

The Effect of the ZYTO Reframe Technology on Resolving Personal Issues and Improving Mood: A Pilot Study

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Abstract

Background: The recognized importance of psychological and behavioral factors in human performance highlights the need for devising new techniques that positively affect perceptions to achieve better outcomes. New software called Reframe Technology imbedded in an iPod has been developed to achieve such a goal.

Methods: Nineteen subjects with at least one issue to perceptually resolve used the Reframe Technology following proper protocols. Changes in resolving personal issues and mood were evaluated using the: (1) Positive States of Mind Scale, (2) Hassles and Uplifts Scale, and (3) Marlowe-Crowne Social Desirability Scale.

Results: The score on the Positive States of Mind Scale significantly increased from Day 0 to Day 14 ($p = 0.003$) and Day 30 ($p = 0.001$) and also from Day 14 to Day 30 ($p = 0.03$). Significant decreases were also noted from Day 0 in the Hassles scores at each weekly time point, i.e., from Day 0 to Day 7 ($p = 0.02$), from Day 0 to Day 14 ($p = 0.001$), from Day 0 to Day 21 ($p = 0.003$), and from Day 0 to Day 30 ($p = 0.001$). Changes on the Uplifts scores were non-significant. A highly significant decrease occurred in the intensity of the reframed issues (M difference = 3, SD = 1.9, $p < 0.0001$), and the average number of rounds to clear an issue was 4.2 (SD = 0.8).

Conclusions: The results of this wait-list control study demonstrate that the Reframe Technology significantly improves both mood and the perception of severity of personal issues. Furthermore, 84% of the subjects reported assistance in resolving personal issues by the Reframe Technology, which highlights its effectiveness.

Keywords: Reframe technology; ZYTO; Perceptions; Health belief model; Biocommunication

Abbreviations: HBM: Health Belief Model; PSOMS: Positive States of Mind Scale; HUS: Hassles and Uplifts Scale; MCSDS: Marlowe Crowne Social Desirability Scale; NRS: Numerical Rating Scale; ANOVA: Analysis of Variance; M: Mean; SD: Standard Deviation; SE: Standard Error; CI: Confidence Interval

Introduction

Due to the recognized importance of social psychological factors in health, a premium has been placed on the elucidation of preventive health theories like the Health Belief Model (HBM). The HBM is one of the most commonly used theories in health education and health promotion. According to the original HBM, health behavior is determined by personal beliefs and perceptions [1-3]. Health psychologists have shown that to respond to problems associated with a condition such as an illness people create their own beliefs regarding the condition [4-6]. These beliefs are the primary determinants of coping strategies, i.e., the behavioral actions to manage health threats [5,7]. Numerous studies have been conducted in the past highlighting the efficacy of HBM to identify and examine the factors related to health behavior [8-11]. However, very little information has been derived from appropriate interventions designed with the HBM. Techniques that can help the individual change perceptions and beliefs about health-related issues need to be devised and studied.

ZYTO is a technology company that produces biocommunication software and equipment to facilitate decision making about wellness and human performance. The company has developed a software application called "Reframe Technology" that incorporates biocommunication to reframe perceptions. The foundation of Reframe Technology and biocommunication is similar to the principles used in the formulation

of techniques such as biofeedback. Biofeedback uses the idea that by harnessing the power of the mind one can increase awareness of and self-monitor internal body processes [12,13]. Neurofeedback is a new variation of biofeedback. It also works on the same principle, i.e., once brain activities are shown to an individual, the person can self-regulate and bring appropriate changes in the patterns of the activities [14].

The person using Reframe Technology speaks about any chosen topic, such as health, a relationship, or personal performance. As the person speaks, Reframe analyzes the voice for frequency patterns. Using a proprietary algorithm, these patterns generate an information field that is embedded into a fractal image. The information is not discernible by the conscious mind, but the person's body is sensitive to the data. This information field is activated for a 30-second period, while the person focuses thoughts on the selected topic. During that period, the fractal image containing the information field is visible to the person. Conscious access to the image is not significant to the process beyond helping the person stay focused on the topic. The person then talks again about the topic, Reframe analyzes the voice, and the information field is embedded and presented to the person

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for a 30-second period. This process is repeated until a sufficient and noticeable change occurs in the frequency patterns of the voice. It is theorized that the presentation of the information field assists the subconscious to create greater awareness; a reframe of the perception and bringing about changes in perceptions and beliefs will improve the person's ability to deal with the selected topic. Reframe Technology helps an individual adapt to better behavioral strategies, thus affecting all aspects of human performance, including dealing with health issues highlighted by HBM. Thus, the purpose of this study was to determine if Reframe Technology could help individuals resolve personal issues and improve mood as a result of perception reframing.

Materials and Methods

Subjects

The study was conducted with the approval of the Institutional Review Board for human subjects research at the National Foundation for Energy Healing of Marana, AZ, and each subject signed an informed consent form before enrolling in the study. Twenty-four potential subjects who met the inclusion criteria were identified and enrolled. Inclusion criteria were: (1) 25-75 years of age; (2) either gender; and (3) with at least one issue to resolve. Exclusion criteria were: (1) history of mental illness diagnosed at the time of assessment; (2) currently taking any prescribed or non-prescribed medication that may alter testing results; (3) history of drug or alcohol addiction or currently consuming more than four drinks per day; and (4) any condition not previously named that, in the opinion of the investigators or intake staff, would jeopardize the safety of the participant or affect the validity of the data collected in this study. Preliminary screenings were conducted to determine whether the potential participant met the inclusion criteria to take part in the study.

After acceptance in the study, subjects were randomized into immediate intervention and wait-list control groups. After baseline testing, the members of the immediate intervention group were given iPods with the Reframe Technology application installed and instructed to use the device a minimum of 3 times per week. The wait-list control group did the baseline testing and waited 30 days before repeating the baseline testing and then began the protocol.

Reframe procedure

After the informed consent process, subjects were instructed on how to use the Reframe Technology (ZYTO Inc., Lindon, UT). Subjects were told to choose an issue that they would like to reframe and then talk about the issue into the device for 10-15 seconds. The voice was analyzed by the device using a special algorithm, and informational feedback embedded in a unique fractal image was created to assist in perception reframing. The subject was instructed to contemplate the issue while listening to music as the unique image was shown for 30 seconds, which constituted one round. The subject was then instructed to continue performing rounds until the Reframe Technology reported a shift in the energetic pattern of their voice. At that point, the session was considered complete, and the participant was given a final image to reinforce the shift, which they were instructed to save on the iPod and view 3 times within 24 hours. After the subject reframed an issue, the process was repeated with another issue. Subjects were asked to reframe a minimum of 3 issues per week based on convenience for the subjects. The viewable image and the music are not significant elements in the reframing process. They assist the subject in focusing on the selected topic during the 30-second period, while the informational field is generated. To better achieve this purpose, the image is made to be

interesting and easy to view, but not distracting. The music selected is non-rhythmic (without a strong beat) and without lyrics.

Assessment

At the baseline assessment, the following measures were administered: (1) Positive States of Mind Scale (PSOMS), (2) Hassles and Uplifts Scale (HUS), and (3) Marlowe-Crowne Social Desirability Scale (MCSDS) [15-17]. The PSOMS is a 7-item, easily repeated measure of positive states of mind and negative moods, including: focused attention, productivity, responsible caretaking, restful repose, sharing, sensuous nonsexual pleasure, and sensuous sexual pleasure [15]. The PSOMS has been shown to be internally consistent and sensitive to the level of life stress [18]. The HUS is a 53-item questionnaire that measures respondents' attitudes about daily situations defined as hassles and uplifts, which evaluate negative and positive events, respectively [19]. The HUS is a better predictor of concurrent and subsequent psychological symptoms than other life events scores [20]. The MCSDS is an 11-item questionnaire, the most frequently used measure to assess social desirability bias, i.e., whether respondents are responding truthfully or are misrepresenting themselves in order to manage their self-presentation, and it has demonstrated an adequate level of reliability [21]. If a subject scored higher than 11 on the MCSDS, then the subject was excluded from further participation in the study. The assessment battery was minimized to ensure greater subject compliance and to avoid learning effects.

Additionally, the subject recorded how many rounds it took to reframe each issue and gave each issue an intensity rating on a scale of 1-10, using a Numerical Rating Scale (NRS) both before and after using the Reframe Technology during the 30-day study period. The PSOMS was completed at Day 14 and Day 30. The HUS was completed at Day 7, Day 14, Day 21, and Day 30. The MCSDS was completed at Day 30. The HUS was administered more frequently, as it has greater sensitivity to daily changes.

Data analysis

Data were analyzed using SPSS 22 (IBM Inc., Chicago, IL) for Windows. Frequency and descriptive statistics were calculated on all variables. Data entry commenced simultaneously with the receipt of completed instruments, so that all data entry was finished only a few days after the conclusion of each assessment. Data were triple-checked to verify that the entry process was valid and correct. Changes on the PSOMS and MCSDS were evaluated using paired samples t-tests. Changes on the HUS were analyzed with repeated-measures analysis of variance (ANOVA). We used the ϵ Huynh-Feldt correction factor to adjust the degrees of freedom for the averaged tests of significance, as the most conservative test of the repeated measures effect. A statistically significant main within subject's effect of time was further examined using simple pairwise effects t-tests for each independent comparison. The criterion for statistical significance was $\alpha = 0.05$.

Results

Twenty-four subjects were recruited for and enrolled in the study and five dropped out; two cited sickness and three reported that they were too busy to participate. Thus, nineteen participants ($n=10$ immediate intervention and $n=9$ wait-list control) completed the study. All 19 subjects were white, non-Hispanic. The average age of the immediate intervention group was 51.7 (SD = 8.0, R = 42, 63), and the average age of the wait-list control group was 53.1 (SD = 8.0, R = 43, 66). The difference between the two groups was non-significant ($t = 0.4$ [17], $p = 0.71$). The immediate intervention group consisted of 9 females and 1

male, and the wait-list control group consisted of 4 females and 5 males. Although the difference in proportion of gender by group assignment was significant ($\chi^2 [1] = 4.6, p = 0.03$), investigating the effect of gender on Reframe Technology was not a purpose of this pilot study.

Table 1 shows the descriptive statistics of the PSOMS for both groups and the total sample. The difference between the first and second baseline assessments (Day -1 and Day 0) on the PSOMS was non-significant ($t = 0.0 [8], p = 1.0$), so we chose to analyze the total group combined for the changes on the PSOMS from Day 0 to Days 14 and 30 and Day 14 to Day 30. The PSOMS significantly increased from Day 0 to Day 14 (M difference = 2.1, SD = 2.6, $t = 3.4 [17], p = 0.003$), from Day 0 to Day 30 (M difference = 2.9, SD = 3.3, $t = 3.8 [18], p = 0.001$), and from Day 14 to Day 30 (M difference = 0.9, SD = 1.7, $t = 2.3 [17], p = 0.03$).

Table 2 shows the descriptive statistics of the HUS for both groups and the total sample. Significant differences were noted between the first and second baseline assessments (Day -1 and Day 0) for both the Hassles (M difference = 1.2, SD = 1.2, $t = 3.1 [8], p = 0.02$) and Uplifts (M difference = 2.7, SD = 2.6, $t = 3.0 [8], p = 0.02$) scales. Although statistically different, using either the Day -1 or Day 0 time point did not alter the ANOVA model results. Thus, we chose to utilize Day 0 in the model. For Hassles, a significant effect was found for time ($F [3.8, 45.6] = 11.1, p < 0.001$). Mauchly's test of sphericity was non-significant ($\chi^2 [9] = 9.2, p = 0.43$), and the ω degrees of freedom Huynh-Feldt correction factor for the within-subjects effects was 0.95. Hassles decreased over time for the total sample, and further pairwise comparisons revealed that the value at Day 0 was significantly higher than all subsequent follow-up assessments: Day 7 (M difference = 8.7, SE = 3.1, 95% CI: 2.1, 15.3, $p = 0.02$), Day 14 (M difference = 13.7, SE = 3.3, 95% CI: 6.5, 20.9, $p = 0.001$), Day 21 (M difference = 16.2, SE =

4.4, 95% CI: 6.6, 25.7, $p = 0.003$), and Day 30 (M difference = 18.5, SE = 3.6, 95% CI: 10.7, 26.4, $p = 0.001$). Day 7 was significantly higher than all subsequent assessments: Day 14 (M difference = 5.0, SE = 1.8, 95% CI: 1.0, 9.0, $p = 0.02$), Day 21 (M difference = 7.5, SE = 3.0, 95% CI: 1.0, 13.9, $p = 0.03$), and Day 30 (M difference = 9.8, SE = 2.7, 95% CI: 3.9, 15.8, $p = 0.004$). No other comparisons were significantly different. For Uplifts, the effect over time was non-significant ($F [2.9, 34.9] = 1.2, p = 0.31$). Mauchly's test of sphericity was non-significant ($\chi^2 [9] = 15.3, p = 0.09$), and the ω degrees of freedom Huynh-Feldt correction factor for the within-subjects effects was 0.73. No pairwise comparisons were significantly different.

A highly significant decrease occurred in the intensity of the reframed issues (M decrease = 3, SD = 1.9, $p < 0.0001$) reported by the subjects, and the average number of rounds to clear an issue was 4.2 (SD = 0.8). The NRS results for the decrease in intensity of each issue ranged from -0.3 to -6, and the average number of rounds to clear an issue ranged from 3 to 6 for each person. The number of completed sessions ranged from 2 to 22.

Table 3 shows the descriptive statistics of the MCSDS for both groups and the total sample. No subject scored higher than 11; thus all subjects were able to complete the study. The difference between the first and second baseline assessments (Day -1 and Day 0) on the MCSDS was non-significant ($t = 1.0 [8], p = 0.35$). Scores for the MCSDS showed that only 3 out of 19 subjects had a tendency to give socially desirable answers. No significant change occurred for the total sample from Day 0 to Day 30 (M difference = 0.05, SD = 0.85, $t [18] = 0.27, p = 0.79$).

At the end of the study, 16 out of 19 (84.2%) subjects reported that the Reframe Technology assisted them in resolving their personal issues.

	Immediate Intervention (n=10)	Wait-List Control (n=9)	Total Sample (n=19)
Day -1	--	M=13.9, SD=3.8 (R=6, 19)	M=13.9, SD=3.8 (R=6, 19)
Day 0	M=12.6, SD=3.5 (R=5, 16)	M=13.9, SD=3.7 (R=6, 19)	M=13.2, SD=3.5 (R=5, 19)
Day 14	M=15.4, SD=3.1 (R=11, 20)	M=14.5, SD=1.5 (R=12, 17)	M=15.0, SD=2.5 (R=11, 20)
Day 30	M=16.3, SD=3.7 (R=12, 21)	M=15.9, SD=2.7 (R=10, 19)	M=16.1, SD=3.0 (R=10, 21)

Table 1: Descriptives on the positive states of mind scale for immediate intervention and waitlist control groups.

		Immediate Intervention (n=10)	Wait-List Control (n=9)	Total Sample (n=19)
Hassles	Day -1	--	M=43.1, SD=24.5 (R=12, 83)	M=43.1, SD=24.5 (R=12, 83)
	Day 0	M=49.0, SD=26.0 (R=16, 95)	M=44.3, SD=25.1 (R=13, 84)	M=46.8, SD=24.9 (R=13, 95)
	Day 7	M=37.5, SD=21.7 (R=6, 83)	M=39.7, SD=22.3 (R=12, 71)	M=38.5, SD=21.4 (R=6, 83)
	Day 14	M=36.9, SD=21.4 (R=9, 84)	M=34.0, SD=18.0 (R=14, 58)	M=35.6, SD=19.4 (R=9, 84)
	Day 21	M=32.9, SD=17.2 (R=9, 57)	M=32.8, SD=20.5 (R=13, 63)	M=32.9, SD=18.0 (R=9, 63)
	Day 30	M=32.7, SD=23.0 (R=3, 67)	M=28.0, SD=21.0 (R=1, 53)	M=30.5, SD=21.6 (R=1, 67)
Uplifts	Day -1	--	M=51.9, SD=30.8 (R=15, 105)	M=51.9, SD=30.8 (R=15, 105)
	Day 0	M=52.1, SD=19.5 (R=25, 78)	M=49.2, SD=29.7 (R=14, 100)	M=50.7, SD=24.2 (R=14, 100)
	Day 7	M=54.0, SD=15.1 (R=34, 83)	M=50.8, SD=29.4 (R=16, 103)	M=52.5, SD=22.4 (R=16, 103)
	Day 14	M=59.2, SD=19.1 (R=24, 96)	M=47.5, SD=28.1 (R=12, 104)	M=54.0, SD=23.6 (R=12, 104)
	Day 21	M=56.0, SD=10.2 (R=42, 70)	M=55.7, SD=15.4 (R=33, 74)	M=55.9, SD=12.3 (R=33, 74)
	Day 30	M=65.8, SD=25.7 (R=14, 112)	M=61.7, SD=25.3 (R=30, 103)	M=63.8, SD=24.9 (R=14, 112)

Table 2: Descriptives on the hassles and uplifts scales for immediate intervention and waitlist control groups.

	Immediate Intervention (n=10)	Wait-List Control (n=9)	Total Sample (n=19)
Day -1	--	M=5.7, SD=2.1 (R=3, 10)	M=5.7, SD=2.1 (R=3, 10)
Day 0	M=5.7, SD=2.0 (R=3, 9)	M=5.6, SD=2.1 (R=3, 10)	M=5.6, SD=2.0 (R=3, 10)
Day 30	M=5.4, SD=2.2 (R=2, 9)	M=5.8, SD=2.6 (R=3, 11)	M=5.6, SD=2.3 (R=2, 11)

Table 3: Descriptives on the marlowe-crowne social desirability scale for immediate intervention and waitlist control groups.

Discussion

Reframe Technology is a new variation of self-training. Because of the limitations of the conscious mind, simply trying to change an individual's perception and improving his/her beliefs about a particular issue through education, lectures, psychotherapy, and counseling is a long effort. Limitations are inherent with such techniques, as individuals might feel like they are being over-advised. Also, attending sessions with a therapist can be difficult for some people. With the advancement of technology, media campaigns have replaced the need for live lectures and counseling sessions. However, the use of media itself has both positive and negative outcomes [22,23].

More rapid and thorough results are possible when the change occurs first at the subconscious level, but to our knowledge no studies have been conducted to determine the efficacy of such techniques to reframe perceptions. Reframe Technology was designed to assist existing efforts. Whether this holds true for such new technology is a prevailing question. The aim of this study was to initiate an evidence-based foundation for the efficacy of this system.

In general, the results of our study demonstrate that Reframe Technology significantly improves outcome measures for mood states and significantly decreases subjective ratings of the severity of personal issues. The PSOMS significantly improved at Day 14 and Day 30, with the Day 30 assessment showing the highest level of significance. For the HUS, the Hassles score significantly decreased at every time point, with increasing levels of improvement at each successive time point. This result demonstrates that the Reframe Technology assisted subjects in reframing negative perceptions about their personal issues. The Uplifts score also improved at every successive time point, but the changes were not statistically significant.

We were limited in our efforts to use the HUS to correlate a change in perceptions because of the lack of well-developed scales to measure perceptions accurately. Are HUS scores accurate correlates of changes in perception relating to life events? Studies conducted on the use of Hassles scales have demonstrated their capacity to correlate with adaptational outcome measures, thus justifying their use [16]. These studies also concluded that Hassles scores do correlate significantly with such measures, especially with the negative affect scale [16]. Uplifts scales have also been shown to be a good predictor of adaptational outcomes, but significant differences may be present between males and females [16]. The findings and reports on different predictions of adaptational outcomes by Uplifts scales have not been shown, and the results from past studies have been equivocal, so this does not hurt our findings. However, we must be cautious in generalizing our findings beyond the type of sample on which they are based.

The NRS scale, which is a subjective rating of the effectiveness of Reframe Technology, showed an average decrease of 3 (on a scale of 1 to 10) in severity of personal issues in the current study. Our results were highly significant, demonstrating that subjects observed a noticeable effect from using Reframe Technology. No differences were found in the two baseline measures of the wait-list control group, further supporting the effectiveness of Reframe Technology.

The MCSDS was administered to measure social desirability independent of psychopathology. In other words, it assesses whether respondents are responding truthfully or are misrepresenting themselves to manage their self-presentation. This test was administered at the beginning and end of the study, and no differences were found between the results for the two time points, indicating that no one changed their opinions during the study. Only three of the 19 subjects tended to give

more socially desirable answers, and none of these scored higher on the second assessment. This further supports that subjects gave accurate answers. At the end of the study, 16 out of 19 (84%) participants reported that using Reframe Technology assisted them in resolving their personal issues.

A single pilot study is insufficient to validate the efficacy of Reframe Technology. Because we did not have a placebo device for this study, the wait-list control design was employed. Additionally, the current study would be stronger if we had used two control groups, i.e., a wait-list group and a group using neutral software monitoring just the voice patterns and neuronal activities of the participants. Although our study demonstrated improvements in mood, we can only construe that by improving mood the device can help expand behavioral strategies that spring from perception. Comparing our work to extant research is difficult due to the paucity of literature in changing perceptions and beliefs.

Additionally, it is worth mentioning that the frequency of using Reframe was not a purpose of the study. Though subjects were advised to use the software for a particular amount of time for convenience, we acknowledge that the increased use of Reframe may be related to a greater change in perception. This is another issue to address in future studies.

Conclusions

The results of this wait-list control study demonstrate that Reframe Technology significantly improves both mood and the perception of severity of personal issues. We noted improvements on the PSOMS and HUS Hassles during the 30-day study period. Furthermore, 84% of the subjects reported assistance in resolving personal issues by Reframe Technology, which highlights its effectiveness. Thus, Reframe Technology should be tested further in a perception-specific context, such as personal performance or health-related issues.

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