

## Extended Abstract

### PSYCHO/PHYSIOLOGICAL EFFECTS OF VESTIBULAR AND AUDIO STIMULATION: *The Trinity Table*

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The purpose of this research was to investigate the effects of vestibular and audio stimulation through the use of music and the Trinity Table™, a horizontal motion machine, on psychophysiological changes and perception of altered states of consciousness in average adults. Stimulation of the vestibular system (a series of canals in the inner ear that provide information on body orientation to the brain) has been suggested to trigger increased neural activity throughout the brain, caused by the electrical impulses sent from the vestibular system to the cerebellum. A range of studies, in both healthy and impaired infants and adults, have shown the benefits of vestibular stimulation by both rotational and rocking motions. The Trinity Table™ experience is intended to promote deep relaxation, spiritual growth, and expansion of consciousness. Through its gentle rotation and rocking movement, the table appears to allow the individual to release both emotional and physical stress. One theory is that the natural flow of energy is balanced and restored as the table's movement, combined with a response to the music, may help release energetic blockages.

The study used a protocol to compare subject responses to two types of experiences using the Trinity Table™. Each adult subject had two separate rides, one with the table turning counterclockwise and the other with the table turning clockwise. The study investigated if changes occurred as a result of experiencing a ride on the Trinity Table™ and whether direction of turn had an impact on those changes. Measurements of blood pressure, pulse, and temperature as measures of relaxation were taken both before and after the rides, as well as measures of mood state, conscious state, and health profile of the subject. The study of 60 table experiences included 30 volunteers, 21 women, and 9 men between the ages of 37 and 76, who had never before ridden the Trinity Table™. The results showed no significant relation between direction of rotation and effects, but both directions of rotations produced reductions in systolic blood pressure. Post hoc analysis of measurements on the Profile of Mood States (POMS) survey indicated different changes between the two trials. Changes during trial one included reductions in anger, confusion, tension, depression and fatigue. Trial one also reflected different results in the responses to the Standard Form 8 (SF8) Health Survey, which showed less conflict with emotional problems and overall mental health

improvement. Trial Two had reductions in anger, depression and fatigue. SF8 responses also reflected improvement in limitations in physical function, and if pain was reported before the ride, responses after showed reductions of that pain. The study found through participants' written narratives, that all of them experienced changes in altered states of consciousness, as measured by Dr. Arnold Ludwig's features of altered states.

Many people reported in their written narratives that their rides opened their hearts and minds toward developing new insights or healing on current conditions, increased their creativity and intuition, and/or clarified their life's intention. Others reported profound spiritual growth or awakenings, including acquiring a sense of deep knowing and oneness with the universe, meetings with spiritual guides, and spontaneous past life regressions.

Among the twenty variables included in the range of measures, eleven significant differences were found in the first trial and six differences found in the second trial. The significant variables were all in the positive direction from a mental health perspective for trial one and are listed in Table I. The subjects had lower systolic blood pressure, lowered pulse and temperature; were less angry, confused, fatigued, tense, depressed; were also less limited in social and emotional function; and had better mental health. All of the differences on the second trial were in the positive direction, and are presented in Table II. The subjects had lower systolic blood pressure, as well as lower levels of anger, depression, fatigue, physical problems and pain.

Narratives were assessed for the frequencies of occurrence of Ludwig's classical categories of altered states of consciousness. The males and females were compared across the two trials, with the results presented in Table III. In order to compare across directions of rotation and sex types, each narrative frequency had to be transformed by both base lines for frequency of subjects (rotation and numbers of male versus female subjects). The raw frequency is read with transformed comparative number at each side (.xxx). The table is presented for observational purposes. Statistical assessment is not possible, because probability does not justify any source of appropriate distribution in this data.

The Post Hoc analyses confirmed that although there were not enough bases to consider differences in sex types, there was a reliable indication that the initial experience was more powerful than the second trial in terms of differences, and that both experiences had rich effect on the psychological aspects of the participants. The second trial experience appears to promote more physiological changes in the individuals, versus the first trial experience, which showed more changes in emotional states.

Comparing differences in sex on the reduction of fatigue for the second trial, men showed a greater reduction of fatigue when they were turned in a clockwise direction, compared with women, who showed more reduction in fatigue when they were turned

**Table I**  
Significant Pre-Post Variables for Trial #1

<b>Variables Names</b>	<b>Pre mean scores</b>	<b>Post mean scores</b>
Systolic BP	116.80	111.53
Pulse rate	71.60	66.73
Temperature	88.11	86.21
POMS Anger	3.07	0.10
POMS Confusion	5.33	3.07
POMS Depression	3.60	1.13
POMS Tension	4.9	.63
POMS Fatigue	6.80	1.70
Standard Form #6 Social Functioning	2.10	1.70
Standard Form #7 Emotional Function	2.77	1.90
Standard Form Overall Mental Health	42.67	50.60

**Table II**  
Significant Pre-Post Variables for Trial #2

<b>Variables Names</b>	<b>Pre mean scores</b>	<b>Post mean scores</b>
Systolic BP	118.27	114.00
POMS Anger	1.57	0.20
POMS Depression	1.70	0.40
POMS Fatigue	4.13	1.23
Standard Form #2 Physical Function	1.57	1.30
Standard Form #4 Pain	2.17	1.77

**Table III**  
Narratives for Sex Differences and Directions Frequency (Transformed Frequency)

	<b>CW</b>		<b>CCW</b>	
	<b>Male</b>	<b>Female</b>	<b>Male</b>	<b>Female</b>
<b>Trial One</b>				
Alterations in thinking	6 (.067)	15 (.056)	2 (.042)	9 (.094)
Sense of time altered	8 (.089)	11 (.040)	0 (.0)	5 (.052)
Loss of control	2 (.022)	10 (.037)	4 (.084)	4 (.042)
Change of emotions	10 (.110)	25 (.093)	6 (.125)	13 (.135)
Body Image Change	6 (.067)	10 (.037)	2 (.042)	11 (.114)
Perceptual Distortions	7 (.078)	14 (.052)	6 (.125)	13 (.135)
Change in Meaning	8 (.089)	11 (.040)	2 (.042)	14 (.146)
Sense of the ineffable	3 (.033)	3 (.011)	1 (.021)	7 (.073)
Sense of Rejuvenation	10 (.110)	14 (.052)	4 (.084)	14 (.146)
Hypersuggestability	0 (.0)	0 (.0)	0 (.0)	0 (.0)
<b>Trial Two</b>				
Alterations in thinking	3 (.063)	10 (.104)	5 (.056)	12 (.044)
Sense of time altered	2 (.042)	6 (.063)	9 (.109)	9 (.033)
Loss of control	2 (.042)	7 (.073)	3 (.033)	7 (.026)
Change of emotions	6 (.125)	14 (.146)	7 (.078)	25 (.093)
Body Image Change	3 (.063)	12 (.125)	8 (.089)	9 (.033)
Perceptual Distortions	1 (.021)	5 (.052)	7 (.078)	13 (.048)
Change in Meaning	4 (.084)	14 (.146)	8 (.089)	10 (.037)
Sense of the ineffable	0 (.0)	8 (.033)	4 (.044)	20 (.074)
Sense of Rejuvenation	8 (.167)	12 (.125)	9 (.109)	9 (.033)
Hypersuggestability	0 (.0)	0 (.0)	0 (.0)	2 (.007)

in a counterclockwise direction. This ties into the classical concepts on human energy outlined in the Energetic Motion and Fields section of Chapter II, Review of Literature. Those theories share the opinion that male energy circulates around the body in a counterclockwise direction, and female energy circulates around the body in a clockwise direction. This one finding mirrors that theory, in that when a female energy (which spirals around the body in a clockwise direction) is turned in a counterclockwise direction, energetic balance occurs—or in this case, fatigue is reduced.

The initial trial had a higher difference in the mean scores for reduction in systolic blood pressure, pulse rate and body temperature. The POMS scales for anger, confusion, tension, depression, and fatigue were all reduced. Overall mental health improved, according to responses to the SF8 questions, and there was less conflict with emotional problems as well. In the second trial the POMS scales showed decreased anger, depression, and fatigue. On the SF8 questions, limitations in physical function and pain were reduced. The second trial also showed changes in lowered systolic blood pressure. Comparing the ASC dimensions with the sex differences and direction, the findings were similar between men and women. Both had psychological shifts and physiological shifts as reported in their narratives and direction was not a significant factor. The most common responses were change in emotions, sense of rejuvenation, perceptual distortions, and change in meaning. In the analysis of the written narratives, some features of ASC occurred more than others, depending on the direction and trial number. The top 3-4 features are listed below, ranked in order of highest occurrence.

The rotation of the Trinity Table™ in trial one in a clockwise direction appeared to promote: 1) change of emotions, 2) sense of rejuvenation, 3) perceptual distortions, and 4) alterations in thinking. The counterclockwise rotation in trial one had the results of: 1) change of emotions, 2) perceptual distortions, 3) sense of rejuvenation, and 4) change in meaning. The second trial clockwise and counterclockwise had significant responses as well. The top 3 features are listed below, ranked in order of highest occurrence. The second trial clockwise direction showed: 1) change of emotions, 2) sense of rejuvenation, and 3) changes in meaning. The opposite direction, counterclockwise, in the second trial had: 1) change of emotions, 2) sense of the ineffable, and 3) perceptual distortions.

The subjects' written responses indicate they experienced significant physical and emotional changes, as well as conceptual changes in thinking (i.e., their attitudes regarding themselves and their place in the world appear to have shifted). For some of the subjects, this was their first powerful experience in transformation, and they were greatly moved with emotion.

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