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POPPING SEALED AIR-CAPSULES TO REDUCE STRESS [1]

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Summary.—30 undergraduate students participated in a study to assess whether tactile manipulation in the form of popping sealed plastic air-capsules would be stress-reducing. Three of the four dependent measures were significantly changed; subjects reported feeling significantly more energized, less tired, and more calm after popping the capsules. Some advantages to this technique over existing ones include that this technique involves minimum ability, essentially no training or practice, and little likelihood of paradoxical anxiety effects that have been shown to accompany meditative relaxation techniques in some subjects.

There are a number of factors to consider when choosing among the many techniques to reduce or relieve stress. Textbooks of applications of stress-reduction techniques often include a mnemonic to help match a technique with a particular symptom (Cotton, 1990; Davis, Eshelman, & McKay, 1980; Groch, 1986). Cotton (1990) advises that the motivation, capability and limitation, personal agenda, and previous attempts of the individual be considered when setting up a stress management program. Many techniques involve a program of learning and rehearsal that may require practice a few times per day or week over a number of months before satisfactory results are achieved (Cotton, 1990).

Another factor to consider is the possibility of paradoxical anxiety effects. Heide and Borkovec (1983) reported evidence of anxiety among some subjects during a preliminary practice of relaxation techniques and during subsequent training. These effects were more evident when subjects used meditative relaxation techniques than when they used somatic relaxation techniques, and the fear of losing control was offered as one potential explanation.

In this study, a stress-reduction technique that requires a minimum of cognitive ability, essentially no training or practice, and little likelihood of paradoxical effects was investigated. This study was based on the premise that touching or manipulating something can be relaxing. "In ancient Greece it was customary, and is still so in much of Asia, to carry a smooth-surfaced stone, or amber, or jade, sometimes called a 'fingering piece.' Such a 'worrybead,' as it is also named, by its pleasant feel, serves to produce a calming effect. The telling of beads by religious Catholics seems to produce a similar result" (Montagu, 1971, p. 239). Similarly, the tactile sensations that accom-

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pany smoking, and handicrafts like needlework and whittling are considered by many to be relaxing.

In this study, it was predicted that positive changes in mood would be observed in subjects after popping sealed plastic air-capsules, a common packaging material, while no changes in mood would be observed after an equal period of waiting.

Method

Subjects

Thirty undergraduate students (21 women, 8 men, and 1 who gave no answer to the question of gender) participated. Their ages ranged from 21 to 33 years, with a mean of 22 and a standard deviation of 2.6. Fourteen subjects were randomly assigned to Group 1 and 16 to Group 2. The groups received the same procedures but the order of procedures was counterbalanced.

Materials

Six-inch squares of sealed plastic air-capsules with bubbles of .9-cm and 3-cm diameters were obtained from Sealed Air Corporation of Fairlawn, New Jersey, through their branch in Holyoke, Massachusetts.

The Activation-Deactivation Adjective Check List, Short Form (Thayer, 1989) was used to measure four mood states of subjects: energetic, tense, tired, and calm. The test consists of 20 adjectives (5 for each of four subscales) that subjects are to rate using a 4-point scale anchored by "vv" for definitely feel, "v" for feel slightly, "?" for cannot decide, and "no" for definitely do not feel. The form is scored by assigning 4, 3, 2, or 1 points to the "vv," "v," "?," and "no" response categories and summing the five scores for each subscale, yielding a range from "5" (definitely do not feel) to "20" (definitely do feel).

In a study of reliability of the checklist, responses to repeated adjectives ranged from .87 to .57, with a median coefficient of .75. In this same report, three validation studies were done comparing the results obtained from the checklist and physiological measures. Of the 12 correlations calculated among three physiological measures of arousal and the four subscales of the checklist, seven were statistically significant and ranged from .46 to .68 (Thayer, 1967).

Procedure

All subjects were first asked to indicate their gender, age, and group assignment, and then to fill out the checklist. Group 1 was told to wait for 5 minutes, then to fill out the checklist again. Then they were instructed to pop two sheets of sealed air-capsules (one sheet of .9-cm bubbles and one sheet of 3-cm bubbles), and to complete the checklist a third time. Lastly, they were asked to rate how much they liked popping the larger and the

smaller sealed air capsules using a 7-point scale where "1" equalled "very much disliked" and "7" equalled "very much liked." To control for effects of order, Group 2 was told to pop both sheets of sealed air capsules, fill out the second checklist, rate the two types of sealed air-capsules, wait 5 minutes, then fill out the checklist a third time.

Results

Before popping the sealed air-capsules, the mean rating for subjects on the energetic scale was 8.6, on the tired scale 13.9, on the tension scale 6.9, and on the calm scale 14.1.

Subjects reported being significantly more energized after popping the capsules than before ($F_{1,27} = 14.72$, $p < 0.01$), significantly less tired ($F_{1,28} = 6.17$, $p < 0.01$), and significantly more calm ($F_{1,26} = 8.83$, $p < 0.01$). Tension was not significantly lower; also no order effects or interactions were significant. It should be noted that not all subjects gave all responses.

Using the Tukey *HSD* test as a *post hoc* test for the three significant main effects, no significant differences were found between the ratings made before and after waiting. On the other hand, all three comparisons on the ratings before and after popping the capsules were significant: subjects were significantly more energized ($p < 0.01$), less tired ($p < 0.05$), and more calm ($p < 0.01$) after popping than before.

The 3-cm sealed air-capsules were given a mean rating of 5.8 with a standard deviation of 1.3 while the .9-cm capsules were rated 4.3 with a standard deviation of 1.5 ($t_{28} = 5.23$, $p < 0.001$).

Discussion

As predicted, subjects reported feeling significantly more energized, less tired, and more calm subsequent to popping two 6-in. squares of sealed air-capsules compared to an equal period of waiting. Feelings of tension were not lowered significantly; however, tension scores before popping the capsules were not high to begin with (mean = 6.9 on a scale from 5 to 20, where "5" means "definitely do not feel"), in contrast to the means of the three significant measures. In future studies, it would be advantageous to look at subjects with higher initial tension scores and to compare other stress-reduction techniques with this one.

Although both sizes of capsules were rated positively, subjects gave a significantly higher mean "liking" rating to the larger diameter sealed air-capsules. Smaller diameters than .9 cm might prove to be more frustrating to pop and therefore receive negative ratings.

An interesting explanation for why such a technique might reduce stress is found in Thayer (1967, 1989). He argues that one initial response to danger, real or perceived, is motor inhibition. In the case of real danger, this response may be adaptive in that it allows an individual to focus attention to

decide better a course of action (perhaps fight or flight). A similar, but less intense pattern of motor inhibition may be experienced by nervous or stressed individuals. Further, he argues that certain behaviors of these individuals, like finger tapping or foot wiggling, might, in fact, be attempts to release muscle inhibition. Similarly, popping sealed air-capsules may reduce stress by releasing this muscle inhibition.

Although this technique did appear to produce positive benefits for these students, its use might be tested and extended to individuals with specific disorders for which tactile manipulation might be therapeutic (e.g., trichotillomania, pilling, self-abusive behavior, nail biting, finger sucking, akathisia, smoking), to individuals for whom other relaxation techniques are too difficult to master (children, individuals with mental retardation or autism), to individuals with little time or motivation to learn or practice a technique, or to individuals who have found other techniques to have paradoxical anxiety-provoking rather than stress-reducing effects.

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