conclude that consumers without formal music training can indeed decode and recognize distinct brand characteristics and product features as articulated in musical expressions. Yet the investigation was not able to uncover a "best-fit" music piece for either GM brand. A presumption about such an exemplar leads one to suspect cultural biases. That is, perhaps such a null finding is resultant from culturally specific music expressions? To explore this issue, a final study was implemented among consumers from a different geopolitical milieu.

## Study 4

### Method

**Participants.** An outsourced research agency in Detroit (USA) pooled 83 members residing within a 30-mile radius from their nation-wide “Consumer Village” database. The village has been employed in previous large-scale studies for companies as varied as: Best Buy, Blue Bunny, Boarders, Coca Cola, Domino’s Pizza, EMBARQ, Hallmark Cards, Hershey, General Motors, Johnson & Johnson, Lowes, Mars, Masterfoods, Nestle Purina, and US Bank. Because members are profiled, investigator-customized screeners can target qualifying consumers more accurately. Of the 83 members contacted, 35 (42%) telephone interviews were completed; only one respondent defaulted on a screener variable. The five inclusion-criterion screener variables were: age (> 25 years); driver’s license (> 7 years); normal hearing; lack of conflict-of-interests (i.e., no involvement with marketing or advertising agencies, PR firms, or media); and a positive attitude toward GM (i.e., would consider a future purchase). Initially, these 34 members were scheduled for the study; two individuals never showed up. Of the remaining 32 participants, 63% were male, 60% Caucasian, on average 43 years old ( $SD = 9.03$ , range = 25–57), with roughly 27 years driver’s license ( $SD = 9.10$ , range = 7–41). Six of the participants drove automobiles from either the Far East or Europe, while 26 drove American cars (57% GM brands: Buick, Chevrolet, GM Truck, Pontiac; 43% other brands: Chrysler, Dodge, Ford, Jeep, Oldsmobile); on average the cars were five years old ( $SD = 3.44$ , range = 1–13). Most of the participants (88%) were employed for an average 14 years ( $SD = 6.63$ , range = 5–31); others reported pre-occupations such as studentship and homemaking. By self-report, 53% of the participants had previously sat as a passenger in a New Malibu while 44% sat in a CTS; 31% had previously driven the Chevrolet while 31% drove the Cadillac; and 78% claimed they would consider buying a New Malibu while 66% indicated that they would consider a CTS. Each participant received a \$50 honorarium.

Two versions of the study ran in parallel; the purpose of the additional run was to isolate the learning phase in an effort to examine the impact this segment may have had on decision-making during the empirical procedure (i.e., priming processes). Thus, an abridged version without Phase 1 (learning) or Phase 3 (recognition) was implemented. Every fourth participant arriving for their scheduled appointment ( $n = 8$ , 25%) were re-routed to the abridged procedure. It should be pointed out that an office clerk who was blind to this allocation procedure handled all aspects of scheduling. While there were no descriptive differences whatsoever between the two samples, significantly more participants in the abridged version reported to have previously driven the Cadillac CTS (63% vs. 21%,  $F_{(1,30)} = 5.36$ ,  $MSe = 1.95$ ,  $p < .05$ ).

**Equipment, procedure, and analysis.** Study 4/Rg (i.e., regular version) was identical to Study 3, but with the exception that all materials and procedures were presented in English. Study 4/Ab (i.e., abridged version) was similar, but only implemented Phase 2 (testing) as a stand-alone empirical procedure (i.e., without initial learning or memory tests segments).

### Results

**Regular version.** The results demonstrate that the design language-generated music was designated to the correct brand in 61% ( $SD = 18.75$ ) of the responses (see Table 4, part A). Total hits for Chevrolet were just slightly lower than for Cadillac ( $M = 57\%$ ,  $SD = 22.30$  vs.  $M = 66\%$ ,  $SD = 21$ ). Looking at only correct responses across trials, the mean rated power for



brand-expression-through-music was 72% ( $SD = 5.17$ ); the Chevrolet-designed items were just slightly lower than Cadillac-designed items ( $M = 67\%$ ,  $SD = 7.90$  vs.  $M = 78\%$ ,  $SD = 2.44$ ). Further, analyses demonstrated no statistical differences between the two trial exposures. An item analysis of both trial sets indicated a grand mean 75% ( $SD = 19.32$ ) stability of responses for music items to the same car brands across trials; 33% were identical for same car brand/same power of expression (SC/SP), while 42% indicated same car brand/different power of expression. An analysis of correct items across both trials indicated an average 33% SC/SP response consistency (Chevrolet  $M = 17\%$ ,  $SD = 16.31$ ; Cadillac  $M = 26\%$ ,  $SD = 9.85$ ). These findings indicate that targeted consumers only changed their minds as regards the designated automobile brand-fit to the heard music in 25% of the trials (i.e., two out of eight repeated items). It is interesting to note that self-estimation of test-retest consistency was 78% ( $SD = 8.72$ , range = 60–95), which is almost identical to the actual 75% score. Finally, the findings indicate that the target consumers underrated their ability learn GM's DL compared to their actual scores on the recognition memory test ( $M = 79\%$ ,  $SD = 13.75$  vs.  $M = 87\%$ ,  $SD = 13.20$ ); memory scores for Chevrolet were significantly lower than for Cadillac ( $M = 83\%$ ,  $SD = 18.54$  vs.  $M = 92\%$ ,  $SD = 10.90$ ;  $t = 2.85$ ,  $df = 23$ ,  $p < .01$ ). Overall, the study found no single music item as an ideal expression for Chevrolet or Cadillac. Looking at mean scores across the dependent measures, and considering only correct items above random levels, the valid brand expressions were: Chevrolet-designed items #2, and #12; Cadillac-designed items #9, #14, and #3.

*Abridged version.* The results indicated that the design language-generated music was designated to the correct brand in 62% ( $SD = 22.80$ ) of the responses (see Table 4, part B). Total hits for Chevrolet were just slightly lower than for Cadillac ( $M = 56\%$ ,  $SD = 28.4$  vs.  $M = 68\%$ ,  $SD = 24.35$ ). Looking at only correct responses across trials, the mean rated power for brand-expression-through-music was 71% ( $SD = 10.81$ ); the Chevrolet-designed items were just slightly lower than Cadillac-designed items ( $M = 69\%$ ,  $SD = 7.85$  vs.  $M = 74\%$ ,  $SD = 13.77$ ). Further, analyses demonstrated no statistical differences between the two trial exposures. An item analysis of both trial sets indicated a grand mean 81% ( $SD = 14.94$ ) stability of responses for music items to the same car brands across trials; 36% were identical for same car brand/same power of expression (SC/SP), while 45% indicated same car brand/different power of expression. An analysis of correct items across trials indicated a mean 36% SC/SP response consistency (Chevrolet  $M = 22\%$ ,  $SD = 15.76$ ; Cadillac  $M = 15\%$ ,  $SD = 18.75$ ). These findings indicate that targeted consumers only changed their mind as regards the designated automobile brand-fit to the heard music in 19% of the trials (i.e., 1.5 out of 8 repeated measures). Overall, the study found no single music item as an ideal expression for either Chevrolet or Cadillac brand. Looking at mean scores across the dependent measures, and considering only correct items above random levels, the valid brand expressions were: Chevrolet-designed items #12, and #2; Cadillac-designed items #3, #9, and #14.

## Discussion

Study 4 made every attempt to recruit a sample of ordinary Americans, mixed by gender and race, without bias towards the GM automotive brand (i.e., evenly split ownership of GM versus other brand cars and trucks). The findings show that the American participants in Study 4/Rg were no different than the non-USA resident participants regarding PCs (61% vs. 60%) and power-of-fit (72% vs. 68%), yet they demonstrated higher memory scores (87% vs. 79%). These data validate previous findings outlined by Aaker (1997), revealing brand personality as a

**Table 4.** Music item analysis, Study 4

Brand/Item	Percent correct hits M%	Brand expression through music M%	Response consistency SC/SP M%	Grand mean M%
A. Study 4/Rg				
Chevrolet				
2	63	66	8	46
11	38	73	0	
12	81	74	38	64
16	46	55	21	
Cadillac				
3	73	80	25	59
8	34	80	13	
9	84	75	33	64
14	73	77	33	61
B. Study 4/Ab				
Chevrolet				
2	76	68	25	56
11	44	63	0	
12	63	75	38	59
16	44	69	25	
Cadillac				
3	94	79	38	70
8	25	75	0	
9	93	84	25	67
14	57	60	0	39

common denominator used in marketing a product across cultures. Nonetheless, one important difference that clearly surfaced between the samples concerns their music choices. Like the non-USA residents of Studies 1–3, the American participants designated Chevrolet-designed items #2 and #12 as most fitting; however, quite differently, they designated Cadillac-designed items #9 and #3 as the most valid expressions of the brand compared to non-USA residents who preferred item #8. Aaker clearly points out that “brand personality might operate in different ways or influence consumer preferences for different reasons” (1997, p. 353). Accounting for the fact that the American sample demonstrated an 87% recognition memory test score, one can only interpret such variances as intentional, and hence point to culturally-derived perceptions of the Cadillac brand. This interpretation is in line with North and colleagues (2004) who found that music *can* prime certain aspects of the participants’ knowledge of the world, and therefore their responses are directly related to cultural and contextual meanings. However, given that the regular procedure employed in Studies 1–4/Rg included a preliminary learning phase (a segment which might have facilitated priming processes cuing perceptions), presumptions about distinctive culturally derived perceptions would be rather difficult to assess. Therefore, a parallel-abridged study was run without the learning sequence.

Foremost, the results of Study 4/Ab replicate those of Study 4/Rg. That is, there were no significant differences for PCs (Total: 61% vs. 62%, Chevrolet: 56% vs. 57%, Cadillac: 67% vs. 66%) or power of fit ratings (total: 71% vs. 72%, Chevrolet: 69% vs. 62%, Cadillac: 74% vs. 78%). Most specifically, the participants in both versions chose similar music expressions: Chevrolet-designed items #12 and #2; Cadillac-designed items #3, #9, and #14. This later finding, then, is a clear indication that culturally-derived musical images and expressions of GM brands do exist.

### Cumulative analysis

To assess the full investigation package, a post-hoc cumulative analysis was implemented. In general, the results demonstrate that design language-generated music was designated to the correct brand in 61% ( $SD = 2.61$ ) of the responses, with an average 70% ( $SD = 8.44$ ) test–retest consistency to the same car between trials, and an overall 70% ( $SD = 2.88$ ) power for brand-expression-through-music (see Table 5). By tallying the responses of the music items across all four studies, a clearer picture surfaced regarding music expressions for both GM brands. Foremost, there seems to be a wide-range consensus that items #12 and #2 are both just as suitable music expressions of the Chevrolet brand New Malibu model. But, a totally different picture surfaced for the Cadillac brand CTS model. That is, while item #8 was perceived as most fitting for non-USA residents, and items #9 or #3 were preferred by American residents, item #14 seems to represent a “culture-free” music expression of the Cadillac brand (accepted by all participants across all studies). Karjalainen (2007) claims that potential distortions in decoding can be a consequence of weak experiences with the product, inconsistent supporting information, or cultural differences. Therefore, to clarify the issue, frequencies of reported experience with Cadillac automobiles were re-examined; the findings show significant differences of exposure within the non-USA resident sample (Chevrolet vs. Cadillac,  $t = 3.47$ ,  $df = 3$ ,  $p < .05$ ), as well as between the two samples (Cadillac for Americans vs. non-USA residents,  $t = 2.55$ ,  $df = 6$ ,  $p < .05$ ). Hence there was a bias of exposure. Nonetheless, one might also conclude that the above findings reflect a situation whereby perceptual encoding of the stimuli expressing each brand’s image accounts for knowledge of cultural texts, and therefore to some extent reveals not only contact with specific brands but also with alternative products, and with local advertisements and their associated soundtracks. Aaker (1997) clearly states that while “human personality dimensions remain robust across cultures, the same might not be so for brand personality” (p. 355). In the end, when looking at the items chosen by each sample, it would appear that American participants perceived the CTS to emulate “mysterious,” “mystifying,” and “unknown” qualities (item #9) while non-USA residents perceived the CTS to emulate “dramatic,” and “action-oriented” qualities (item #8). Ironically, as can be seen in Figure 1, both can be found in the brand’s DL.

**Table 5.** Cumulative analyses, Studies 1–4

	Israel			USA		Cumulative data		
	Study 1 M%	Study 2 M%	Study 3 M%	Study 4/Rg M%	Study 4/Ab M%	Israel M% (SD)	USA M% (SD)	Total M% (SD)
Percent correct	62	56	62	61	62	60 (3.46)	61 (0.71)	61 (2.61)
power rating	67	66	72	72	71	68 (3.21)	72 (0.71)	70 (2.88)
Brand/item								
Chevrolet								
2	46	58	59	46	56	54 (7.23)	51 (7.07)	<b>53</b> (2.36)
11			41			14		
12	54	46	55	64	59	52 (4.93)	62 (3.53)	<b>57</b> (6.95)
16	57	43	46			49 (7.37)		
Cadillac								
3	51		47	59	70	33 (2.83)	65 (7.78)	49 (22.50)
8	52	59	66			59 (7.00)		
9	59	52		64	67	37 (4.95)	66 (2.12)	51 (20.15)
14	56	59	55	61	39	57 (2.08)	50 (15.56)	<b>54</b> (4.71))

Bold = final items.

## General discussion

The current investigation attempted to substantiate how music can be composed to express brand characteristics and product features as outlined in a developed design language. More specifically, the current findings demonstrate that:

- Design language can be decoded by industrial composers who have expertise in formulating emotions, and can interpret language-based descriptive adjectives and metaphors into a non-verbal non-visual music modality.
- Design language-generated music can be validated and judged for reliability of intent by independent music experts as well as by everyday listeners.
- Consumers without formal music training are capable of decoding a composer's intentions to convey brand characteristics and product features, and can consistently successfully designate such music as expressions to the appropriate brand over repeated trials.

In addition, the current research also made an effort to evaluate the concept of perceptual variances among consumers of different cultures, specifically regarding brands that are aimed at the international market. The research considers the premise that, if music can express a brand, then choices and preferences of music items should somewhat depend on geopolitical positioning of the brand – whose distinguishing image might fluctuate from country to country. The current findings reveal that, concerning the Chevrolet brand image, there was more or less consistent agreement among consumers regardless of residence or cultural milieu. However, regarding the Cadillac brand image there were clear culturally-derived variances. Several researchers (Johar et al., 2005; Monga & John, 2007; Ng & Houston, 2006) have identified factors that can influence the weight that some consumers place on “fit” once perceptions of a brand have been formulated; among these are situational differences in mood, trait-relevant cognitive processes, and cultural differences in styles of thinking. Further, North and colleagues (2004) claim that “musical fit might influence not only knowledge regarding the brand in question, but also participants’ emotional responses to it” (p. 1686). Several years ago Karjalainen (2001) called for future investigations on the use of a metaphor to work out core brand/product identity; the current investigation, then, illustrates how consumers’ choice and preference of *music* can be seen as a metaphor for associated insights towards a brand. Moreover, music seems to express brand characteristics and product features perceived by one culture that are not necessarily evident in another. Finally, the current investigation supports the notion that a culture-free image of a brand can come to the surface despite culturally-derived images. That is, all participants in the study perceived the Chevrolet New Malibu as having a young, free, sensual, passionate, and energetic “Baywatch” persona (item #12), whereas the Cadillac CTS was perceived with a more dramatic, action-oriented, stately, bold, and heroic “Bond” disposition (item #14). Zander (2006) astutely highlights the fact that “music *can* convey information about the brand that words cannot – and not least in 30 seconds” (p. 478).

The findings point out a general principle relating to how music can successfully hone in and clarify perceptions of brand images. Undoubtedly, the most common and potent employment use of music as a background soundtrack is in advertisement. In this connection, Simmons (2005b) observes that music can be an incredibly powerful medium to convey the emotional attributes of products, while simultaneously creating layered textural experiences in consumers’ lives. A recent GM music video clip has eloquently verified these sentiments: after a catastrophic fall in sales across the whole market in 2008, GM was left on the edge of bankruptcy,

and for the first time the Detroit manufacturer was surpassed by rival Toyota as the “American Global #1 Automobile” (AdBrands, 2009). GM accepted defeat in June 2009, filing for Chapter 11 protection, but then, only 40 days later, a new GM emerged from bankruptcy with the US and Canadian governments as its controlling shareholders. With the bulk of its debt left behind, and having trimmed down several national brands and foreign subsidiaries, GM could look ahead. But the manufacturer needed to maintain emotional relevance with the American people – who were also struggling for financial survival. Their strategy was to re-position the “American Value” profile of yesteryear into a more reflective “American Adventure” image.

With this in mind, GM released an advertisement that touched the hearts and souls of the American people (online Appendix 8). The video features Brandi Carlile’s “The Story”: “All of these lines across my face/Tell you the story of who I am/So many stories of where I’ve been/ And how I got to where I am/Oh yea, and it’s true that I was made for you.” Beginning as an innocent folk ballad accompanied by arpeggio-strummed guitar, the video builds up to a full rock ballad with the trimmings of guitar distortion, power chords, heavy 2/4 backbeat drum kicks, and harsh aggressive vocals. But then, when returning to a more somber and nostalgic atmosphere, a feeling that *we have survived the storm* ensues. The message “After all is said and done, GM was made for you” comes across in an absolutely brilliant fashion.

Kreuzbauer and Malter (2005) astutely point out that understanding experiential products such as automobiles is not merely a matter of evaluating a list of technical specifications, but rather that designers and engineers need to develop a more complex appreciation of how consumers further integrate sensory input and brand image. Although the perception and evaluation of product features will differ for every driver, Karjalainen (2007) claims the overriding design language will provide a consistency allowing consumers to become attached to specific functional and symbolic qualities of the vehicle. Accordingly, if inconsistencies between value-based design cues and consumer perceptions arise, these may be seen from two major distortions: failure of the designer to encode proper meanings of the brand (i.e., music composed inappropriately), or failure of the user to correctly decode meanings (i.e., application of incongruent music). Sound and music may be there for the taking, but a more serious effort to apply music as reliable extensions of brand characteristics and product features must emerge. One only need look at two very different versions of Michael Bay’s highly-acclaimed GM commercial video to understand the crucial effects that music can have on brand image (online Appendix 9): the official GM version employing John Kay and Rushton Moreve’s 1968 hit “Magic Carpet Ride” (Steppenwolf) falls short to the popular “bootleg” (but ironically brand-fitting) soundtrack by Hans Zimmer. While certainly it may be presumptuous to view the current study beyond “proof of concept,” and therefore by its nature herein lies the limitations of the findings, there is no doubt that design language-generated music is a more adept stratagem to tap into the essence of a brand. The future will no doubt offer an indication if commercial applications employing such exemplars will materialize as ecologically enhanced music expressions of the brand.

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## Note

1. Multimedia appendices can be found online at: <http://cmsprod.bgu.ac.il/humsos/departments/art/staff/Warren.htm>. An interactive link to view and listen to the examples of this paper appears underneath the article title.

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## Biography

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