

Radio's Clutter Conundrum:
Better Memory for Ads, Worse Attitudes Toward Stations

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Abstract

An experiment examined effects of increasing the number of advertising pods in radio. With the number of commercials kept constant, participants heard ads in one or three pods. Those exposed to the cluttered condition (i.e., three pods) report the ads as more excessive and the commercial breaks more disruptive than those exposed to one pod. Clutter participants self-reported greater irritation than those hearing only one pod. This was supported by greater skin conductance responses in the clutter condition. However, other physiological measures suggested more cognitive resources were applied during the cluttered condition. Free recall and recognition were greater in the cluttered condition, although the latter not significantly so. Results are discussed in terms of the tradeoffs management must make in deciding how to schedule advertising breaks in today's competitive radio marketplace.

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The basic premise of commercial-supported radio contains a difficult conundrum. Radio stations attempt to maximize audiences with various types of program content. At the same time, commercial-supported radio stations must insert various types of advertising content to maintain the revenues that keep the station operating. In theory, there is a balance between the programming that generates an audience and the advertising that generates revenue. In reality, program directors and sales managers use various strategies to maximize the number of listeners and advertisers. On a daily basis, radio programmers worry that advertising will break up audience flow by causing listeners to switch to another station. Therefore, they use various strategies to maintain audience interest by placing advertising content in specific blocks throughout a broadcast hour. Often programmers will utilize a strategy of placing their entire ad inventory in a single commercial pod each hour, thereby freeing up the remainder of the time for a greater number of songs in a row. The argument is that providing so much uninterrupted, or uncluttered, programming in a row is a trend listeners desire and likely to increase both Time Spent Listening (T.S.L) and the cumulative audience (cume) (Radio Business Report, 2003). On the other hand, advertising managers may argue that pods containing so many sequential advertisements will adversely affect ad, client, and brand recall—with the net result being a decrease in satisfied, and therefore repeat, clients. Furthermore, if a station is known for extremely long pods there will be an increased likelihood that listeners will tune away during the first ad in the pod (Zhao, 1997).

This debate between programming and sales departments continues. In fact, Newton (2002) says that “[m]ore arguments arise over commercial load than any other aspect of programming a music format [in radio]” (p. 380). With Arbitron’s introduction of the Portable People Meter (PPM), a technology designed to provide more accurate measurement of the listening audience, there has been even more concern that radio audiences are smaller than expected and perhaps likely to continue diminishing (Tucker, Cobo, & Dunham, 2007). New types of competition from satellite radio and portable media devices have created an environment where the radio industry must identify programming strategies for maintaining current listeners and seeking new audiences. Unfortunately, very little rigorous research has been conducted on the effects of advertising clutter on music radio listeners. Specifically, no work has addressed the questions:

How does the frequency of advertising pods affect listeners’ perceptions of the radio station they listen to?

How does pod frequency affect cognitive processing of information in the advertisements?

This study presents results from a controlled experiment designed to address these general questions.

Literature Review

Many of the studies in the area of advertising clutter have focused on the actual number of advertising units (Ha & Litman 1997; Johnson & Cobb-Walgren, 1994; Mord & Gilson, 1985; Webb & Ray, 1979) or the overall amount of time devoted to non-programming material (Webb & Ray, 1979). This aspect of advertising clutter has also

received attention in the radio trade press. According to an analysis of 266 radio markets there was an increase of 6% in paid commercials per hour between 1998 and 1999 (Rathbun, 2000). Farhi (2002) reported that in some markets stations were airing between 16 and 20 minutes of commercials per hour. These increases in the overall number of ads have led to concerns about their effects on listeners. Findings in the research literature would seem to justify such apprehension. The majority of published research studies that define clutter as an increase in the overall number of commercials have focused on television as the media vehicle (Brown & Rothschild, 1993; Johnson & Cobb-Walgren, 1994; Keller, 1991; Zhao, 1997). Still, if radio managers were to look to them for guidance they would see that results are primarily negative, with more advertising clutter resulting in negative effects on brand recall (Zhao, 1997) and advertisement liking (Mord & Gilson, 1985; Zhao, 1997), plus a greater awareness of the presence of commercials by individual audience members (Mord & Gilson, 1985). Furthermore, survey results show negative associations between perceived levels of clutter and attitudes toward advertising on a variety of media vehicles (Elliot & Speck, 1998). It was awareness of negative perceptions of advertising clutter that led radio giant Clear Channel Communications to institute its *Less is More* campaign on their collection of more than 1,200 radio stations. The management tactic was to reduce the number of commercial units per hour while also shortening the duration of each unit (Burling, 2006).

Of course, perceptions of high levels of advertising clutter can occur because of conditions other than playing a large number of overall units. For example, Ha (1996) identified two other dimensions of the clutter construct. The first was *clutter as competitiveness*, which is defined as “the degree of similarity of advertised products and

the proximity between the advertisements of competitive brands in the same product category in a media vehicle” (p. 77). The second is *clutter as intrusiveness*, or the “degree to which advertisements in a media vehicle interrupt the flow of an editorial unit,” (Ha, 1996, p. 77). In a field experiment conducted with magazine ads, Ha found that participants who reported advertising as being more intrusive also tended to have lower attitudes toward magazine advertising in general, and lower attitudes for the ad (Aad) measures toward a target ad for Spiegel catalog clothing in the stimulus magazine.

This intrusiveness dimension of clutter is similar to what Speck and Elliot (1997) refer to as *disruption*, a factor that they found to be significantly predictive of advertising avoidance in any broadcast medium due to the lack of control over commercial break duration or timing of occurrence. In a subsequent analysis of data taken from over 900 respondents to the National Family Opinion’s consumer panel, Elliot and Speck (1998) report that radio was perceived to be less cluttered than television but more cluttered than print vehicles such as newspaper and Yellow Pages. What the Elliot and Speck research does not address, however, is how certain perceptions of clutter can be influenced *within* a specific medium. Using their work as a springboard, therefore, an experiment was conducted to investigate the impact of one of the variables that may contribute to perceptions of a radio station being perceived as more or less cluttered.

Focus of the Current Study

A premise of the current study was that competitive market pressures often result in stations with similar music formats having very similar clutter levels in terms of the overall number of ads played per hour (Newton, 2002). Furthermore, it was assumed that even program directors openly antagonistic toward sales department goals would

recognize the common sense behind limiting clutter defined as competitiveness—the amount of separation between two advertisers in the same product category. In other words, most program directors would recognize along with sales managers the need for traffic system rules prohibiting a Burger King commercial from airing directly adjacent to one for McDonald's. It is with the other conceptual dimension of advertising clutter—that of intrusiveness—where program directors and sales managers may differ, for reasons discussed above.

It is also in the area of clutter as intrusiveness where program directors have the most influence. Although determining the number of advertising units per hour often ends in a tense compromise between sales and programming, the flow of local entertainment/editorial units and commercial breaks is the programming department's domain. Radio programmers use different forms of a 'hot clock' to determine the various elements within a program hour (Norberg, 1996). A major consideration for programmers when designing these clocks is how to stagger commercial breaks to maximize listener satisfaction. A strategy often employed is to “backload” all the commercial inventory for an hour into a single pod—freeing up the majority of the hour for “uninterrupted music sweeps” or “10 songs in a row!” This plan results in longer, although fewer, commercial breaks throughout the broadcast hour. This may eventually damage advertising sales due to clients perturbation over being lost in the noise associated with a long string of sequential ads (Newton, 2002).

The other option, of course, is to have more frequent commercial breaks. More pods, however, would likely result in increased potential for listeners to perceive advertising clutter. The problem facing local programmers therefore, is the finite number

of program elements and advertising units available in a sixty-minute time period. Programmers can use longer song sweeps or longer periods of time for talk programming and be forced to allow fewer, but longer commercial pods. Or, programmers can use shorter song sweeps and talk segments in exchange for more frequent, but shorter, commercial pods. In either scenario, the advertising time remains constant, but the differences in perceived intrusiveness may affect listener's attitudes toward the station and the cognitive processing of client ads. This difference in intrusiveness is the focus of the current study.

Cognitive processing of radio commercial breaks

A growing body of literature in the area of cognitive processing of audio messages provided guidance in generating hypotheses. This literature views the radio listener's cognitive system as an information processor with a finite amount of cognitive resources available for processing new information and completing other cognitive tasks at any single moment in time. Within this conceptual model, tasks such as listening to radio commercials are thought to "cost" the system resources. The particular cost associated with processing any individual message will vary, of course. One well-recognized way of increasing the amount of resources devoted to a message is to have it be about something that the listener is interested in (Lang, 2000, 2006). In other words, increasing the involvement of the listener in the message is one way to increase the extent to which that message will be cognitively processed (Yoon, Bolls, & Muehling, 1999).

Many scholars have offered the idea that radio is a low involvement medium (Speck & Elliott, 1997), with much of the overall TSL being actually spent doing other things while the radio plays in the background. The implication of these claims is that

information from radio commercials mostly fails to penetrate the cognitive system. However, a recent series of studies by Potter and colleagues using persuasive radio messages as stimuli (Potter, 2000, 2006; Potter & Choi, 2006; Potter, Lang, & Bolls 1998) suggests that while listener involvement may vary greatly from person to person, there are other structural attributes of an audio message that cause the human cognitive system to automatically devote resources to the task of encoding information contained in the message. The biological mechanism for this automatic allocation of cognitive resources is known as the orienting response (“the OR,” Pavlov, 1927; Sokolov, 1963; Watson & Gatchel, 1979). This is hard-wired into the cognitive system such that a person will predictably have an OR in response to novelty in the environment or to learned signals, such as hearing one’s name called out. An occurrence of an OR in a human subject can often be recognized by the obvious activity of their turning and looking in the direction of the novel stimulus. However, also accompanying the OR are physiological changes such as a momentary deceleration in heart rate and increase in skin conductance over 6 to 10 seconds following the onset of the novelty into the environment (Andreassi, 2006; Graham, 1979; Lang, Geiger, Strickwerda, & Sumner, 1993; Watson & Gatchel, 1979). Using these physiological indicators, Potter, Lang, and Bolls (1998) showed how a number of structural features in a radio broadcast introduce enough environmental novelty that they elicit ORs. These formal structural features include sound effects, productions effects such as laser sounds, and—of primary importance for the current study—the onset of a commercial. This elicitation of orienting responses was found regardless of whether research participants were told to pay close attention to the message (a high involvement condition) or to merely relax and listen to the radio. Later

experiments showed that persuasive radio messages containing a high number of OR-eliciting auditory structural features were better remembered than those that didn't cause repetitive orienting (Potter & Callison, 2000; Potter & Choi, 2006). This finding was replicated using participants placed into a variety of audience situations, including listening to the radio in the background and on headphones via a personal stereo system while doing other tasks (Potter, Chen, Cho, & Zhou, 2000).

The implications of this series of studies is that, regardless of the fact that radio tends to be a medium of lesser involvement, there are certain identifiable structural features in an auditory signal that the human brain cannot help but cognitively process—at least initially. This is even the case if the listener has the radio on in the background while involved primarily in completing other tasks. One of these features that listeners automatically process is the onset of a commercial (Potter et al., 1998). It is feasible, therefore, to argue that whenever a radio station goes to a commercial break, listeners in the vicinity briefly encode what is happening in the broadcast and take note of the fact that entertainment content is being interrupted for the sake of advertising. If this is the case, then Ha's (1996) finding that increased intrusiveness results in more negative feelings toward advertising leads to the following hypothesis:

- H1:** Listeners exposed to a radio station with more commercial pods will more frequently orient to the onset of the pods and thereby recognize a more frequent disruption of programming. This will lead to greater self-reported and negative attitudes than listeners hearing the same number of commercials in a single pod.

Past research in the area of advertising clutter in television reports that advertisements in a less crowded pod receive higher brand recall than ads in crowded pods (Zhao, 1997). In addition, Webb and Ray (1979) found that commercials placed in

the first and last position of a pod containing at least 4 commercials have higher brand recall than those placed in the middle positions. Because the experimental manipulation in this study results in pods that were either below or vastly above their 4-commercial threshold, it is predicted that the number of advertising pods in the radio broadcasts will also affect memory for the ads in question, which leads to the following hypothesis:

H₂: A radio broadcast with more commercial pods will result in better memory for commercial content compared to a broadcast with the same commercials delivered in fewer pods.

Memory traces of advertisements and the information they contain rely on some level of attention being paid to the messages. It makes sense therefore, given previous findings of better memory in for ads in shorter pods (Webb & Ray, 1979 Zhao, 1997), that higher levels of attention could also be expected during shorter pods compared to longer ones. Furthermore, Thorson and Zhao (1988, reported in Thorson, 1994) used an eyes-on-screen methodology during an investigation of television advertising to show that attention levels are at their highest at the beginning of a pod and then decrease for a short period of time, only to then cycle approximately every 60 seconds after that. These findings, along with the expectation that attentional resources in listeners will automatically be allocated to the initial pod onsets, lead to a final hypothesis:

H₃: A radio broadcast with more commercial pods will result in higher attention levels in listeners compared to a broadcast with the same commercials delivered in fewer pods.

Method

In order to address these hypotheses a between-subjects experiment was designed. The goal of the design was to control the entertainment programming (music) and the

commercial load between two conditions while varying the number of pods in which these commercial units were presented.

Stimulus Creation

The desire was to create stimuli which were believable facsimiles of a popular-format radio broadcast. Because the research participants would be college students, music was selected from top-ten charts of Alternative and CHR formats at the time. Advertisements were taken from CDs obtained through a subscription to *Radio and Production* magazine and were chosen to reflect products appealing to the CHR and Alternative demographic/psychographic. The final stimuli were about 40 minutes in length and consisted of eight songs, three 60-second advertisements, four 30-second advertisements, a 60-second promotional announcement, and a 30-second promotional sounder. The promotional announcement and sounder were included as part of another experimental manipulation not reported here. However, the different levels of the manipulation in the promo experiment varied identically across the two conditions of the clutter experiment being reported here. The stimulus in the non-cluttered condition contained only a single pod consisting of all 9 units. This pod was placed after the first four songs. The cluttered condition stimulus contained three pods of 3 units each—occurring after songs 2, 5, and 7. Participants heard the songs and the ads/promos in the same sequence across conditions.

Dependent Variables

This study was interested in assessing the effects of commercial clutter on radio listener irritation, attitudes, attention and memory. Participants provided self-report data using paper & pencil questionnaires administered after the stimuli presentation.

Physiological data were also collected from a subset of participants during a portion of the time they listened to the radio messages.

Irritation was operationalized by asking participants to respond to the statement “The amount of advertising in the radio broadcast I just heard was irritating” using a 7-point scale anchored by “Strongly Agree” and “Strongly Disagree.” It was further operationalized by quantifying the number of skin conductance responses the physiological participants experienced during each advertising pod. Skin conductance has been recognized as a valid measure of autonomic nervous system activity (Hopkins & Fletcher, 1994; Watson & Gatchel, 1979) and has been shown to index emotional reaction to the processing of radio messages (Bolls, Lang, & Potter 2001; Potter & Choi, 2006).

Listener attitudes, as they applied to the hypotheses, were addressed by asking participants to respond to the following statements using 7-point scales anchored by “Strongly Agree” and “Strongly Disagree”:

1. The amount of advertising in the radio broadcast I heard was excessive,
2. When a radio station goes to commercial break it disrupts my listening experience,
3. This radio broadcast I just heard had too many commercials.

Furthermore, listeners were asked to estimate the number of commercials that were included in the radio broadcast they listened to.

Attention, or more conceptually the allocation of cognitive effort, was operationalized using heart rate levels. A decrease in cardiac activity over time has long been recognized as an indicator of increases in cognitive effort directed toward non-

threatening external stimuli in both cognitive psychology (Graham, 1979) and in media message processing (Lang, 2000; Lang, Bolls, Potter & Kawahara, 1999; Watson & Gatchel, 1979). Therefore, the operationalized version of hypothesis three calls for lower heart rates during commercial processing for the participants in the cluttered condition compared to those in the single pod condition.

Memory for commercials was operationalized using free recall and recognition tests. Specifically, after listening to the radio station stimuli participants were given a piece of paper containing 9 blank lines and the instructions “On the blank lines below, please list any of the radio commercials you can remember hearing during the broadcast you listened to.” Participants also answered a series of multiple choice questions designed to measure recognition. There were three fact-based questions about each advertisement. Following each question was a series of four possible answers, with one being the correct response. The researchers took care to create questions concerning content from each third of each commercial. For example, recognition questions for the 30-second commercials were taken from content delivered in seconds 0-9, 10-19, and 20-30.

Participants

Data were collected at two different sites. All participants were college students enrolled in large entry-level communication courses. All provided informed consent and received either course credit or extra credit in exchange for their time and participation. At one site, participants ($n = 113$) were exposed to the stimuli in mixed-gender groups of about 10 and completed the paper and pencil measures only. At the other site, participants

(n = 65) were exposed to the stimuli individually in order to allow their physiological responses to be recorded during presentation.

Procedure

Each participant was randomly assigned to a treatment condition and played one of the conditions from a compact disc. After the broadcast was complete participants made their evaluations via paper questionnaire. In addition to evaluating the overall broadcast, participants were asked to list any of the advertisements they had heard. If a participant could not recall the brand name of the product that had been advertised, he/she was encouraged to try to list any other description of the message that could be recalled. After completing the free recall portion, participants completed the recognition test. Participants were not permitted to turn back to the free recall portion of the questionnaire once they had begun the recognition questions. Participants then answered a series of demographic questions, were thanked and excused.

Physiology participants completed the procedure individually. Sensors were applied to the participant's hand and forearms. Heart rate and skin conductance data were taken during each broadcast, immediately before, during, and for one minute following each advertising pod. In other words, if a participant had been randomly assigned to a "cluttered" condition, physiology data were collected three times—once for each pod. If they were assigned to the "non-cluttered" condition, physiology data were collected during and immediately surrounding the single pod. In both conditions, however, physiological reactions were recorded in response to all commercials.

Apparatus

Heart rate data were collected using 3 standard sized AG/AGCL electrodes attached to the participant's forearms. Signals from the electrodes were transmitted to a Coulbourn S-75-01 bioamplifier, and then onto the VPM data collection program (Cook, 2003), which determined the milliseconds between heartbeats—or the inter-beat interval (IBI)—and stored it for later cleaning and analysis. Skin conductance data were collected using a Coulbourn S-71-22 skin conductance coupler sampling conductance levels 20 times per second from 2 standard AG/AGCL electrodes on the surface of the participant's non-dominant hand.

Data editing, reduction, and analysis

Heart rate data were cleaned using the computer program VPMEVENT (Cook, 2003). Heart rate from 10 participants was lost due to experimenter error, leaving the final N for cardiac data at 55 participants. IBIs were converted to average beats per minute for each second of presentation of each advertisement. Skin conductance responses were defined as any increase of .10 microSiemens with a risetime of less than 2 seconds (Dawson, Schell, & Fillion, 1990). All analyses on skin conductance responses and the self-report data were conducted using standard one-tailed t-tests. Because similar ad durations were required for analysis of heart rate data to address hypothesis 3, mean beats per minute for each second were calculated for the four 30-second ads. ANOVAs using clutter condition as a between-group factor were conducted on these data. For all analyses, p. values of .05 or less were defined as significant.

Results

Hypothesis 1—Clutter and Listener Attitudes

It was assumed that, regardless of an individual's level of involvement with the radio broadcast, onsets of a commercial pod would lead to an orienting response—an automatic allocation of cognitive resources to message encoding. This would, in turn, lead listeners to recognize a disruption in the entertainment utility of the musical programming. The nature of the experimental manipulation meant that this disruption would occur three times as often in the cluttered condition compared to the non-cluttered condition. Therefore, it was predicted that listeners in the clutter condition (three pods) would report being more irritated by the commercials and furthermore have more negative attitudes toward the ads compared to those in the non-cluttered condition (one pod).

Statistical analyses confirm this hypothesis, with participants in the cluttered condition reporting significantly greater levels of irritation by the ads ($M = 3.85$, $SD = 1.62$) than participants in the non-cluttered condition ($M = 3.42$, $SD = 1.61$, $t(176) = 1.79$, $p = .04$). Listeners in the cluttered condition also more strongly agreed that the amount of advertising in the broadcast they heard was excessive ($M = 4.85$, $SD = 1.47$) than listeners in the non-cluttered condition ($M = 3.97$, $SD = 1.87$, $t(176) = 3.51$, $p < .001$). They felt that the commercial breaks disrupted their listening experience to a greater extent ($M = 3.06$, $SD = 1.59$) than those who heard only one pod ($M = 2.66$, $SD = 1.55$, $t(176) = 1.69$, $p = .05$). Furthermore, they felt more strongly that the station played too many ads ($M = 4.52$, $SD = 1.35$) than those who heard the non-cluttered condition ($M = 4.07$, $SD = 1.52$, $t(176) = 2.06$, $p = .02$). Finally, when asked to estimate the number of

ads that they had heard in each condition, those who heard 3 pods reported almost two more on average—a statistically significant difference (means of 6.94 compared to 5.17, $t(176) = 5.01, p < .001$).

This hypothesis was also tested using skin conductance responses as a physiological indicator of autonomic arousal. It was assumed that a greater number of skin conductance responses would be indicative of more irritation due to an interruption of the music programming. The statistical test of this prediction failed to reach significance. However, the mean number of skin conductance responses during the advertisement presentation in each condition did vary in the expected direction, with participants exposed to the cluttered condition having more responses ($M = 20.18, SD = 13.57$) compared to those in the non-cluttered condition ($M = 17.43, SD = 10.38$).

Hypothesis one was not confirmed in the physiological data. It was strongly supported, however, in the self-report data, with all five measures showing statistically more negative responses for the clutter compared to the non-clutter conditions.

Hypothesis 2—Clutter and Memory for Ads

This hypothesis predicted that listeners in the clutter condition would have better memory for advertisements than listeners in the non-clutter condition. This was tested using both recognition memory for information in the ads and free recall memory of the ads themselves as dependent measures. Results show that, as predicted, listeners who experienced the cluttered programming delivery were able to freely recall more ads ($M = 2.31, SD = 1.57$) than those who experience the more streamlined program delivery ($M = 1.76, SD = 1.76, t(176) = 2.20, p = .015$). Recognition memory for details in each advertisement was greater in the cluttered condition than the non-cluttered condition, but

not significantly so ($t(176) = .93, p = .18$). This hypothesis is confirmed in the free recall data but not in the recognition data.

Hypothesis 3—Clutter and Cognitive Effort

This hypothesis predicted that listeners would have lower heart rate levels, indicative of greater cognitive resource allocation, during commercials presented in multiple pods compared to those presented in a single pod. The results of averaging the beats per minute for each second of each of the four 30-second commercials is shown in Figure 1. Although this shows a substantially lower heart rate during commercial presentation in the cluttered condition than in the single-pod condition, this difference only approached statistical significance ($F(1,53) = 3.36, p = .07$).

<<PLACE FIGURE 1 ABOUT HERE>>

Discussion

Ever since radio stations began to rely primarily on advertising revenue to keep the lights on, a tension has existed between sales departments and programming departments. The arguments leading to this tension are summed up by programming consultant Eric Norberg:

The main point of tension between the sales department and the programming department tends to center on the perceptions in each department that their job is clearly the most important to the station's success. Specifically, those in programming believe, with some justification, that without outstanding programming, the sales department would have nothing to sell and that successful sales require a successful product. Meanwhile, those in the sales department are certain, with some justification, that without their efforts, there would be no radio station and that it is their work that pays the salary of every person in programming, none of whom seems to them to be directly responsible for a single dollar in revenue. (1996, p. 140).

Because of the chicken-or-the-egg nature of the argument, it is unlikely to dissipate anytime soon. However, to date there has been little research designed to specifically

explore how different responses to this tension between programming and sales affect radio listeners. This experiment, therefore, was designed to be the first in a series of explorations investigating how the entertainment value of music programming and the revenue generation necessity of commercial pods interact to influence listener attitudes, cognitive processes, emotional response, and memory for advertisement content.

Unfortunately, findings of this study cannot be used to help ease the tensions between programming and sales. Based on previous advertising clutter literature, as well as on work done in the area of cognitive processing of audio, hypotheses were posited which claimed that if a radio manager encourages their programming department to create hot clocks with frequent but short commercial pods in hopes of increasing attention and retention of commercial content, they will also increase listener irritation. As predicted, listeners who had their presentation of music programming interrupted by more commercial pods reported it to be more irritating and disruptive than those who heard the same ads delivered in one long stopset. They also reported the cluttered station as playing more units than listeners who heard the commercials delivered all in one sequence. These self-report data were also guardedly supported by physiological measures that showed more clutter led to more skin conductance responses—although this difference was not statistically significant. As Watson and Gatchel (1979) have suggested, skin conductance and verbal report data can be beneficially combined by advertising researchers “to gain an assessment of [specific] advertising material” (p. 20), or in this case, specific pod configurations within an hour of programming. Combining the attitudinal and psychophysiological data in such a way suggests that a station choosing to stop the music more often—even if done with the benevolent intent of

keeping the length of each pod to a minimum—does so at the risk of irritating their listeners.

Before program directors claim victory in these findings, however, the data also show that if one decides to design a programming sweep maximizing the entertainment of the audience, it significantly decreases the effectiveness of the advertising sold to clients by the sales department. Free recall memory was significantly greater for ads presented in more frequent, but shorter, pods than for the same ads delivered in one long sequence. Recognition memory was also greater for information in the ads presented in a “cluttered” fashion, although not significantly so. Furthermore, using heart rate data as an index of attention paid to the messages during the commercial pods suggested that more cognitive processing may have occurred during the cluttered condition than during the non-cluttered condition.

The bad news is that the current results provide no “magic formula.” There are drawbacks to both choices facing radio program directors and sales managers. The conundrum continues: Too many pods diminishes listener enjoyment, too few pods diminishes attention and cognitive processing of advertising. However, the benefit of this experiment is that it gives those in the industry empirical evidence that had been lacking. The findings provide further concern for radio managers because the industry faces competition from music sources that play limited commercials (satellite radio) and no commercials (portable media players). A possible silver lining can be found in the results, however, as there are now data to support an understanding of how different hot clock configurations affect listeners. Rather than looking for a “magic formula,” one that works in all situations, this study provides more motivation for assessing each station’s

market position individually and designing programming and commercial pod alignment accordingly. In other words, in each idiosyncratic market situation that a station management team finds itself, which of the two necessary evils is least acceptable? Are you worried about increasing clutter, then you had better maximize the listeners attitudes toward your station as one that provides entertainment. Is your format competitor running extremely long pods and advertisers getting perturbed? With this study you can now more confidently program shorter pods, using the current findings as justification that you are increasing the likelihood of greater attention and better retention of client's creative content.

Limitations and Suggestions for Future Research

Every study has limitations, and this one is no exception. Like every experiment, these results are somewhat tainted by the artificial nature of the experimental task—especially in the physiology laboratory where experimental participants were asked to listen to the radio stimuli with sensors attached to their skin. However, the insight provided by data that goes beyond self-report balance drawbacks of artificiality. Although field observation of how radio listeners actually respond to commercial pod configurations would be extremely informative, these are also expensive and time-consuming undertakings. It is therefore likely that other researchers will continue to explore this issue experimentally. Those who do should consider expanding the limited set of attitudinal self-report measures included in this study to include traditional dependent measures from the advertising literature (Attitude toward the Ad, Attitude toward the Brand, and Purchase Intention, for example). Doing so will allow measurement not only of attitudes listeners have toward the station delivering the pods,

but comparisons of how length and intrusiveness of pods impact attitudes toward the advertisers themselves. Furthermore, while the current findings are valuable as a first glimpse into the effects of radio clutter, because only one order of presentation was used as the current stimuli, there is the possibility that the current results are due to the order in which the songs and commercials were delivered. Future studies should systematically vary these attributes in order to control any impact they have on results. Finally, it is possible that the results of this study are specific to a particular demographic, a specific format (CHR) or cultural bias (United States). In international radio markets, researchers may find differences among listeners especially between younger listeners without a commercial radio context and older listeners with such a context.

In conclusion, this study not only confirmed previous concerns from both programmers and sales managers, but also suggested the industry might need to re-conceptualize the future of radio. Listeners, especially younger listeners, are tuning out traditional radio in favor of new technologies where they control their entertainment options – and where advertising is largely absent. Therefore, radio, like many traditional media outlets may need to adjust an almost 100-year old business model centered upon commercial breaks filled with advertising messages of standard durations. The behavioral, attitudinal, and cognitive effects of these new models on listeners should most certainly be studied systematically in order to provide the best guidance for media managers.

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Figure 1: Effect of Clutter Condition on Heart Rate Level

