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Are Musical Themes Better than Visual Images as ESP-Targets? An Experimental Study Using the Ganzfeld Technique

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ABSTRACT: The ability to detect emotion in music has many educational and practical benefits. However, there appear to be few studies reported in the literature in which sounds have been used as stimuli in extrasensory tests. The present study was undertaken in order to compare auditory with visual stimuli and to explore whether psychological factors which appear to be favourable in music tests are related to ESP. Musical styles were chosen as targets in this experiment. Fifty-four participants attended two GESP sessions (each on a different occasion) at the Institute of Paranormal Psychology in Buenos Aires, Argentina. The first author (AP) was the experimenter, who received each participant, and the second author (JV) was the blind "sender" for all of the sample. A CD–R containing 3,500 high–resolution colour pictures and another CD containing 112 themes in MP3 format were used, on the two different occasions.

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Stimulus targets were randomly selected. Both conditions yielded significant results (psi-hitting)—the musical-target condition (p = .008) and the visual-target condition (p = .001), the latter somewhat more significant, but the difference between the two was not significant.

INTRODUCTION

The psychologist C. G. Jung maintained that "music expresses, in some way, the movement of the feelings (or emotional values) that cling to the unconscious processes" (Budd, 1992). The words used to describe feelings very often have a slightly but significantly different meaning for each individual. For Clarke (1999), feeling was the function of consciousness which tells one how and to what extent a thing is important or unimportant for us.

The ability to detect emotion in music has many educational and practical benefits (Balkwill & Thompson, 1999; Gabrielsson, 1982; Meyer, 1956). According to Leonard Meyer (1956) and other pioneer psychologists, it is theoretically possible to detect the emotion in music if these emotions are contained entirely within the context of the music itself. Therefore, music has a very strong, very definite physiological and psychological effect on people (Smith, 1999). Disharmonic music causes a number of negative behaviours (Dimberg, 1987). Gabrielsson (1982) places the responses into three categories: experiential ("various perceptual, cognitive, and emotional variables", p. 160), behavioural (actions performed as a result of the rhythm), and physiological. More specifically, affected individuals are rarely aware of all of their responses, such as changes in heart rate or respiration, or even toe tapping.

Among many other stimuli used in parapsychological studies of extrasensory perception, there are coloured cards, Zener or ESP symbols, and words emotionally or non-emotionally charged. However there appear to be few studies reported in the literature in which *sounds* have been used as stimuli in ESP tests. More psi studies using sound stimuli would be desirable. First, sounds are fundamental to the normal method of human communication. Second, there is the possibility that there are systematic variables present in the ESP tests with visual stimuli which have not as yet been discovered and which might be isolated in tests of ESP with sound stimuli or by other variations in procedure. Third, the use of sound stimuli in a controlled experimental study should serve to increase our knowledge of the problem of extrasensory perception.

Reports of ESP experiments using music as targets were published by Shulman (1938) and George (1948). Keil (1965) hypothesised that the music might provide a relatively dominant and stable effect that would

transcend the influence of subject-experimenter relationship. He design an experiment in which five pieces of music were selected for ea participant, representative, meaningful, and important to him or her. T results were significant (p = .01). The author pointed out that it is r certain what effect the music had in producing the results, because of t fact that this was a GESP test and he himself might have been the "agent."

However, it seems surprising that no further investigations into t use of sounds as targets have been conducted. The present study w undertaken to compare auditory with visual stimuli and to explore whetl psychological factors which appear to be favourable in music tests a related to the ESP task. However, it is difficult to define the psychologi variables in music appreciation adequately, but terms such as "intense, ve personal, and sometimes highly emotional" would probably find agreem with most who are interested in music at all.

Psi phenomena have had a long tradition linked to altered states consciousness (Alvarado, 1998). Bertini, Lewis, and Witkin (19(exploited this association to develop an "experimental-hypnagog technique to facilitate the study of hypnagogic imagery. Ganzf stimulation, such as reduction of the sensory noise level through regulati of perceptual input and deployment of attention toward internal mentati could serve to "carry" psi impressions. One of the first investigators introduce the use of the Ganzfeld in parapsychology was Charles Honort (Honorton and Harper, 1974), who believed that the experimen production of hypnagogic imagery could facilitate the reception a recognition of extrasensory perception in the laboratory. This idea ar(because of the similarity of the hypnagogic state (a state of dream-li consciousness experienced before falling asleep) to certain altered states consciousness traditionally associated with spontaneous psycl experiences. Stanford had hypothesised elsewhere (1979, 1980) that t Ganzfeld favours ESP because it reduces cognitive constraints and tl some of this reduction depends upon the use of noise during the Ganzfeld.

The first study carried out using musical themes as ESP targ was by Melvyn J. Willin (Willin, 1996a, 1996b). He used pairs deliberately selected people known for their musical appreciation (mu students). His first 50 trials produced a hit rate of 32%. But in spite of t fact that that experiment did not yield significant results after 100 trials, (aim consisted in comparing the results using musical targets for a group participants who had already undergone the conventional Ganzf experiment using visual images as targets. We anticipated, in advance, t this experiment would offer support for the notion that Ganzfeld stimulati is psi-conducive, and we expected some kind of difference between sco on the visual targets and on the musical targets.

METHOD

Participants

The sample was recruited from an earlier study using visual targets (Parra & Villanueva, 2003a; Parra & Villanueva, 2003b): out of 138 persons approached, just 54 agreed to participate again (31 [57.4%] females and 23 [42.6%] males). Age ranged from 23 to 76 years old (Mean = 46.83; *SD* = 12.70). They were students of parapsychology at our Institute in Buenos Aires. Appropriate informed consent to the experimental procedure was obtained, using language reasonably understandable by the participants.

Participant Orientation

Participants were recruited by mailing announcements (pamphlets) using an Institute mailing list. A Participation Information Form offered a brief explanation of the Ganzfeld procedure and encouraged prospective participants to have an interview with us in order to gain more information about the technique and visit the Ganzfeld lab. An announcement was also placed in the Internet (*www.alipsi.com.ar/ganzfeld.htm*). Paranormal belief was strong in this population.

Experimenter and Sender

The first author (AP) was the experimenter, who received each participant, and the second author (JV) was the sender for the entire sample. The sender, who had taken part in other ESP experiments, also knows meditation and imagery–techniques and he is a yoga trainer as well. The sender could not hear the receiver's impressions, which were tape-recorded by the experimenter for analysis following the Ganzfeld session.

Layout and Equipment

The Ganzfeld lab was the same as in the earlier study. The rooms utilized in this experiment are indicated as A, B, C and E (A = Ganzfeld lab; B = experimenter's room; C = sender's room for the target-hearing period; and E = sender's room for non-target-hearing period). It is important to point out that the Ganzfeld lab is a safe, sound-isolated room. Also, the Ganzfeld room was at a distance from the sender's room and separated by about 30 m. Figure 1 shows the placement of the sender and the receiver. The receiver's room is lit by a white bulb that goes on before and after the Ganzfeld experience starts and ends. A 70-watt red filtered flood-light, located approximately 2 m in front of the receiver's face, is adjusted in intensity until the receiver reports a comfortable, shadow-free, homogeneous visual field. The level of white noise is similarly adjusted:

the receiver is informed that the white noise should be as loud as possi without being annoying or uncomfortable.

The receiver remained lying down on a chaise longue, whi permitted the receiver to remain comfortable. The experimenter kept receiver company while he prepared the receiver for visual and audit Ganzfeld stimulation. Translucent hemispheres (two halves of a ping-pc ball) are taped over the receiver's eyes and firmly fastened to a cotton m with transparent adhesive tape.

A CD player (Sanyo MCD–X97) connects the receiver to auditory stimulus by means of headphones to their ears. The receiver co not adjust the volume of the CD by themselves.

AP controls the duration of the Ganzfeld session using chronometer which synchronises both the digital counter of the CI revolutions and the computer's real-time clock.

The computer peripherals used by the sender included a real-ti clock, a 56X-CD-R player supporting digital audio extraction, sou proofed headphones adjusted by the sender, and a Pentium III proces with sound card computer. MP3 provides high quality audio in one-te the file-size. We used an audio system (AudioCatalyst^{TM}) which allows to make a digital copy on CD-R and transform each sound track into MP3 file in one easy step. To play the musical theme, an MP3 player (X Technologies Co.^{TM}) was also used. The high-quality evolved sound not permit any sensory cues from being transferred from the headphones the sender's room to the receiver's room.

Relaxation exercise

Receivers underwent a 9–minute recorded relaxation exerc before the sending period, in a style similar to a hypnotic induct procedure. The relaxation exercise includes progressive relaxation exerci and autogenic phrases (Jacobson, 1974) recorded using the voice of experimenter (AP). The instructions and relaxation exercises were delive in a slow, soothing but confident manner. The auditory stimulation v given by a 33-minute, white-noise CD generated for this experiment.

Test instructions

Explanations of the experiment were given to the participants. told them that we were conducting a telepathy experiment in which we h musical themes as targets; following on from the experiment with vis targets, that both type of targets possibly stimulate psychic abilities people, and that we were now exploring both, so that we could evalu their relative importance in psychic performance.

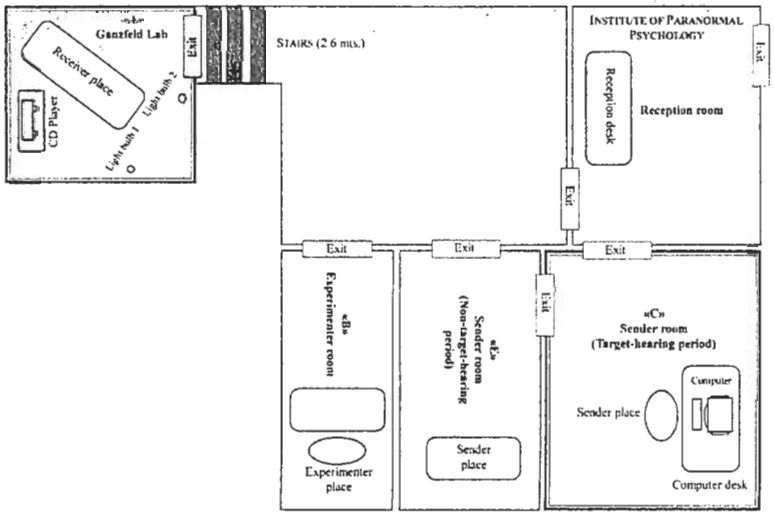

Figure 1. Laboratory layout

Type of Targets

Musical. A CD-R clip-of-music was specially designed. CD–R contains 96 well-differentiated themes on an MP3 system (e.g., African–mahori, Classical, heavy Rock, and Brazilian-Caribbean music styles), which were clustered into 24 groups of four themes each. The target-pool selector was AP, who had no contact with the sender, JV, during the selection process. There were two steps to building the musical themes pool before the Ganzfeld session. The first step was to select one style of theme out of hundreds of themes (from the same style: e.g., Brazilian-Caribbean); and the second step was to cluster the theme style into groups (four potential targets, each target being from one style). All of these steps were randomised (approximately one hundred themes each style). Each style was also coded using random number tables. JV randomly selected one of the four potential targets for hearing at the same time as the participant underwent the Ganzfeld stimulus. Once designed, AP delivered to the sender the CD-R. We decided to use the CD because of four reasons: (1) The MP3 digital system record music is easy to handle; (2) themes are appropriately clustered in such a way that it facilitated the randomisation task; (3) the musical-targets were characterised by their diversity and auditory attractiveness—designed to be a good target for a GESP experiment; and; (4) avoided any manipulation of the target, mainly during

the target-hearing and the judgment process.

Visual: In the previous experiment visual targets had been used (Parra Villanueva, 2003a,b): A CD–R contains 3,500 high–resolution, jpg pictu (taken from a CD-R clip-art) for computer. Ten groups of w differentiated targets, such as animals, icons, foods, people, landscap religion, scenic pictures, structures, and humorous cartoons, were clustered into six subgroups of pictures each. Each subgroup contains 2 pictures, which are numbered from 1 onward. One image-target for e receiver was randomly selected by the sender. We decided to use the for five reasons: (1) picture subgroups are easily clustered; (2) randomisation process was facilitated; (3) picture-targets were characteri by their diversity and visual attractiveness which served as good targets a GESP experiment; (4) avoided any sensory (visual) cues; and (5) avoi any target manipulation, mainly during target-viewing and the judgm process.

Target security

AP had no contact with the sender during the selection process. made the selection of the targets for each receiver (each sessi individually, prior to each session, but he kept a register of the names each receiver and the selection of the group, subgroup and the pictu targets. This paper-and-pencil register was never in contact with AP security copy was kept by JV in a safe place unknown to the experiment During each session, JV kept the register in a closed envelope with hir all times until after the judging procedure: he then delivered it to AP. W JV prepared only a single target, he remained alone in the sender's ro separated from the experimenter. This procedure protected against (unlikely) possibility of any leaking of target information to AP. T experimenter did not access the room of the sender (JV) before and dur the Ganzfeld session.

This was a blind experiment because the experimenter, who wa contact with the receiver during the pre-test and post-test period, was aware of which picture-target the sender had selected. The experimer also did not show the sender's room to the receiver before the Ganzfeld t The experimenter had no contact whatsoever with the sender either dur the selection process or during the observation of the picture-target, si the experimenter left the room before the sender selected the picture-targe

When the Ganzfeld session concluded, JV used the same tar selection procedure to create the target (visual or musical) set, that is, tar and three decoys for the judging procedure. AP was unaware as to details of this procedure. A randomisation procedure was carried out by

sender once the three images/music for the judging procedure had been selected. To avoid the tendency to select pictures placed on the high or low and left or right on the computer screen, the sender randomly assigned a value from 1–4 for each the places of the picture-target. AP was also unaware of the details of this procedure.[1]

To avoid sensory cues as to the musical-target identity, the experimenter had a PC program for displaying four audio-clips at the same time. The musical-targets were previously randomised before the hearing of them. Four themes of different music style, numbered from 1–4, were inserted in each group. JV used the same target selection procedure to show the audio-clip set for the judging procedure. The details of this procedure were unknown to AP.

A sequence of (pseudo)random numbers obtained using StatPac Gold 4.5 to select the group of targets (target and three decoys) was generated. No participant had any contact with the sender before, during or after the Ganzfeld session. The distance between sender and receiver, as well as the walls of the Institute, and the design of the Ganzfeld lab are optimal with rooms safely isolated so that one cannot infer that both AP and JV could have communicated any sensory clues—intentionally or unintentionally.

Experimental procedure

As mentioned above, out of 138 participants who underwent a Ganzfeld session using visual targets, just 54 of them underwent a session using musical targets—a few months after—so that the order of the experimental session was visual first, musical second, and were not counterbalanced. Moreover, people who underwent the musical target condition had some experience with Ganzfeld stimulation.

The experimenter engaged in conversation with each participant, so as to provide more information about the Ganzfeld technique. After that, and once the Ganzfeld stimulation began, he left the receiver's room, and he returned when the stimulation had ended. During the session, the experimenter remained silent in room B. After the receiver's stay in the Ganzfeld lab, the experimenter indicated the end using, twice, a caller (one-bip sound) to indicate to the sender the target-hearing/viewing period (indicating the beginning and end of the hearing/viewing period). The audio-target was heard by the sender, using headphones, for 23 minutes.

Each receiver was asked to verbalise their visual/auditory

[1] Photoshop 5.0 allows display of four pictures at the same time on the computer screen. The picture-targets were never printed on paper, so that fact also did not allow any sensory cues between the receiver and experimenter.

mentation as much as possible after the Ganzfeld stimulation. The sen left the sender's room, to go to another room, on the other side of Institute, waiting a few minutes before meeting AP once the entire Ganzf experiment ended. The judgment procedure started once the receiver v seated in front of the computer screen.

Judgment procedure

Musical. The experimenter had a form used only by him. The receiver tl heard the four potential targets (the actual target and three decoys), wh are presented in one of four random sequences. The receiver, while hear each candidate, associated to the item as though it were the actual tar; describing emotional and sensational similarities between the item and Ganzfeld whole-mentation (auditory, visual, emotional, or sensory). Wl the receiver was associating to each candidate, the experimenter pointed potential correspondences that the receiver may have overlooked. A rank 1 is assigned to the candidate which the receiver believes has the *strong* similarity to their Ganzfeld mentation; a rank of 4 is given to the candic which the receiver deems *least* like their Ganzfeld experience.

Visual. Like the musical targets, each receiver viewed the four poten targets (the actual target and three decoys on the computer screen), wh were presented in one of four random sequences. The receiver, view each candidate, associated to the item as though it were the actual tar; describing perceived similarities between the item and the Ganzf impression. A score of 1 is assigned to the candidate the receiver felt the *strongest* similarity to their Ganzfeld impression; a score of 4 was gi to the candidate the receiver felt was *least* like their Ganzfeld experie (Scores 2 and 3 were also allocated). The experimenter did not suggest additional comments during the judging process.

The judging procedure—depending on each participant—las between five and ten minutes in both conditions. Forms were individu signed by each participant.

Both conditions: Three rating-scales were used following the Ganzfeld: degree of mental activity; (2) vividness of imagery; and (3) effort listen/perceive. They were all on a 0-99 scale. See Table 3.

RESULTS

First-rank scores represent high coincidence with picture/musical theme chosen as potential target; fourth-rank sco

represent low or null coincidence with picture/theme chosen as potential target in the judging procedure. The visual-target Ganzfeld condition (p = .002) gave results better than the musical-target Ganzfeld condition (p = .009), but the difference between both target conditions (visual vs. musical) was not significant (z score = –.392, p = n.s.). See Tables 1 and 2. It should be noted that the rate of first-rank hits, viz., 46.3%, is higher than in the original visual-target experiment (viz., 41.3%), and it is just possible that the present results are artifactual, if hitters in the first experiment were more inclined to volunteer for the musical experiment. Note also that correlations between the ESP-scores and the personality tests were non-significant.

Table 1.
Comparison of musical- and visual-target rank-scores: Distribution of scores (n = 54)

	1st	2nd	3 th	4 th	z-score	p (one-tailed)
Expected	25%	25%	25%	25%		
Observed Visual–Target	46.3	18.5	18.5	16.7	– 2.86	.002
Observed Musical–Target	35.2	27.8	25.9	11.1	– 2.37	.009

* A *negative* z-score indicates score position *above* mean chance expectation. First-rank is high coincidence; fourth-rank is low or null coincidence. Due to the fact that scores of 1 represent high coincidence *lower* scores indicate psi-hitting.

Table 2.
Comparison of musical- and visual-target conditions: Wilcoxon rank test (n= 54)*

Type of Target			N	Mean rank	Sum of ranks**	z	p
Musical	Musical target Visual target	<	20	21.05	421.00	.392*	n.s.
Visual	Musical target Visual target	>	22	21.91	482.00		
	Visual target Musical target	=	12				
	Total		54				

* Wilcoxon t test was used using SPSS

** Statistical test was used following the "sum of ranks with ma subjects" procedure (Kreiman, 1998, pp. 125-126).

Table 3.
Comparison of means for post-ganzfeld questionnaire item scores: First a second ganzfeld session

	First ganzfeld session (Visual target)		Second ganzfel session (Musical target	
FACTOR	Mean	SD	Mean	SI
MENTAL ACTIVITY (0 = structured; 99 = bizarre)	66.67	23.56	67.56	18.(
IMAGERY VIVIDNESS (0 = Low; 99 = High)	64.30	25.04	55.69	26.5
EFFORT TO PERCEIVE MUSIC / IMAGERY (0 = Low; 99 = High)	35.42	28.74	38.59	27.(

Vividness of imagery was greater using visual targets than for musical targets, t (52) = 2.96, p = .005 (two-tailed)

DISCUSSION

This experiment studied a psi-conducive state (the Ganzfeld) us a GESP technique (telepathy) in a free-response test using musical style targets. We conclude that this experiment offers some support for the cl that Ganzfeld stimulation is psi-conducive. Both conditions, one us visual- and the other, musical-targets gave significant results, although n the caveat for the visual-target data.

However, we do not conclude that the good ESP results in experiment using Ganzfeld induction were related to the use of a modif state of consciousness. We feel that the prior familiarity with the environment would lead to a reduction of the stress or anxiety typic caused by entering a potentially threatening or unknown situation. Lin with this point we feel it is important to use experienced participants Ganzfeld research. Experienced participants are those who have had a p Ganzfeld session (in this case, visual-targets), and therefore know wha expect from the experience. Thus, these results may be due to conduct Ganzfeld research with experienced participants, a situation which seem produce a higher success-rate than research designs using only novices. inexperienced participants (Honorton, Ferrari & Bem, 1990; Sargent, 19 Sargent & Bartlett, 1982). Again, this result may be related to the hig degree of comfort and familiarity with a procedure that initially may se

strange or bizarre for the participant. This familiarity may contribute to the participant's ability to relax in a "safe" environment and facilitate a deconstruction of psychological barriers.

Comparing the principal indicators of the Ganzfeld experience in the first session (visual-targets) and the second session (musical-targets) we found a very small increase in participant mental activity (66.67 to 67.56), a significant decrease in the vividness of imagery (64.30 to 55.69)—probably due to the effect of the instructions given for each session—and a non-significant increase in the effort to perceive imagery (32.22 to 38.59). We asked ourselves if imagery vividness in Ganzfeld stimulation increases or decreases depending on the *nature* and not the *content* of the target, that is, being a visual image or a sound. In the same way that other studies have examined the content of the target (i.e., static images versus dynamic images), future studies should also examine differences in the content of the musical target (i.e., a musical theme vs. a monotonous sound).

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