Understanding radio art reception

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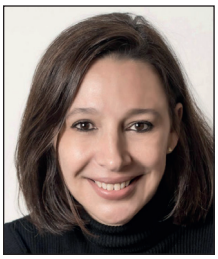

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Abstract

Radio art is understood as radio made by artists. The term is typically applied to sound-based artifacts produced and broadcast by means of the creative use of radio media affordances, infrastructure, and technologies. Radio art is known as any sound work conceived to expand the creative and aesthetic possibilities of the medium through the use of the elements of radiophonic language (voice, words, music, sound effects, and silence) with the intention to produce aesthetic messages and to move radio listeners. This study introduces radio art reception as a subject of scientific scrutiny. It proposes a model of radio art processing that includes involvement, art reception, and positive emotions as predictors of the willingness to listen to such works. After listening to each of two pieces of radio art, 126 Singaporean undergraduate communication students (M_{Age} = 22.7, *SD* = 1.7) completed a questionnaire measuring involvement, art reception, perceived emotions, and willingness to listen to another radio art feature. The main results confirm our model of radio art reception: involvement predicts the audience's cognitive stimulation generated by radio art, their artistic evaluation, and the positive attraction experienced by audiences towards them. The positive emotions experienced during consumption have a direct effect on the attraction towards radio art. Moreover, the specific radio art content affects the audiences' responses. These results allow us to understand psychological responses to sound art. The hope is to attract the attention of communication and art researchers and invite them to deepen the existing knowledge about artistic sound through empirical studies, since debates about radio art and sound works are almost lacking from scientific literature.

Keywords

Radio art; Sound art; Artistic sound; Art reception; Involvement; Emotions; Radiophonic language; Radio aesthetics; Creative radio; Creative sound; Emotions; Path analysis; Media psychology.

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1. Introduction

Radio art is generally understood as radio made by artists (**Iges**, 2004). Although when art is implied, definitions tend to become blurred (**Glandien**, 2000), the term is typically applied to sound-based artifacts produced and broadcast by means of the creative use of radio media affordances, infrastructure, and technologies (**Barber**, 2017a). Radio art is known as any sound work conceived to expand the creative and aesthetic possibilities of the medium through the use of the elements of radiophonic language (voice, words, music, sound effects, and silence) with the intention to produce aesthetic messages and to move radio listeners (**Camacho**, 2007). It is defined also as a melting pot of heterogeneous elements, a world of sounds and noises coming from the real acoustic environment or artificially produced that are organized in an acoustic symbiosis thanks to the electronic technology (**Schöning**, 1997). Radio art intends to challenge traditional radio creation, communication and consumption while transporting radio practices and listening beyond conventionalities to engage listeners to artistic practices (**Barber**, 2017b). It is constructed primarily for radio, as opposed to audio art or experimental music (**Zurbrugg**, 1989). Radio art can adopt different formats, such as sound text collages, soundscapes, electro-acoustic compositions, or noise art (**DeLys**; **Foley**, 2006). Actually, radio art resists clear classifications (**Black**, 2010).

Frequently, radio art creators work within interdisciplinary production teams which include complementary professional profiles such as sound engineers and radio producers. Indeed, radio artists could come from disciplines such as literature, music, theater, film sound, performance art, or documentary. They tend to believe that aesthetic experiences could be something else other than viewing artworks in museums or galleries (**Mullin** *et al.*, 2017). They think creatively from inside the media and use the elements of radiophonic media with an aesthetic intention (**De-Quevedo-Orozco**, 2001). Nowadays, radio art initiatives held persistently over time have been mainly produced by public broadcasters, community, university, or experimental radio stations (**Iges**, 2004).

1.1. Radio art, an old manifestation

The idea of using radio in an artistic way is as old as the radiophonic medium itself (**Glandien**, 2000). During the last century, radio art was part of the regular radio offering, and audio culture played a pivotal role in vanguard artistic practices (**Mende**, 2008). At the turn of the twenty-first century, the technological advances in recording and manipulating sound stimulated the emergence of radio art as a distinctive international art form (**Gómez**, 2008; **Mende**, 2008). Later, the new radio delivery mechanisms (e.g., internet, mobile phones) gave rise to new forms of radio art content and interactions with them (**DeLys**; **Foley**, 2006). Throughout the last two decades of the millennium, radio art rebounded through new concepts, claims and questions. New approaches to the traditional art genres of radio work (e.g., sound poetry, radio theater) and new artistic radiogenic forms emerged as a consequence of the work of visual artists interested in the possibilities of sound and multimedia (**Mende**, 2008). Such increasing interest in radio art was also reflected in the support to free radio stations, the edition of some key texts, or the organization of international conferences and exhibitions (**Mende**, 2008). Since then, the attention to radio art has continued to grow as shown in the more recent massive one-month *Radio Revolten International Radio Art Festival* celebrated in Germany (1st–30th October 2016) or the *Canadian 60 Second Radio contest* (May 14th, 2020) in which 297 works from 29 countries participated.

However, neither communication nor art studies have paid attention to the artistic possibilities of radio or to the idea that radio could be also an artistic phenomenon. Despite the fact that few forms of artistic inquiry can claim such a long and powerful history as radio art, it has received scarce attention from researchers (**Mende**, 2008). There are several possible reasons for this (**De-Quevedo-Orozco**, 2001):

- radio´s early adoption of a commercial model;
- the fact that radio is considered by many as a content transmitter instead of a content generator;
- the existence of a visual predominance in our society;
- the absence of an autonomous and independent music theory of artistic sound;
- the impact of technology itself;
- a general lack of knowledge of the possible artistic radiophonic forms.

Actually, radio evolved historically into a mass medium through a technology related to, and able to comment on, everyday reality (**Mende**, 2008), so its informative nature has been dominant over other uses (**Iges**, 2004).

1.2. Radio art, a challenge for perception

Art theorists and art critics state that radio art is a world of sound formed by the juxtaposition of noise, music and speech, which implies a distinctive listening mode (**Breitsameter**, 1998, cited by **Hall**, 2015). They consider that the density of the audio montages of these programs inevitably implies an experimental interaction between producers, sounds, and audiences (**Spinelly**, 2005). Moreover, that radio arts are aesthetic artifacts which deal with a process of transformation from sound to language, to mental images, presented as limited or altered acoustic forms, which automatically triggers attentiveness. Accordingly, this would require receivers to perceive radio art selectively and specifically without having a physical space as a frame of reference (**DeLys**; **Foley**, 2006).

Furthermore, theorists state that radio arts imply a potentially demanding listening experience (**Gómez**, 2008) since their perception requires converting sound sensations to mental images and meanings (**Iges**, 2004). The radio artists might

for example propose a temporal and spatial dimension through a combination of movements and sound levels so that the combined audio perception would be accepted as an acoustic representation of a physical space. This would require a specific mode of listening which must, in a way, be trained, similar to how the enjoyment of narrative conventions of films required audiences to adjust their perceptions in the earlier days of cinema (**Iges**, 2009). Arguably, audiences today may have lost that listening mode because of the disappearance of these kinds of productions, artistic or otherwise, which were more typical from early and even modern-day 'cultural' radio (**Iges**, 2004). Medium theorists have written in this area, suggesting that shifting to one medium and away from another may bring about both gains and losses to audiences (**Postman**, 1993, and **McLuhan**, 1994, for example, have famously written on these topics). Despite of all the above, there are no known empirical studies dedicated to analyzing the reception of radio art despite its uniqueness. This research aims to fill in such gap. Indeed, it aims to understand psychological responses to sound art and further the current knowledge about the characteristics of radio art listening through an experimental experience. Particularly, this study proposes a model for understanding radio art reception. In doing so, it introduces radio art reception as a subject of scientific scrutiny (**Soto-Sanfiel**; **Freeman**; **Angulo-Brunet**, 2021) which will inform radio studies and empirical aesthetics, an area in need of attention (**Augustin**; **Wagemans**, 2012).

> "Radio art intends to challenge traditional radio creation, communication and consumption while transporting radio practices and listening beyond conventionalities to engage listeners into artistic practices"

There are also some other reasons to observe the reception of radio art works. First, the consolidation of the audience's on-demand media practices, which implies not only the selection but the way of listening to content, would favor the reception of radio arts by interested audiences (**Iges**, 2009). Furthermore, sound art, in its many forms, has grown and proliferated worldwide due to the recent increase in online engagement caused by phenomena such as the Covid-19 pandemic. Audiences are turning to art and to radio art in particular (*Mase*, 2020). Finally, radio art is a constructive method for opening up the listening practices while moving ourselves beyond the constraints of the dominant modes of storytelling and the anthropocentric dialogues (**Donovan**, 2018).

1.3. Towards a model of radio art reception

Preliminary literature on media psychology has identified involvement, emotional experience, and characteristics of the content as prominent variables for explaining media consumption and aesthetical experience. A review of the evidence related to those variables that could be applied to radio art reception follows next.

Involvement

A radio art piece is an *acousmatic sound* work in the words of **Schaeffer** (1966). Receivers are unable to see the sources of its constituent sounds, which implies they must apply different listening strategies to clarify their perception. One key aspect is that, while listening to radio arts, receivers are especially sensitive to the acoustic invariants since they inform about the potential sources and their origins. Simultaneously, receivers perceive the technological treatment of the original source in confluence with the impact of the transmission equipment and the environment. The perception of acousmatic pieces radically differs from the perception of real events (**Windsor**, 2000). This process is meant to be as the disembodiment of the sound, which would imply that listeners become more involved mentally (**Kolb**, 1993).

Involvement is a relevant variable for processing audio messages (**Celsi**; **Olson**, 1988; **Gotlieb**; **Sarel**, 1991; **Petty**; **Cacioppo**, 1979; **Zaichkowsky**, 1985). Psychology defines it as an immediate and direct experience of the receivers (**Krugman**, 1966); as a motivational state that incites receivers to engage in message processing (**Petty**; **Cacioppo**, 1979). Involvement predicts attention (**Kruglanski** *et al.*, 2006) and induces a reward expectation (**Braverman**, 2005). Higher involvement produces greater personal relevance of the audio message (**Engel**; **Blackwell**, 1982; **Krugman**, 1965; **Lang** *et al.*, 2007; **Petty**; **Cacioppo**, 1979): a message's content receives greater attention and processing when the recipient is motivated and able to analyze its content (**Petty** *et al.*, 2004; **Todorov**; **Chaiken**; **Henderson**, 2002). Thus, involvement with radio arts would be an important aspect of its reception.

> "Radio art is a constructive method for opening up the listening practices while moving ourselves beyond the constraints of the dominant modes of storytelling and the anthropocentric dialogues"

Emotional experience

As argued before radio arts are very complex audio messages. They typically contain a juxtaposition of multiple voice changes, sound effects, silences, and music onsets acoustically synthesized. They can also employ a great deal of cuts, edits, and information density.

Early research in perception informs us that stimulus complexity is one of the most important stimulus properties in message processing (**Güçlütürk** *et al.*, 2018). The auditory structural complexity of an audio message impacts its cognitive processing: greater auditory structural complexity produces greater cognitive capacity to process the message (**Potter**; **Choi**, 2006). On the contrary, too much complexity of audio messages produces cognitive overload (**Dillman-Carpentier**,

2010; **Potter**; **Callison**, 2000). An excess of structural features in the message affects attention, hinders processing, and affects recall (**Dillman-Carpentier**, 2010).

However, the complexity of a media message would also impact the emotional experience of its consumption. When individuals are faced with too many elements to cognitively process, their enjoyment is reduced. According to the Limited Capacity Model of Media Message Processing, receivers process effectively a small number of simultaneous elements (**Lang**, 2000; **Lang**; **Dhillon**; **Dong**, 1995). A message containing a moderated inclusion of elements increases not only the involvement but the emotional responses and its enjoyment (**Grabe** *et al.*, 2000; **Lang**, 2000; **Yoon** *et al.*, 1999). Indeed, the emotional tone of the message, its production pacing, and the number of elements that it includes affect its emotional processing (**Bolls**; **Lang**; **Potter**, 2001; **Bolls**; **Muehling**; **Yoon**, 2003). Consequently, the specific content of the radio art, which is typically a complex audio message, would impact the emotional experience of its consumption.

Aesthetic responses

Aesthetic responses are related to the complexity of the message too. According to the processing-fluency approach, the aesthetic judgments of audiences are closely related to the subjective ease with which mental operations are performed when perceiving a stimulus (**Reber**; **Schwarz**; **Winkielman**, 2004). Although there is no empirical evidence related to sound, visual studies state that in cases of relatively abstract art works, the ease of deriving meaning from stimuli is relevant (**Topolinski**; **Strack**, 2009), since they produce better aesthetic preference judgments (**Ball** *et al.*, 2018).

Moreover, the aesthetic liking of art work is related to the stimulus properties (e.g., **Bar**; **Neta**, 2006; **Bertamini**; **Makin**; **Rampone**, 2013; **Oppenheimer**; **Frank**, 2008; **Reber**; **Winkielman**; **Schwarz**, 1998; **Wurtz**; **Reber**; **Zimmerman**, 2008) and the perceivers' familiarity with it. A prior history of the receiver with the stimulus or repeated exposure to it, would increase processing fluency and, subsequently, its liking (e.g., **Bornstein**, 1989; **Bornstein**; **D'Agostino**, 1994). There is evidence that the complexity of the message interacts with an aesthetic appreciation in the perception of its beauty (**Ball** *et al.*, 2018).

All of the above leads us to propose the next model of radio art consumption formed by involvement and positive emotions as predictors of perception of the art on these manifestations. The perception of art would predict, in turn, the willingness to consume other radio arts (see Figure 1).

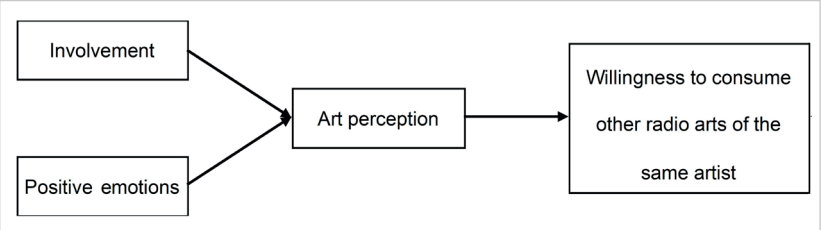

Figure 1. Theoretical model of radio art consumption.

Accordingly, we formulate the following two hypotheses:

H1: The effect of the different variables in the model will differ depending on the radio art stimulus.

H2: The audience's involvement with a radio art work and their positive emotional experience will impact the audience's perception of the artistic qualities and the audience's willingness to continue consuming other radio arts (see Figure 1).

2. Method

2.1. Participants

We used a convenience sample of 126 Singaporean undergraduate communication students (M_{Age} = 22.7, *SD* = 1.7) enrolled in a class on radio production. Of them, 63% were men. Moreover, 85% of the participants declared to have a Chinese background, while 9% were Malay and 2% Indian. Further, 4% declared 'other ethnical background' or preferred not to disclose. Finally, 14% (*n* = 18) reported prior knowledge of radio arts (familiarity).

Students participated on a voluntary basis without any compensation. The data collection occurred after their class. They were asked to collaborate with the study then. It was clarified by the researchers that consent was obtained from their willingness to stay on the experience.

2.2. Materials

Stimulus

We used two radio art works produced by students of an advanced radio production class directed and taught by one of the researchers of this study. Both art pieces had a similar length. They were comprised of elements of sound language (e.g., sound effects, music, silence, and some single words), which were synthesized and manipulated in their acoustical parameters, speed and rhythm for example. Radio art 1 (05:04) was inspired by the four seasons. It was modeled on the rotation of earth compared to life cycles (from birth to death) and reflected on eternity. Radio art 2 was inspired by the travels of Carl Linnaeus, considered the father of modern taxonomy and ecology. It was modeled on different habitats on earth and climate change (04:54). A qualitative pre-test carried out during the summer of 2018 indicated that radio art 2 was considered to be more abstract than radio art 1. Participants were able to apprehend the purpose, narrative, and content to a greater extent in radio art 1 than in radio art 2. Radio art 1 was also considered to be easier to be understood.

Measures

Participants completed a paper questionnaire with various sections:

Sociodemographic variables. Sex (Male or Female); Age; Ethnic background (Chinese, Indian, Malay, and Others) which was recoded into two categories (Chinese and Others), and previous knowledge of radio art (Yes/No).

Involvement. We created a 4–item scale (e.g., "Keep your interest [poorly-well]) following the works of **Rodero** (2012), and **Suckfull** and **Scharkow** (2009). We obtained adequate goodness of fit indexes (GOFI) and internal consistency reliability for radio art 1 (confirmatory factor analysis [CFA]: χ^2[df] = 1.63 [2], CFI =1.00, TLI = 1.00, RMSEA =.00 [.00–.16]; ω = .86, α = .86) and also for radio art 2(χ^2[df] = 4.24 [2], CFI = .99, TLI = .97, RMSEA =.09 [.00–.22]; ω = .86, α = .85).

Emotions. We used the modified Differential Emotions Scale (mDES, **Fredrickson** *et al.,* 2003), which contains 20 items (e.g., "I felt amused or fun-loving"; 1 = Totally disagree / 5 = Totally agree). We obtained evidence of validity and reliability for a positive emotions factor in radio art 1 (CFA: χ^2[df] = 6.23 (20), CFI = 1.00, TLI = 1.00, RMSEA = .0 (.00–.00); ω = .92, α = .92) and in radio art 2 (χ^2[df] = 11.46 [20], CFI = 1.00, TLI = 1.00, RMSEA = .00 (.00–.00); ω = .92, α = .90). We also obtained evidence of validity and reliability for a negative emotions factor in radio art 1 (χ^2[df] = 10.052 [27], CFI = 1.00, TLI = 1.00, RMSEA = .0 (.00–.00); ω = .92, α = .92) and radio art 2(χ^2[df] = 67.99 [27], CFI = .97, TLI = .96, RMSEA = .11 (.08–.14); ω = .82, α = .85).

Art reception. We adapted the *Art Reception Survey* (*ARS*; **Hager** *et al*., 2012) for being suitable to radio arts. As in the original scale, our adaptation has 29 items grouped in six dimensions (1 = Totally disagree / 5 = Totally agree):

- Cognitive stimulation (CS; 5 items; e.g., "This radio art made me curios");
- Negative emotionality (NE; 5 items; e.g., "This radio art makes me experiment negative physical sensations");
- Expertise (EX; 5 items; e.g., "I can relate this radio art to a specific art historical context");
- Self-reference (SR; 4 items; e.g., "The radio art makes me think about my own life");
- Artistic quality (AQ; 5 items; e.g., "This radio art features a high level of creativity"); and
- Positive attraction (PA; 5 items; e.g., "This radio art is pleasant").

We obtained validity evidence of internal structure for the radio art reception scale through a CFA for a 6–factor correlated model in the radio art 1 (χ^2[df] = 330.30 [242], CFI = .98, TLI = .98, RMSEA = .05 [.04–.07]) and also in radio art 2 (χ^2[df] = 260.60 [242], CFI = 1.00, TLI = 1.00, RMSEA =.02 [.00–.05]). Internal consistency reliability coefficients were adequate for all dimensions in both phases except for expertise: CS (radio art 1: ω = .92, α = .92 ; radio art 2: ω = .92, α = .91); NE (radio art 1: ω = .93 α = .93; radio art 2: ω = .90, α = .93); EX (radio art 1: ω = .60, α = .4; radio art 2: ω = .65, α = .4); SR (radio art 1: ω = .83, α = .91; radio art 2: ω = .89, α = .86); AQ (radio art 1: ω = .73, α = .91; radio art 2: ω = .92, α = .95); PA (radio art 1: ω = .88, α = .86; radio art 2: ω = .90, α = .89). The adapted questionnaire for *Radio Art Reception Survey* is included at the appendix 1. We believe researchers can apply it to different sub-genres of sonorous art by modifying accordingly the name of the specific sub-genre.

Willingness to listen to another radio art. We used a single- item on a 5-point Likert scale ("I would like to listen to other radio arts of the same artist"; 1 = Totally disagree / 5 = Totally agree).

2.3. Procedure

The study followed the guides of the hosting university for empirical studies including human participants. Ethical consent was obtained from the respective committee before beginning the data collection. It was carried out during the course of the academic year 2018-2019, right after the ending of a regular class at the *Wee Kim Wee School of Communication* (*Nanyang Technological University*, Singapore). Students were asked to collaborate with the research freely and voluntarily. No compensation was provided to them. Participants accepted by remaining in the room after the class. Only the researchers were present during the entire activity.

Participants were randomly assigned into two equal groups.. All participants listened to the radio arts in the same room, as it was acoustically adequate for sound perception. Participants were informed that they were going to listen to two radio art works based on science and that they would be asked to fill out a paper questionnaire with scales, right after listening to each one of them. They were also informed that they could retire from the study at any time without required explanation. The first group listened to radio art 1 first whereas the other group listened to radio art 2 first. The radio art 1 audio was introduced as a piece about the earth's rotation. The radio art 2 audio was introduced as a piece art about climate diversity and change. Two researchers were in the room during the test for assistance.

2.4. Data analysis

All the analyses were performed with *R* software (*R Core Team*, 2019). In order to examine quantitative psychometric properties of the questionnaires (see Measures section), we followed **Viladrich**, **Angulo-Brunet** and **Doval** (2017) recommendations. We examined internal structure through CFA with *lavaan* package (**Rosseel**, 2012) using unweighted least squares estimator (ULS), considering the sample size (see Participants section). In order to assess GOFI, we considered excellent fit (**Hu**; **Bentler**, 1999) values greater than .95 in the *comparative fit index* (CFI) and *Tucker-Lewis index* (TLI), and smaller than .05 in *Root mean square error of approximation* (RMSEA). We considered acceptable fit (**Marsh**; **Hau**;

Wen, 2004) CFI and TLI greater than .90 and RMSEA smaller than .08. According to **Viladrich**, **Angulo-Brunet** and **Doval** (2017), we obtained two internal consistency coefficients: omega (ω; **Green**; **Yang**, 2009) and Cronbach's alpha (α; for comparison purposes with previous research).

We also performed a paired Welch t-test (**Delacre**; **Lakens**; **Leys**, 2017) for comparing scores between the two radio arts with *t.test* function and obtained Cohen's d effect size with *cohen.d* from package *effsize* (**Torchiano**, 2019). We considered an effect greater than 0.8 as large, an effect between 0.8 and 0.5 as medium, and an effect greater than 0.2 small following **Cohen**'s suggestions (1988). Furthermore, we performed two separate path analyses using the *sem* function from the *lavaan* package.

3. Results

In general, radio art 1 was better appreciated than radio art 2. As Figure 2 shows, participants stated they had greater involvement in radio art 1. They also reported experiencing greater positive emotions and less negative emotions than in radio art 2. Consequently, the audience's involvement and emotional experience depended on the specific radio art they consumed, which is in line with H1.

Regarding art reception, participants manifested that they had experienced greater cognitive stimulation in radio art 1 than for radio art 2 with the effect being small. Moreover, similar to negative emotions, participants experienced greater negative emotionality for radio art 2 than in radio art 1. As for expertise, we did not find evidence of reliability for the mean score and there was no further testing with those variables. Concerning self-reference, we did not obtain differences between the two radio art works. In terms of artistic quality, participants perceived slightly more quality in radio art 1 than in radio art 2. They also felt more positively attracted to radio art 1 than to radio art 2. Finally, concerning the willingness to listen to other radio arts from the same artists, participants manifested they would like to listen to them more in the vein of radio art 1 than in radio art 2. Consequently, the specific radio art impacts the negative emotionality, the perceived artistic quality, the positive attraction towards the specific art work, and the willingness to listen to more radio art works, which confirms H1.

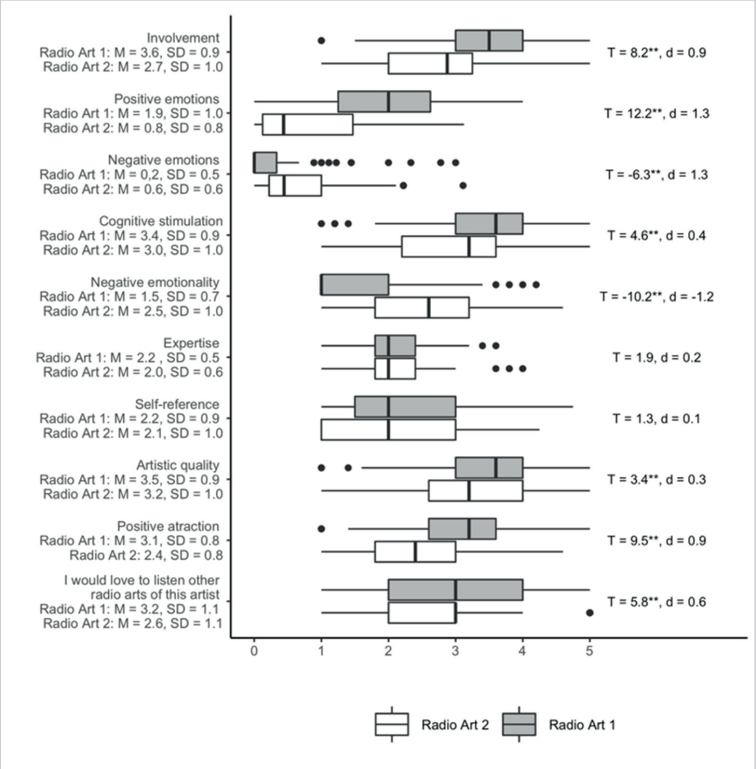

Figure 2. Boxplot and mean comparison.

We later tested the theoretical model presented in the introduction. First, we examined the model for radio art 1. Standardized regression coefficients for path analysis are shown in Figure 3. GOFI were adequate (χ^2[df] = 2.45 [2], p = .29, CFI =.99, TLI = .99, RMSEA =.04 [.00–.19]).

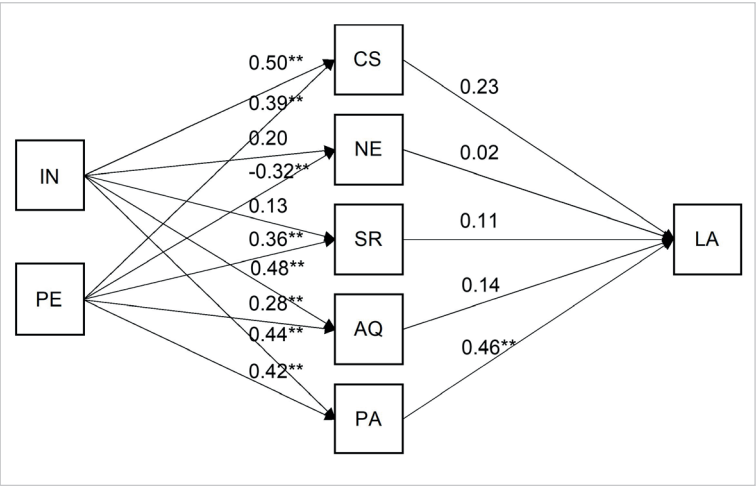

Figure 3. Path analysis for radio art 1.
Note. * p =.05, ** p <.001. PE = Positive emotions, IN = Involvement; CS =Cognitive stimulation; NE =Negative emotionality; SR = Self-reference; AQ = Artistic quality; PA = Positive attraction; LA = Willingness to listen to another radio art.

Results show a direct effect of involvement on cognitive stimulation (β = 0.50, p <.001), artistic quality (β = 0.48, p <.001) and positive attraction (β = 0.44, p <.001). We also found a direct effect of positive emotions on cognitive stimulation (β = 0.39, p <.001), negative emotionality (β = –0.32, p =.005), self-reference (β = 0.36, p <.001), artistic quality (β = 0.28, p =.001) and positive attraction (β = 0.42, p <.05). At the same time, we observed a direct effect from positive

attraction to willingness to listen to another radio art work (β = 0.46, p <.001). Indeed, this model explains a 67% of willingness to listen to another radio art variance, which is in line with H2. The model also explains a 63% of cognitive stimulation variance, a 7% of negative emotionality variance, a 20% of self-reference variance, a 47% of artistic quality variance, and 57% of a positive attraction variance.

We also verified the proposed model for radio art 2. Figure 4 shows the results of path analysis for radio art 2. GOFI were adequate (χ^2[df] = 2.51 [2], p = .28, CFI =.99, TLI = .98, RMSEA =.05 [.00–.19]).

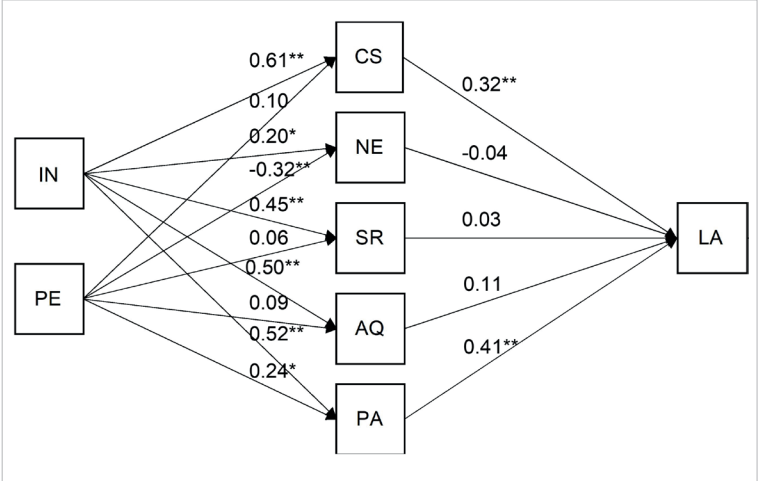

Figure 4. Path analysis for radio art 2.
Note. *p =.05, ** p <.001. PE = Positive emotions; IN = Involvement; CS = Cognitive stimulation; NE = Negative emotionally; SR = Self-reference; AQ = Artistic quality; PA = Positive attraction; LA = Willingness to listen to another radio art.

Results indicate that involvement has a direct effect on cognitive stimulation (β = 0.61, p <.001), negative emotionality (β = 0.20, p <.05), self-reference (β = 0.45, p <.001), artistic quality (β = 0.50, p <.001) and positive attraction (β = 0.52, p <.001). In turn, positive emotions also have a negative direct effect on negative emotionality (β = –0.34, p <.001) and a positive effect on positive attraction (β = 0.24, p <.05). There is also an effect of cognitive stimulation on willingness to listen to other radio art (β = 0.32, p <.001) and of positive attraction on willingness to listen to another radio art (β = 0.41, p <.001). All things considered, 64% of the variance for the 'willingness to listen to another art' is explained by this model. As in the model for radio art 1, this is in line with H1. Regarding other dependent variables, the r-squared informed that the model explains 45% of the cognitive stimulation variance, 44% of a positive attraction variance, 30% of an artistic quality variance, 24% of the self-regulation variance, and 9% of the negative stimulation variance.

4. Discussion

This study introduces radio arts, and sound art in general, as a topic of scientific inquiry (**Soto-Sanfiel**; **Freeman**; **Angulo-Brunet**, 2021). It hopes to attract the attention of communication and art researchers and invite them to deepen the existing knowledge about this artistic manifestation through empirical studies. Fundamentally, this study portends to open the debate about radio arts and sound works, which is fairly non-existent in the scientific literature. In doing so, this study vindicates the scientific research of the expressive qualities of sound and artistic radio, which could enlarge our understanding of the spectrum of media listening practices, uses and consumptions, together with broadening our perspectives about storytelling (**Donovan**, 2018) and benefiting a more rigorously elaborated cultural radio (**Iges**, 2004).

Particularly, this research has studied radio art in the light of meaningful psychological variables related by the previous literature written on media consumption and aesthetical experience. Consequently, this study advances the understanding of the processes that explain the reception of sound art and, particularly, of radio arts.

The main results of this study inform that involvement is an important aspect of the perception of radio arts. Involvement predicts the audience's cognitive stimulation generated by radio arts, their artistic evaluation, and the favourable attraction experienced by audiences towards them. All of this is coherent with the preliminary pieces of evidence which confirm the relevance of involvement in the processing of audio messages in general (**Celsi**; **Olson**, 1988; **Gotlieb**; **Sarel**, 1991; **Petty**; **Cacioppo**, 1979; **Zaichkowsky**, 1985).

Through the two radio art pieces we have confirmed a model in which involvement and positive emotions affect the perception of art values within artistic sound pieces, and that this perception in turn affects the willingness to consume other radio arts of the same artist (first hypothesis). However, although we have also confirmed the same model for the different art pieces, we have also observed that the effects of the variables are different for each one. Regarding the second hypothesis, our main results show that the positive emotions experienced during the consumption of radio arts have a positive direct effect on the attraction to such works. Positive emotions also show a negative direct effect on the negative emotions experienced. These results ecologically provide support for the validity of our measures. However, what is more relevant is that they offer valuable information for promoting the listening and appreciation of radio arts. According to our results, developing a positive attraction to radio arts requires provoking positive emotions while avoiding negative emotions for potential audiences. Moreover, a positive attraction towards a radio art work directly impacts the willingness to listen to another radio art work for both of the stimuli used in this study. Perhaps the entertaining function of media, related basically with positive hedonic emotions,

> This study advances the understanding of the processes that explain the reception of sound art and, particularly, of radio

such as enjoyment (**Vorderer**; **Klimmt**; **Ritterfeld**, 2004), has interacted with the evaluation of the emotional experience related to the radio arts by the participants of this study. This is important since many radio arts tend to do exactly the opposite: they intend to provoke anxiety, fear or uncertainty in their listeners. They attempt to emphasize dark, enigmatic, dramatic or stressing sensations more related to negative emotions. On the other hand, the socio-demographic characteristics of the sample could also have exerted an influence on the equation. In any case, future studies with samples of different cultural backgrounds could provide more information on the relationship between the emotional experience and the attraction in radio art evaluation and consumption.

> "We have confirmed a model in which involvement and positive emotions affect the perception of art values within artistic sound pieces, and that this perception in turn affects the willingness to consume other radio arts"

Despite that, it must also be remembered that preliminary literature has warned us that enjoyment of media messages is affected by the complexity and abundance of elements to be processed simultaneously (**Lang**, 2000; **Lang**; **Dhillon**; **Dong**, 1995). It is possible that the radio arts used as stimulus in this study were moderately abstract and complex so to elicit positive emotions and positive attraction in the examined sample. According to previous evidence, both qualities tend to produce positive emotional responses and involvement (**Grabe** *et al.*, 2000; **Lang**, 2000; **Lang** *et al.*, 1999; **Yoon**; **Bolls**; **Muehling**, 1999). It is thus necessary, that further studies experimentally manipulate the content constituents of the radio arts audio to deepen the understanding of these observations. Such works could provide clues about the limits of content complexity for producing positive aesthetical responses to artistic sound works. The theory of limited capacity model of media messages (**Lang**, 2000; **Lang**; **Dhillon**; **Dong**, 1995) would be a convenient framework to observe the extent to which even more abstract radio arts, about different topics, and through manipulating different acoustical structural elements, affect the emotional experience and the positive attraction to radio arts by different audiences.

One of the main contributions of this study is that it has obtained evidence for the proposed model of radio art consumption. According to the confirmed model, and across all the radio arts of this study, involvement and positive emotions during radio art listening directly impacts the cognitive processing and the perception of the artistic characteristics of such works which, consequently, impacts the willingness to consume other radio arts.

However, our results have also informed that the degree of involvement, the emotional experience, the perception of artistic qualities of the specific artistic piece and the willingness to listen to another radio arts are affected by the specific content of the listened-to radio art work. This result is not surprising, given that the characteristics associated with the stimulus play an important role in the artistic experience. Nevertheless, they inform radio art creators who wish to appeal to wider audiences that they should consider the relationship between the characteristics of their target receivers and the sound piece as well. This is meaningful for radio artists because they frequently explore dark, enigmatic, intriguing or even anguishing topics/sensations in their works. Although there is still much research to be done on the perception of radio arts to provide more concrete guidelines for artists, this research suggests that contents eliciting positive emotions would promote a further willingness to listen to other pieces created by the artists.

On the other hand, it must be considered that this research did not manipulate specific characteristics of the content as variables; it only used two different works as a stimulus for confronting the direction of the content effect. Still, the better-appreciated radio art was precisely the one considered less abstract and easier to understand in the pre-test. Further studies must confirm and deepen our understanding of this assumption.

Moreover, due to the lack of questionnaires measuring the perception of the artistic qualities of radio arts, this research has also adapted and obtained validity evidence of internal structure and evidence of internal consistency reliability for both radio art works (see Measures section) in the *Art Reception Survey* (**Hager** *et al.*, 2012) initially produced for visual works. Considering the good evidence obtained, future works are encouraged to use this tool as an art reception measuring instrument.

Finally, it is worth considering that radio art is a macro genre label. It refers to different types of pieces (sub-genres) which use complex sound for inducing receivers' aesthetical experiences and moving audiences. This research used as stimulus two radio art pieces that were halfway between soundscapes and sound poetry. Although classifications of radio arts could be problematic, it is possible that the nature of the specific art work impacts on the described psychological processes. Because of that, further studies must specifically observe responses not only to different art works with varied content complexity and constituents but associated with different sub-genres. Other studies must also continue observing the mental images they generate and advance the research initiated by the recent experimental work of **Soto-Sanfiel**, **Freeman** and **Angulo-Brunet** (2021), the production of meaning by radio arts, and specific perception processes in the reception of these audio contents, which are important variables in their aesthetical reception as theory states.

One limitation of this research is that both radio arts were listened to by the participants in an artificial experimental situation, which was independent of a real radio listening experience. Some radio artists defend the idea that radio art perception must be related to a programming or transmission radio strategy. However, we think that considering the lack of research on radio arts, it is important to control the situation to have greater validity. Despite the fact that new

on-demand practices imply different modes of reception and amplify the uses and consumptions of media, other researchers could examine radio art perception in the context of an institutional radio framework.

Another limitation of this work is that it used a convenience sample formed by Singaporean college communication students. It is plausible to consider that the socio-demographic characteristics and the cultural background of the participants could interact with the observations. Because of that, future studies should observe the radio arts' involvement, emotional experience, artistic evaluation, and attraction by many different audiences to observe the degree of generality of the information provided by our study and the extent to which the reception context influences the responses to radio arts. Since radio art is a genre mostly present within western contexts, it would be necessary to conduct cross-cultural comparisons particularly within western and non-western countries.

> "This research has also adapted and obtained validity evidence of internal structure and evidence of internal consistency reliability for the *Art Reception Survey* (**Hager** *et al.*, 2012) initially produced for visual works. Considering the good evidence obtained, future works are encouraged to use this tool as an artistic sound reception measuring instrument"

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6. Annex

Radio art reception survey (*RARS*)

Adapted from **Hager** *et al.* (2012). "Assessing aesthetic appreciation of visual artworks - The construction of the *Art Reception Survey* (*ARS*)". *Psychology of aesthetics, creativity, and the arts*, v. 6, n. 4, pp. 320-333. *https://doi.org/10.1037/a0028776*

	1	2	3	4	5
	Completely disagree				**Completely agree**
This radio art made me curios					
This radio art is thought-provoking					
It is exciting to think about this radio art					
It is fun to deal with this radio art					
I would like to learn more about the background of this radio art					
This radio art makes me feel negative emotions					
This radio art makes me experiment negative physical sensations					
This radio art makes me feel sad					
This radio art makes me feel troubled					
This radio art disgusts me					
I can relate this radio art to a specific art historical context					
I can relate this radio art to a particular director					
I know this radio art					
I have an idea what the director is trying to convey with this radio art					
I have an idea what the director is trying to convey with this radio art					
The meaning of this radio art remains inaccessible to me					
The radio art makes me thing about my own life history					
I can associate this radio art with my own personal biography					
Personal memories of mine are linked to this radio art					
The radio art mirrors personal emotional states that I feel or have felt in my life					
This radio art is unique					
This radio art features a high level of creativity					
The composition of this radio art is of high quality					
The artist manner of creating it is fascinating					
The radio art is or was very innovative					
The radio art is pleasant					
The radio art is beautiful					
I would consider investing in buying the radio art					
The radio art thrills me					
I feel inspired by this radio art					
I would love to see other radio arts of this artists					