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The Effects of an Auditory Subliminal Message upon the Production of Images and Dreams

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The purpose of this research was to investigate what effect an auditory subliminal message, produced by speeding up the rate at which it was recorded, would have upon the imagery and dreams of a group of normal subjects. The auditory subliminal message was produced by speeding up a message that was sung until it could not be consciously understood. This message was mixed with a normal music recording and played to nine subjects in the experimental group. Nine subjects in the control group heard the normal music recording without the subliminal message. Both groups were asked to produce a pretest drawing before the tapes were played, an imagery drawing immediately after the tapes were played, and a dream drawing of any dreams they might have that night.

A statistical analysis was performed from data collected on blind ratings given to all the drawings by two art therapists. The results indicated a significant difference between the dream drawings and the imagery drawings of the experimental group and the control group. When the drawings were examined, the effect of the subliminal message could be seen.

Based on the statistical data and certain drawings collected in this study, it would appear that the auditory subliminal message did have an effect upon the imagery and dreams of the subjects in the experimental group. The results of this study appear to indicate that the unconscious/preconscious mind is able to perceive a recorded verbal message that cannot be consciously understood at the high rate of speed at which it was recorded.

The purpose of this study was to test a method of producing an auditory subliminal stimulus by investigating the effect it had on the images and dreams of a group of normal college students.

The auditory subliminal stimulus was produced by increasing the rate of speed at which a message was sung until it could no longer be consciously perceived as anything other than a brief, squeaky noise. This subliminal message was embedded in a piece of instrumental music at a reduced decibel level, but was still loud enough to be heard clearly anywhere within a regular-sized room.

The main auditory subliminal message used in this study contained two sections. The first section contained the following phrases, which were sung using no specific melody: A, "You are climbing a long staircase," B, "A piano is playing," C, "You wish to be with daddy," and D, "He is wearing a hat." Section 2, which was spoken, said "Remember your dream and make a drawing of it when you wake up." This entire message was re-recorded at increasing speed until the duration was approximately 1 second. The message was sung and spoken by the author. The entire message was mixed with the music, so it would be heard four times at regular intervals over a 5-minute period.

There have been studies done in the past using auditory subliminal stimulation. However, the methods used have been different from the method developed for this experiment. Most of the studies involving auditory subliminal messages used a technique that consisted of playing an unaltered recorded message at a reduced decibel level below the threshold of hearing, through earphones or speakers (Borgeat *et al.*, 1981; Dixon, 1956; Fisher, 1976). In these studies, the researchers reduced the volume level of the recorded message until the test subjects could not hear it. Their results indicated that the subliminal stimulus was perceived without the subjects being consciously aware of it.

In another study (Mykel and Daves, 1979), an auditory subliminal message, played at a decibel level below the threshold of hearing, was presented in one earphone while music was played into the other earphone. This study also indicated that the auditory subliminal message appeared to influence the subjects in such a way that they must have perceived it unconsciously/preconsciously.

Another researcher (Becker, 1979) invented a sound mixer that combined music with an auditory subliminal message that was played at a reduced decibel level compared to the music. This invention was used in a department store chain with an antitheft subliminal

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message. The music could be heard clearly as regular background music, but the auditory subliminal message could only be perceived consciously by a shopper too close to the speakers in the ceiling. One department store chain reported a 37% reduction in theft as evidence to support the theory that people were affected by the auditory subliminal message.

Many studies have tested the effects of visual subliminal stimulation upon the production of images and dreams dating back to the original studies reported by Poetzl (1917/1960) Poetzl had his subjects view slides of photographs, which were displayed for 1/100 of a second using a tachistoscope, and then asked them to describe what they had seen. The next day Poetzl asked his subjects to report their dream imagery to see how it related to the subliminally presented photograph. Poetzl concluded from his research that there is a relationship of exclusion involved in perception whereby a consciously perceived visual stimulus loses its effect and other visual material perceived preconsciously continues to exert an effect upon the individual's dream imagery (Poetzl, 1917/1960). The work of Poetzl was revived during the 1950s, primarily by Fisher (1954), who conducted many tests using the tachistoscopic method of presenting a visual image at an average speed of 1/100 of a second to his subjects. Fisher concluded from his studies that visual perception can occur on a level below the conscious recognition threshold, that visual subliminal stimuli are registered and acquire memory status unconsciously/preconsciously, and that such registrations become attached to preexisting memories and are utilized in dreams and background conscious imagery (Fisher, 1957). Subsequent studies designed to test the original findings of Poetzl reported results similar to those of Fisher (Luborsky and Shevrin, 1956; Paul and Fisher, 1959; Shevrin and Luborsky, 1958).

The visual subliminal stimulation method using the tachistoscope was tested, using photographs, simple line drawings, and short word messages. This latter method continues to be used most frequently by researchers, such as Silverman and Levinson (1975) and others, who have developed what they call the subliminal psychodynamic activation method. This method uses the visual subliminal message "Mommy and I are one" quite frequently. Silverman believes that his method is capable of demonstrating that a relationship exists between particular unconscious wishes, anxieties, and fantasies and particular behaviors (Silverman, 1983). Since most subliminal effects occur unconsciously/preconsciously, the intent of the subliminal psychodynamic activation method is to make contact with unconscious conflicts directly in an effort to either increase or decrease whatever psychopathology is connected to the conflict (Silverman *et al.*, 1978).

The auditory subliminal message used in the present study included two parts that have a similar psychodynamic activating quality as the "Mommy and I are one" type of message. Parts A, "You are climbing a long staircase," and C, "You wish to be with daddy," were included in the message in order to increase its impact upon the unconscious mechanism, thereby increasing the likelihood that the subjects' imagery and dreams would pertain to the message in some way. Parts B, "A piano is playing," and D, "He is wearing a hat," were intended to be more neutral in nature. However, there are some similarities between a piano keyboard and a staircase, which, according to Freud, are both latent symbolism for engaging in sexual activity (Freud, 1900/1965). It would seem possible that the scores would be higher for those parts of the message most likely to stimulate unconscious/preconscious memories that are already seeking to be made conscious.

It is important to understand the subliminal activation theory that has been formulated in order to explain what occurs when someone is exposed to a visual or auditory subliminal stimulus. The key element behind all subliminal studies done to date is that the unconscious/preconscious mind appears to be capable of perception at a level below the normal thresholds for hearing and seeing. We are not always conscious of everything that goes on around us, and it is possible that most or all of what we experience must first pass through some kind of psychological filtering device in the mind, which only allows that which is acceptable and/or essential to be perceived consciously. This filtering device is often referred to as the defense mechanism or the censor for the super ego.

So, although we are unable to consciously perceive the content of a visual or auditory stimulus exposed to the eyes or ears at a level below normal threshold, it is possible to perceive the subliminal stimuli unconsciously/preconsciously or through some other unknown mechanism of the mind. The subliminal stimulus appears to connect with existing unconscious/preconscious memories. These memories are most likely to contain elements of primary process drives that are seeking to be gratified. The repressed unconscious memories are condensed with the subliminal stimuli, much like the dream work construction process, in order to escape the resistance of the censor and enter consciousness via imagery and dreams (Fisher, 1954).

The psychological mechanism motivating this process may be the wish-fulfilling characteristic of dreams that Freud wrote about. It is responsible for granting

partial gratification to the demands of that which have been repressed (Freud, 1965). The first demand would appear to be conscious recognition. Fisher believed that, in a research situation, the subjects' wish to know what they had been exposed to may have been a factor that caused them to dream about the subliminal stimuli (Fisher, 1954).

At this point in time, it no longer seems necessary to debate the fact that perception is possible at levels below the normal thresholds and that subliminal stimuli thus perceived affect imagery and dreams (Dixon, 1956; Fisher, 1957). Much research has been completed and reported to support these contentions (Klein, 1959; Luborsky and Shevrin, 1956; Paul and Fisher, 1959; Shevrin and Luborsky, 1958; Silverman, 1983). It is now time to focus on other ways in which this phenomenon can be used and to discover more about the limits of our perceptual abilities.

The main objective of this study was to test an auditory subliminal message that could be heard clearly by the subjects in the experimental group but could not be consciously understood due to the rapid speed at which it was recorded. The results of this study will be presented in order to demonstrate that the unconscious/preconscious mind is not only capable of perception below the normal threshold of hearing, but is also capable of perception at levels that go beyond the normal threshold: In other words, perception of auditory stimuli that is presented at a very rapid speed rather than at a very low decibel level.

Methods

Subjects

There were nine subjects in the experimental group and nine in the control group. The experimental group consisted of volunteers from the first-year undergraduate respiratory therapy program at a large urban medical university. There were three men and six women in this group.

The control group consisted of four full-time staff members, four student interns, and one volunteer from a local urban rehabilitation hospital. The control group had two men and seven women who volunteered to participate.

It should be noted that the researcher was doing a clinical placement as a second-year music therapy graduate student at the same rehabilitation hospital at which the control group was tested.

Procedure

The subjects were asked to make themselves as comfortable as possible while sitting in chairs. A blank sheet of white construction paper measuring 9 × 12 inches and a sharpened no. 2 pencil were on the desks in front of them. The subjects were told to allow an image to come into their minds, and to make a drawing of that image on the paper with the pencil. The subjects were also told to add any verbal comments on the front or back of the paper if they felt the need to describe their imagery further. The subjects were given 5 minutes to make their pretest drawings before they were collected.

The subjects were then given another blank piece of paper, the lights in the room were lowered, and they again were asked to relax and make themselves comfortable. The subjects were then told that they would be listening to one short piece of music on which they should not try to concentrate. They were told to just listen and let the music help them relax. The subjects were then informed that there might be material on the tape that they might not be able to perceive.

After a brief, quiet pause, the music was turned on. The cassette recording of the music was played on the Toshiba RT 8700 S stereo radio cassette recorder. The experimental group listened to the tape containing the subliminal message. The control group listened to the exact same music without a subliminal message. When the music was finished and the lights were turned back on, the subjects were asked to allow an image to come into their minds. Nothing was said concerning the music and their images; the subjects were simply told to make a drawing of any image that came to them on the piece of paper in front of them with the no. 2 pencil. They were also told to make verbal descriptions, if necessary, on the drawing.

After the imagery drawings were completed, each subject was given a blank sheet of paper in a file folder and a no. 2 pencil, which they were asked to take home with them that night. The subjects were told to put these materials next to their bed that night and to make a drawing of any dream they might have on the paper as soon as they woke up in the morning. The subjects in both the experimental and control groups were asked to return the next day with their dream drawings.

Those in the experimental group were also asked to listen to the music with the subliminal message again, after returning their dream drawings. They were told exactly when the subliminal message would be heard and to listen very carefully to it. The experimental group subjects were then asked if they could tell what the message said.

The Auditory Subliminal Tape

The auditory subliminal message was comprised of two sections. The first section of the message was sung in order to give it a musical quality, and contained four parts: A, "You are climbing a long staircase," B, "A piano is playing," C, "You wish to be with daddy,"

and D, "He is wearing a hat." The second section of the message was spoken and contained the following instructions: "Remember your dream and make a drawing of it when you wake up." The subliminal message was given a musical quality to increase its emotional impact and the likelihood that it would be processed by both hemispheres of the brain (Regelski, 1978).

In order to produce the subliminal message, it was first recorded directly into a Marantz PMD 220 two-speed professional cassette recorder at a slower 15/16 IPS recording speed.

This recording was then played back directly into a Sanyo M2562 radio cassette recorder, using a patch cord at the faster 1-7/8 IPS recording speed, thus speeding up the original message. The recording made on the Sanyo M2562 was then recorded again on the Marantz PMD 220, using a patch cord at the slower 15/16 IPS recording speed. This recording was then switched again to the faster 1-7/8 speed and played again into the Sanyo M2562. This entire process was repeated two more times, thus producing a recorded message that was played at such a rapid speed that it appeared impossible to consciously hear what it said.

The subliminal message was then recorded onto a cassette tape at regular intervals four times with total silence in between each playing of the message.

The music used in the study was a piece entitled "Mr. Gone," by Weather Report, Columbia Stereo (ARC) JC 35358, 1978. This record was played on a Kenwood KD 2070 direct-drive turntable and recorded onto a cassette tape using a Sharp TR 1144 stereo cassette deck with Dolby noise reduction on.

To combine the subliminal message with the tape "Mr. Gone," both tapes were played simultaneously on the Marantz PMD 220 and the Sanyo M2562 cassette recorders into a Shure 588 Sa Unisphere B dynamic professional microphone, which was connected to the Sharp RT 1144 cassette deck via a Pioneer SX 424 stereo receiver. In this fashion, the subliminal message was combined with the music four times at regular intervals into a Maxell XL II-S60 high-position cassette tape.

When the subliminal tape was recorded together with the music tape, the loudness level was much softer for the subliminal message and the music tended to mask the sound of the high-pitched message to

TABLE 1
Ratings of the Drawings (Rater X)

Control Group									Experimental Group									
Subject type	Manifest content				Latent content				Subject type	Manifest content				Latent content				
	A	B	C	D	A	B	C	D		A	B	C	D	A	B	C	D	
10 P	1	1	1	1	1	2	1	3	1 P	2	1	1	1	3	2	1	1	
I	1	1	1	1	1	1	3	1	I	1	1	1	1	1	2	2	2	
D	1	1	2	1	1	1	3	1	D	2	1	1	1	3	1	2	2	
11 P	1	1	1	1	2	2	1	2	2 P	1	1	1	1	2	1	2	3	
I	1	1	1	1	1	1	2	2	I	1	1	2	3	1	1	3	2	2
12 P	1	1	1	1	1	1	2	1	3 P	1	1	1	1	1	1	3	2	
I	2	1	1	1	2	1	1	2	I	2	1	2	1	3	2	2	1	
D	1	1	1	1	1	1	2	1	D	1	1	1	2	1	1	3	3	
13 P	1	1	2	1	2	2	2	1	4 P	1	1	1	1	3	1	3	3	
I	3	1	1	1	3	2	2	2	I	1	1	1	1	2	2	2	1	
D	1	1	1	1	1	2	2	1	D	2	1	2	1	3	1	3	2	
14 P	1	1	1	1	1	1	2	2	5 P	1	1	1	1	1	2	1	2	
I	1	1	1	1	2	1	3	2	I	2	1	1	1	3	1	1	2	
D	1	1	1	1	1	2	2	1	D	1	1	1	1	1	1	3	1	
15 P	1	1	1	1	1	1	2	1	6 P	2	1	1	1	3	2	2	2	
I	1	3	1	1	2	1	2	1	I	1	1	1	1	2	3	1	1	
D	2	1	1	1	3	2	1	1	D	2	1	1	3	3	2	2	1	1
16 P	1	1	1	1	1	2	2	1	7 P	2	1	2	1	3	1	3	1	3
I	1	1	1	1	2	2	2	1	I	2	1	2	2	3	2	3	3	4
D	2	1	1	1	3	1	3	1	8 P	1	1	1	1	1	1	2	1	
17 P	2	1	1	1	3	1	2	1	I	2	1	1	1	3	2	2	1	
I	1	1	1	1	1	2	1	2	D	1	1	2	1	1	1	3	3	
D	1	1	1	1	2	2	3	1	9 P	1	1	1	1	1	1	3	1	
18 P	1	1	1	1	1	1	2	2	I	2	1	1	1	3	1	2	1	
I	2	1	1	1	3	1	2	2										
D	1	1	1	1	2	1	1	2										

Parts of the auditory subliminal message: A, "You are climbing a long staircase"; B, "A piano is playing"; C, "You wish to be with daddy"; D, "He is wearing a hat." Scores: No relationship to message, 1 point; mild or some relationship to message, 2 points; definite strong relationship to message, 3 points. Drawing types: Pretest drawing, P; imagery drawing, I; dream drawing, D. The figure number of the drawings displayed in this article are listed to the right of the rating scores they received.

TABLE 2
Ratings of the Drawings (Rater Z)

Control Group									Experimental Group									
Subject type	Manifest content				Latent content				Subject type	Manifest content				Latent content				
	A	B	C	D	A	B	C	D		A	B	C	D	A	B	C	D	
10 P	1	1	1	1	1	1	3	1	1 P	2	1	1	1	2	1	2	1	
I	1	1	2	1	2	1	2	1	I	1	1	1	1	1	1	3	2	
D	1	1	1	1	1	1	3	1	D	2	1	1	1	2	2	3	1	
11 P	1	1	1	1	2	1	1	2	2 P	1	1	1	1	2	1	2	1	
I	1	1	1	1	1	1	1	2	I	1	1	2	3	1	1	2	2	2
12 P	1	1	1	1	2	1	2	1	3 P	1	1	1	1	1	1	2	2	
I	1	1	1	1	1	1	2	1	I	3	1	2	1	2	3	2	1	
D	1	1	1	1	1	1	2	1	D	2	1	1	1	2	1	2	1	
13 P	1	1	2	1	2	1	3	1	4 P	1	1	1	1	2	1	3	1	
I	3	1	1	1	3	1	3	1	I	1	1	1	1	2	2	3	1	
D	1	1	1	1	1	1	3	2	D	2	1	1	1	2	2	3	2	
14 P	1	1	2	1	1	1	3	1	5 P	1	1	1	1	1	1	2	1	
I	1	1	1	1	1	1	2	1	I	2	1	1	1	3	1	1	2	
D	1	1	2	1	1	1	3	1	D	1	1	2	1	1	1	2	1	
15 P	1	1	1	1	2	1	1	2	6 P	2	1	1	1	2	1	3	2	
I	1	3	1	1	1	1	1	1	I	1	1	1	1	1	1	2	1	
D	1	2	1	1	2	3	1	1	D	2	1	1	2	3	1	2	2	1
16 P	1	1	1	1	2	1	3	2	7 P	3	1	1	1	2	2	3	2	3
I	2	1	1	1	2	2	2	2	I	2	2	1	1	3	2	3	2	4
D	3	1	1	1	2	1	3	1	8 P	1	1	1	1	1	1	3	1	
17 P	2	1	1	1	1	1	3	2	I	2	1	2	1	2	2	3	1	
I	1	1	1	1	1	1	2	2	D	1	1	2	1	1	1	2	3	
D	1	1	1	1	1	1	2	1	9 P	1	1	1	1	1	1	2	1	
18 P	1	1	1	1	1	2	1	1	I	2	1	1	1	2	1	3	1	
I	2	1	1	1	2	1	3	1										
D	1	1	1	1	2	1	2	1										

Parts of the auditory subliminal message: A, "You are climbing a long staircase"; B, "A piano is playing"; C, "You wish to be with daddy"; D, "He is wearing a hat." Scores: No relationship to message: 1 point; mild or some relationship to message: 2 points; definite strong relationship to message: 3 points. Drawing types: Pretest drawing, P; imagery drawing, I; dream drawing, D. The figure number of the drawings displayed in this article are listed to the right of the rating scores they received.

some degree. However, the message was quite audible on the combined experimental group test tape, even when sitting some distance from the cassette player in a regular-sized classroom. The point is that the message was subliminal, not because it could not be consciously heard, but because it could not be consciously understood.

Results

Data Analysis

All the drawings collected in this study were coded and shown to two registered art therapists to be rated. In order to make this a blind rating, the drawings were mixed randomly and given to each rater in two separate groups. The two raters worked separately on one drawing at a time, not knowing what kind of drawing they were rating at any time. When both raters completed rating the first group of drawings, they exchanged pictures and rated the other half, thus completing the scoring for all the drawings. Both raters were registered art therapists with master's degrees in creative arts therapy and worked in psychiatric inpatient units of a large urban hospital medical school.

The art therapists were asked to rate the drawings on a scale of 1 to 3 for their manifest and latent content related to each of the four parts of the auditory subliminal message. Manifest content was defined as being "any part depicting a literal interpretation of the objects, ideas and/or situations referred to in the message fragment." Latent content was defined as being "any part depicting a symbolic representation of the objects, ideas and/or situations referred to in the message fragment." Symbolic representation was determined according to psychodynamic Freudian symbols that have been found to represent objects, ideas, and/or situations suggested in the content of the subliminal message (Schafer, 1954; Rapaport, 1951). Torda (1980) reported that sexual experience represented more symbolically in dreams can be analyzed by a trained therapist due to the universally understandable language and symbolism used by humans (Torda, 1980).

Each of the drawings was rated eight times; for each four parts of the message relating to manifest content,

and for each of the four parts of the message relating to latent content. In Tables 1 and 2 the ratings each drawing received from the two raters are listed for both groups. The scores given the drawings by each of the raters were added together.

The scores were totalled for the nine experimental group pretest, imagery, and dream drawings and compared to the scores of the nine control group pretest, imagery, and dream drawings. Scores from both groups were totalled three ways: Combined scores from the manifest and latent content, the manifest scores only, and the latent scores only. To compare the scores to find out where there was a significant difference, a nonparametric statistic was used because the sample sizes were small, $N = 9$. The test chosen was a Mann-Whitney U-test, a nonparametric form of the t-test used to measure whether two independent groups have been drawn from the same population.

The Mann-Whitney U-test was used to compare the differences between the scores on the pretest drawings and the scores on the imagery drawings and the dream drawings for both the control group and the experimental group. This test was also used to compare the differences between scores on the imagery drawings of both groups and between scores on the dream drawings of both groups.

A Pearson r correlation coefficient was used to measure interrater reliability. The measure of agreement between the two raters for the manifest content scores was $r = .82641$; the level of significance was $p = .001$. The measure of agreement between the two raters for the overall latent content scores was $r = .65872$; the level of significance was $p = .001$.

In Table 3, the results of the Mann-Whitney U-test scores are listed along with the level of significance. Although many of the figures in Table 3 are not significant, it should be noted that there was a level of significance in five of six categories having to do with the experimental group's dream drawing scores. When the experimental group and control group dream drawings were compared, their manifest, latent, and combined total scores all proved significant. There is also a significance of .05 when the total scores of the imagery drawings are compared between the two groups.

TABLE 3
Mann-Whitney U-Test Results

Pretest *vs.* imagery scores	Experimental Group		Control Group	
	U[a]	p	U	p
Manifest content	23.0	NS	26.0	NS
Latent content	30.5	NS	39.0	NS
Total content	23.5	NS	30.5	NS
Pretest *vs.* dream scores	**Experimental Group**		**Control Group**	
	U	p	U	p
Manifest content	4.0	.013	16.5	NS
Latent content	14.0	NS	21.0	NS
Total content	9.0	.09	20.5	NS

Experimental *vs.* control group	Drawings					
	Pretest		Imagery		Dream	
	U	P	U	P	U	P
Manifest content	36.0	NS	29.5	NS	8.0	.037
Latent content	26.5	NS	21.5	NS	7.0	.026
Total content	31.5	NS	19.0	.05	3.5	.007

[a] U, Mann-Whitney U-test score.

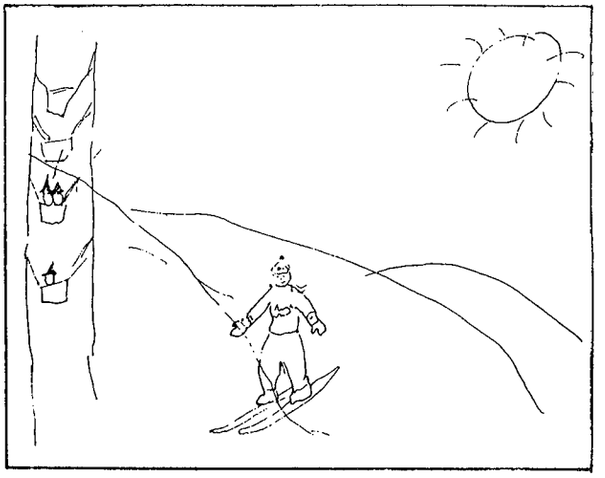

FIG. 1. Subject 1's dream drawing.

The Drawings

Three drawings that best represent the auditory subliminal activation effect will be presented. These two imagery drawings and one dream drawing, which were produced by three different subjects in the experimental group, appear to depict images that are directly related to the four parts of the auditory subliminal message. In one of the imagery drawings displayed, all four parts of the message are represented in one drawing.

The first drawing (Figure 1) is the dream drawing of a female subject. Three parts are depicted in this drawing, all of which are found in the image of the ski lift. Part A of the message ("You are climbing a long staircase") is represented symbolically in the ski lift. Part C ("You wish to be with daddy") is illustrated with one lone figure separated from two other figures drawn close together. The same image of two figures together separated from one lone figure could be found in the drawings of four of the nine experimental subjects. Part D of the auditory subliminal message ("He is wearing a hat") is literally represented in this drawing as all four figures were wearing hats.

On the back of this drawing, the subject wrote that she had a dream she was skiing, an activity that she

had never tried and has no desire to try. This may be an expression of the subject's willingness to complete the third part of the experiment, which was to remember her dream and to make a drawing of it when she woke up. This subject had a total score of 20 points on her imagery drawing and 29 points on her dream drawing, reflecting a greater effect of the subliminal message on her dream drawing as compared to her imagery drawing.

Figure 2 is the imagery drawing of one of the male subjects in the experimental group. This drawing contains imagery related to part C ("You wish to be with daddy") and Part D ("He is wearing a hat") of the auditory subliminal message. The larger head with long hair at the top left of the drawing is looking across a group of people at the head of an older-looking figure, who is the only person wearing a hat. The subject who drew this image reported no dream. It would appear that the subliminal message was processed through the production of the drawing.

Figures 3 and 4 are the pretest and imagery drawings of one of the female subjects from the experimental group. Both of her drawings are being shown in order to illustrate the effect the auditory subliminal message had on this individual.

It appears that all four parts of the subliminal mesage are represented in the subject's imagery drawing. In addition, it is interesting to note that even this subject's pretest drawing appears to represent two parts of the message—C ("You wish to be with daddy") and A ("You are climbing a long staircase"). For this reason, the drawing scored very high on the rating.

In the imagery drawing 4 (Figure 4), part A ("You are climbing a long staircase") is represented by the long road that appears to connect to a line rising up toward the cross in the sky. This road is also drawn with step-like lines on both sides. These "steps" also partially represent part B of the message ("A piano is playing"), which is further represented by the two pairs of hands that appear to be playing the keys ("steps") of the piano. Part C of the message ("You wish to be with daddy") is symbolically illustrated by the road (stairway) leading toward the cross, which is symbolic of Christ or God the Father. The two pairs of hands together and the cross in the sky alone, which is symbolic of another figure, is similar to the three-figure image found in the first drawing. Part D of the subliminal message ("He is wearing a hat") is literally illustrated by the positioning of a crown directly above the cross.

Imagery drawing 4 was the only drawing that contained material suggestive of all four parts of the auditory subliminal message. It received the highest score in the rating of all 50 drawings. The individual who made this drawing claimed not to have had a

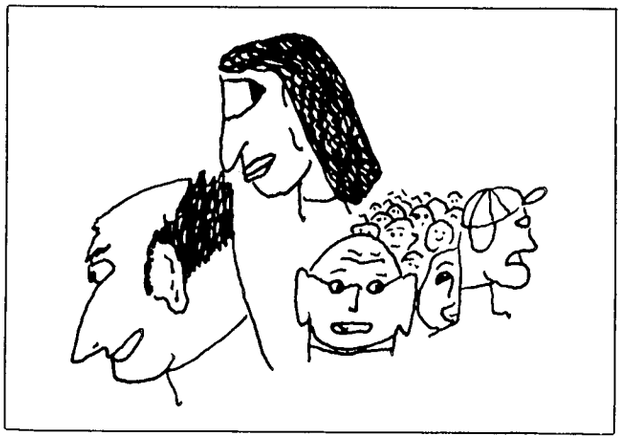

FIG. 2. Subject 2's imagery drawing.

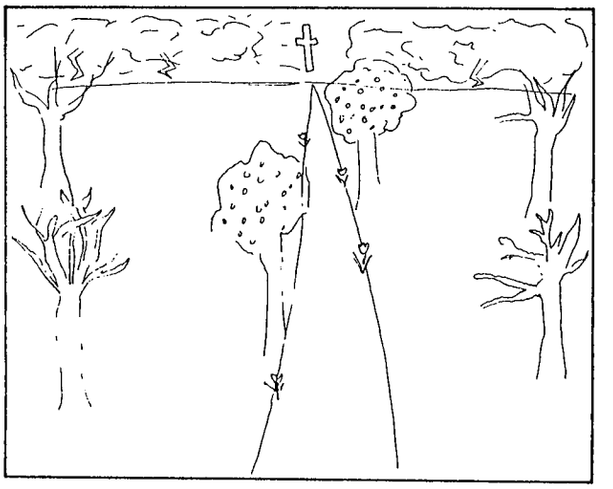

FIG. 3. Subject 3's pre-test drawing.

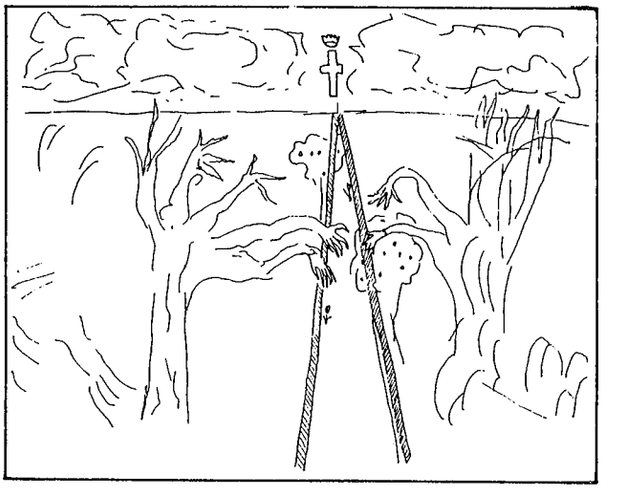

FIG. 4. Subject 3's imagery drawing.

dream, and reported that she had been sick all night and did not sleep.[2]

It would appear that this subject, along with the second individual discussed, was able to process the auditory subliminal material immediately after the playing of the tape. There may have been less reason for these two subjects to process the subliminal material in dreams as this was completed earlier via the production of an image and a drawing.

Discussion

The validity of the statistical analysis performed on the data collected in this study is directly related to the reliability of the ratings the drawings received by the two art therapists. The measure of agreement between the raters was significant at the $p = .001$ level for the manifest content and latent content scores. However, for latent content scores the Pearson r correlation coefficient ($r = .65872$) is lower than the conventionally accepted level ($r = .85$). It is difficult to say how this may have affected the results. The raters were asked to look for any part of each drawing depicting a symbolic representation of the objects, ideas, and or situations referred to in each of the four parts of the message. Considering the nature of this request it would seem unrealistic to assume that even two professionally trained art therapists could reach a measure of agreement as high as $r = .65872$.

Based on the statistical analysis of the data collected in this study it would appear that the effect of the auditory subliminal message was most clearly found to influence the dreams of subjects in the experimental group. The manifest content scores of their dream drawings were significantly higher than the manifest content scores of the control group. The latent content scores of the dream drawings made by the experimental group were also significantly higher than the control group. When both manifest and latent scores are combined for a total score comparison between the dream drawings of the two groups, the experimental group's scores are significantly higher at the $p = .007$ level. Based on statistics alone, it would appear that the auditory subliminal message did have an effect on the dream imagery produced by the subjects.

The two imagery drawings (Figures 2 and 4) displayed in this paper contained material that would appear to be directly related to the message content of the auditory subliminal message. The second imagery drawing containing the cross in the sky (Figure 4) is a startling example of the auditory subliminal effect upon an individual's imagery. This drawing scored much higher than any other drawing collected in the study and appears to contain all four parts of the subliminal message. It should be mentioned that, in the statistical analysis, all three drawings were compared using the Mann-Whitney U-test. The high scores this drawing received were not included as this subject did not report having a dream.

There are data available in this study to suggest that the auditory subliminal stimuli did have an effect upon the imagery and dreams of the subjects. Even though the subjects might have been consciously aware of the high-pitched sounding message, it was not perceived consciously as having meaning. It would appear that some other area of the brain was able to perceive the content of the message and store it in the unconscious/preconscious memory system. Freud alluded to the brain's ability to perceive on a level other than the conscious when he stated that, "... the most complicated achievements of thought are possible without the assistance of consciousness." (Freud, 1900/1965). Concerning auditory perception specifically, Torda (1980) reported that processing auditory stimuli is usually unaffected by the auditory cortex and that auditory information is coded at subcortical areas of the brain independently without conscious awareness occurring in the cerebral cortex (Torda, 1980).

More evidence to support this general idea was discovered through research pertaining to visual subliminal stimulation. Fisher reported that his results show that memory images preconsciously perceived after being tachistoscopically exposed, appear in the images that were presented immediately after the presentation of the subliminal material (Fisher, 1957). Fisher (1957) concluded from his imagery and dream experiments that, "it is certain, however, that extensive peripheral registration far below conscious recognition threshold takes place, that such registrations may acquire memory status and may be utilized on a major scale not only in dreams, but also in our background conscious imagery ..." (p. 42).

What appears to take place is that the content of the auditory subliminal message is perceived and possibly becomes condensed with preexisting unconscious/preconscious memories and images. At this time, a process may go into effect that requires that the repressed material should become conscious. Freud believed that we dream in order to allow ourselves to control preconsciously the excitation in the unconscious, which has been left free (Freud, 1900/1965). It may be possible that stimuli perceived subliminally create tension in the unconscious/precon-

[2] During another auditory subliminal experiment similar to this one, several subjects reported experiencing headaches after the procedure. There is no mention of this side effect in the literature related to auditory or visual subliminal experiments.

scious mind and, if there is a need, the material is brought to the attention of the conscious mind.

This process may be involved in what Hartmann believes are two of the functions of a dream: Dreams allow the conscious mind to benefit from the wider and more universal truths of the unconscious, and dreams allow for a solution of current emotional problems, integration of the solutions, and produce better adaptations to current life (Hartmann, 1967).

The duty of the mind would be to make available to the unconscious/preconsciousness of the individual any information perceived unknowingly that unconsciously has meaning or importance to the organism. We may be able to store and recall just about everything that happens around us at all times. However, it would seem more likely that we would be most apt to recall material containing the highest amount of emotional meaning.

The auditory subliminal message in this study contained four separate parts in section 1 that were sung; each part was designed to have its own level of manifest and latent meaning. Parts A ("You are climbing a long staircase") and C ("You wish to be with daddy") were intended to have a more potent impact upon repressed unconscious memories than parts B ("A piano is playing") and D ("He is wearing a hat").

According to Freudian dream symbolism, climbing a long staircase is a latent representation for having sex (Freud, 1900/1965). Part C of the message suggested to the subjects that they wish for a fairly important object with whom to be. For women, this part of the message would be related to the repressed unconscious memories of the oedipal complex. For men, it would imply that they avoid the unconscious fear of castration by the father by being with him and not against him. Suggesting a particular wish may also have provided an additional push for this part of the message to enter consciousness in the dream state.

Parts B ("A piano is playing") and D ("He is wearing a hat") contain less latent symbolic meaning compared with Parts A and C. However, part D consistently received a higher rating than part B in the experimental group and the control group. This may be attributed to the Freudian dream symbolism of a hat being representative of a woman's uterus (Freud, 1900/1965).

The general tendency for parts A and C to have a greater impact upon the repressed unconscious memories and, therefore, to appear more frequently in the drawings is illustrated more clearly when each drawing's score is looked at separately. When the scores for parts A and C are combined and compared with the combined scores for parts B and D, the following results are obtained.

Experimental Group (24 Total Drawings)

Manifest content scores. A and C totals are the same or higher than B and D totals for 22 of the 24 drawings.

Latent content scores. A and C totals are the same or higher than B and D totals for 23 of the 24 drawings.

Control Group (26 Total Drawings)

Manifest content scores. A and C totals are the same or higher than B and D totals for 25 of the 26 drawings.

Latent content scores. A and C totals are the same or higher than B and D totals for 22 of the 26 drawings.

Control Group and Experimental Group (50 Total Drawings)

Manifest content scores combined with the latent content scores (100 total scores). A and C totals are the same or higher than B and D totals for 92 of the 100 scores.

This evidence strongly suggests that there is a certain "universal" latent symbolic meaning attributed to parts A and C of the auditory subliminal message that may be found in almost any drawing created under similar experimental conditions, regardless of the presence of any kind of subliminal message. However, in this particular study, the degree of importance can be found in which drawings (pretest, imagery, or dream) received the highest scores most consistently. The Mann-Whitney *U*-test results show that the experimental group's dream drawings and to some extent their imagery drawings scored higher overall than the control group's dream and imagery drawings.

Another issue related to the auditory subliminal message and its relatively universal symbolic qualities has to do with the transference between the researcher and the subjects during the testing procedure. In this situation, a male researcher was asking five male and 13 female subjects to regress while music was played and then engage in the primary process activity of drawing their imagery and dreams. The regression, together with transference to a male researcher, may have been partially responsible for imagery and dreams related to latent sexual symbols (staircases) and wanting to be with daddy.

I feel these transference issues may have caused the control group scores to be higher, since they knew the researcher as a music therapist and co-worker. In this situation, imagery and dreams related to wishing to be with daddy may have been elicited by their own wishes to assist the researcher as best they could. The fact that they had seen the researcher play piano appeared to have had an impact upon one female subject, who reported an imagery drawing of a dancing figure and a hand playing a piano keyboard. This drawing was the only one in the entire study to receive

the highest score (3 points) from both raters under manifest content for part B ("A piano is playing") of the subliminal message.

Transference to the researcher may also have caused the experimental group's scores to be higher. The "daddy" image of the researcher telling the three male and six female subjects what to do may have affected their imagery related to parts A and C of the auditory subliminal message as much as the message itself. However, if this had occurred, it would seem possible that the experimental group's pretest drawings would have scored as high as their imagery and dream drawings, which was not the case.

The problem of transference and other factors affecting the validity of the experimental findings may have been avoided by making a few changes in the method of presenting the auditory stimulus. First of all, some type of sound, such as white noise, could have been embedded with the music the control group heard to make the two tapes sound almost identical. Then, in order to reduce experimenter bias the tapes could have been coded by a third party so no one involved in the testing situation would know for sure which tape was being played. Another suggestion would be to have the instructions to the subjects recorded one time and added to the beginning of both tapes.

In earlier subliminal studies it was discoverd that once the subliminal material was presented to the individual in imagery or dreams, it would then begin to lose its effect. Once the subliminal message is activated and processed, either preconsciously or consciously, it appears to lose its emotional impact upon the individual's psychic apparatus (Poetzl, 1960).

In the present study, each subject in the experimental group received total scores that serve to illustrate this effect. In each case, if a subject scored high on their imagery drawings, their dream drawing score was always lower and vice versa. In other words, if the subliminal material was processed immediately in their imagery drawings, then it lost its effect and did not appear in their dreams; if the individual's imagery drawing was unaffected by the subliminal material, then it would have its effect upon that person's dream drawing. The graph helps to illustrate this point more clearly (Figure 5).

The one question still remaining pertains to the ability of the brain to perceive the highly accelerated subliminal message at any level of consciousness. It would appear that auditory perception within the unconscious/preconscious area of the mind does not have to be at normal rates of speed. If this is true, further research is needed to discover the limits at which subliminal perception is no longer possible. Further research is also needed to discover what effects other

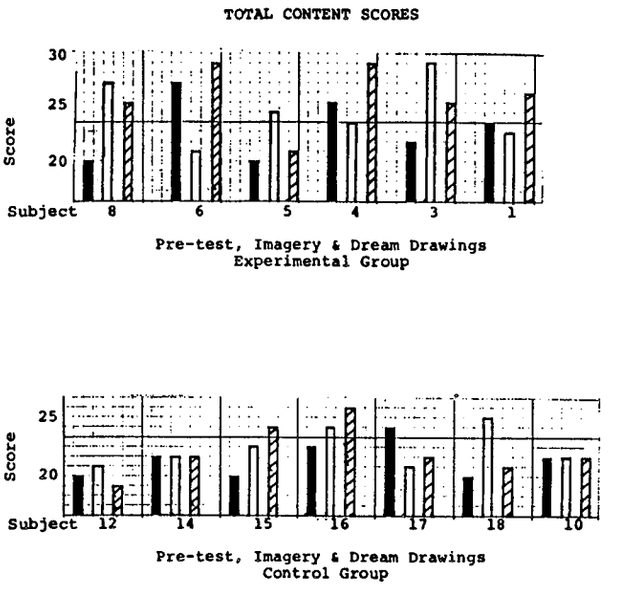

FIG. 5. Total content scores.

types of messages may have upon imagery and dreams and what the residual effects are of this procedure upon human behavior.

The important question to ask seems to be what are the advantages, if any, of communicating directly with the unconscious/preconscious areas of the mind using accelerated verbal messages? Are there any benefits to using this technique over the tachistoscopic visual technique of presenting the subliminal material? It might also be a good idea to investigate the limits of visual perception. Most of the current research involves the use of very brief four- or five-word phrases. It may be possible for an individual to perceive much more visually using subliminal stimulation.

Conclusions

There are data presented in this article to support the hypothesis that the auditory subliminal message developed for this study would have an effect upon the imagery and dream drawings produced by subjects who were exposed to the message.

The Mann-Whitney *U*-test results revealed five areas in which the experimental group's drawings were significantly different from the control group's drawings in favor of the hypothesis. Imagery drawing 4 (Figure 4) appears to illustrate clearly the effect of the four-part auditory subliminal message used in this experiment.

The statistical data utilized in this study may have been more significant if the high scores drawing 4 received were included in the results. However, these

high numbers were excluded, due to the requirement that all three drawings (pretest, imagery and dream) had to be included in the Mann-Whitney *U*-test analysis of the rating scores. Another factor affecting the scores was that the subjects in the control group knew the researcher before the testing. It may have been possible that transference issues between the subjects in the control group and the researcher may have caused their scores to be higher, relating to at least three parts of the subliminal message. However, there have been no articles published concerning the effect of the subliminal stimuli upon imagery and dreams that were concerned with statistics. Most researchers simply displayed a few drawings, pointing out where they thought the subliminal stimuli had had its effect. In this study, regardless of statistics, the drawings presented are significant and appear to demonstrate that the auditory subliminal message technique utilized did have an effect upon the subjects' imagery and dreams.

It therefore appears that we are capable of perceiving auditory stimuli at levels that go beyond the normal thresholds. This perception occurs in unconscious/preconscious areas of the mind with conscious perception made available through imagery and dreams.

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