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The Validity of Self-monitored Physiological Indices of Relaxation

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Some form of relaxation training is an integral part of many (or perhaps even most) stress management programs. Many procedures have been developed to train clients to produce a state of cultivated low arousal. These include: progressive relaxation, self-hypnosis, autogenic training, various forms of meditation, biofeedback training, and Benson's relaxation response (cf. Benson, 1975). The assumption underlying these procedures is that people who participate in a relaxation training program do learn to relax. Further, the assumption is usually made that some form of home practice facilitates the training process. However, few studies report any physiological data to support the contention that recipients have learned to achieve a state of cultivated low arousal either during therapist-directed or home-practice sessions (Barrios & Shigetomi, 1979). This is likely due to the high cost of equipment and the extensive training needed to obtain physiological measures of relaxation.

Several authors have advocated utilizing self-monitored measures of heart rate, respiration rate and finger temperature as indicators of relaxation (cf. Hiebert, 1980; Lamott, 1975). Such procedures have the advantage of being inexpensively obtained, easily trained, and potentially useful in either therapist-directed or home-practice settings. However,

these procedures can be attacked on logical grounds. For example, most people are aware of being able to purposefully alter their respiration rate, and some studies have reported small, but statistically significant, changes in heart rate in response to directions to purposefully slow or speed up heart rate (Bouchard & Labelle, 1982). Clearly, if these self-monitored measures are to be used, some validation procedure must be used to determine the degree to which these self-monitored measures are consistent with machine monitored measures. This study is an attempt to determine the degree to which self-monitored heart rate, respiration rate and finger temperature are trustworthy indicators of relaxation.

Subjects

The subjects were 45 students (19 males, 26 females; ages 18-46), recruited via announcements in the campus newspaper and large lecture classes. Subjects had no previous psychiatric history.

Method

Subjects were instructed to monitor and record their heart rate, respiration rate, and finger temperature after the manner described by Hiebert (1980) and Lamott (1975). They were shown how to take their own pulses, on either the wrist or the neck, for 30 seconds and to double the reading to obtain a b.p.m. reading. Subjects used the second hand on their wrist watch to count time. Subjects were then

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shown how to obtain finger temperature by holding a small thermometer between their thumb and forefinger, waiting a minute for the reading to stabilize, then reading and recording the result. Subjects were instructed to also count each time they exhaled for a one minute period as a measure of respiration rate. They were reminded how easily it is for people to purposefully alter their breathing rate; however, the purpose of the task was not to see how long they could hold their breath but to get an indication of their natural breathing rate. Procedurally, after monitoring heart rate, subjects held the thermometer for one minute while monitoring their respiration rate. At the end of the minute they recorded their respiration rate and their finger temperature.

The validity of this procedure was tested by having the subjects self-monitor the measures while external, objective measures were being taken. A Coulbourn Instruments pulse monitor, and temperature module were used to assess heart rate and finger temperature. The research assistant monitored and recorded the respiration rate.

Results

Significant correlations were observed between all self-monitored and externally monitored measures. The correlation between self-monitored and machine-monitored (or therapist monitored) measures were as follows: heart rate, .94; respiration rate, .97; finger temperature, .95.

Discussion

From this study it would appear that self-monitored heart rate, respiration rate, and

finger temperature are reasonable reflections of physiological functioning. Therefore, therapists who do not have access to a polygraph, or biofeedback equipment, might consider the self-monitored measures as rough indicators of relaxation. This self-monitoring procedure could also be used in home relaxation practice, to indicate the success of an individual practice session or progress across time. To indicate intra session change, clients could monitor and record these measures before and after each home practice session, and calculate the difference. To indicate intersession progress, the measures could be recorded daily over several weeks, giving clients a visual indication of their progress in learning to relax.

This self-monitoring procedure is easily learned and requires minimal capital expenditure. This study suggests that the self-monitored measures can be trusted, as accurate reflections of machine monitored measures. Now it would seem possible to obtain some valid indications of physiological change while relaxing even when clients or therapists do not have access to expensive equipment.

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