Psycho-Dynamics of Chewing

A quick look at Hollingsworth's looks at certain effects of chewing

compiled by Katherine Lee, Improbable Research staff

Harry L. Hollingworth wrote the book that can be considered the bible of psychological research about people who chew chewing gum. Called Psycho-Dynamics of Chewing, it was published in 1939 as an entire issue of the scholarly journal Archives of Psychology.

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The research was sponsored by the Beech-Nut company, makers of chewing gum. The publisher explained:

This book offers a series of experiments that study the psychodynamics of chewing in various contexts. Chewing is such a satisfying activity, in itself, that random masticatories such as straws, toothpicks, rubber bands, are utilized in order to support it. The familiarity and convenience of the confectioned masticatory provides a useful technique for the experimental variation of such a motor automatism as chewing. Its widespread use in daily life makes it a conspicuous social institution, or at least a custom, and it is a problem of some scientific interest to inquire into the intrinsic factors which presumably perpetuate and extend such a conventionalized practise. With all these interests in mind we have instituted an extended series of experimental investigations on the role of sustained mastication in the psycho-physical economy of human activity.

Metabolism Costs of Chewing


Unless the main occupation is so sedentary as to permit of little or no restless movement, the activity of sustained chewing may be supported with no net energy costs to the organism. Of course sustained mastication uses energy; the best evidence shows that it costs some .20 calories per minute as an energy equivalent. But in active occupation this cost is not added to the total energy requirements of the active organism. Although the facts are not revealed in the metabolism experiment here reported, data from other parts of our more extended investigation of the psycho-dynamics of chewing show that energy which would otherwise be expended in the form of restless and random movement supports the mastication and may even provide a surplus which may be directed into the activities of the main occupation.

Our subjects were two male graduate students of psychology, with previous experience as metabolism subjects. Metabolism rate was measured by the respiration technique, using the helmet devised by Benedict. The helmet, like an inverted aluminum pail, was suspended from the ceiling by a system of weights and pulleys so that it would permit adjustment to the individual subject and permit him to wear the helmet comfortably enough so as to be able to undertake a routine task. The helmet having been sealed in an air-tight fashion about the subject’s head, outside air was supplied for breathing and the expired air was moved out of the helmet by a fan and collected in a Douglas bag for examination.

Writing While Chewing

“Writing Pressure as Modified by Chewing,” Harry L. Hollingworth, Archives of Psychology, vol. 239, 1939, pp. 51–6. Hollingworth explains:

Pencil-and-paper activities were set up,—these being the familiar laboratory exercises,—Substitution, Cancellation, and Mental Addition. All of these called for the writing of numbers or marks on the test sheet. In addition, on one such blank the subject was required to write his signature (including the date and the number of the series).

In each case the test blanks had been made up in the form of a pad which concealed, between corresponding white sheets, five sheets of black carbon paper (Guild 1049 Pencil Carbon). The greater the writing pressure, the deeper down into this carbon-pad would the impression go. “With 5 such carbons it is fairly easy to make out degrees of such impression....

Four workers were studied, working four half-day periods, with 8 rounds of work in each period.... On two of the half-days the workers were under normal conditions throughout (no chewing). On two half-days they were instructed to chew continuously during the comparison trials (last four rounds) the masticatory being peppermint flavored confectioner’s chicle....
In the forenoon comparisons two subjects exert greater pressure while chewing; two exert less. In the afternoons there is complete agreement; all four subjects exert more pressure while chewing.

**Typing While Chewing**

“Speed and Accuracy of Typing While Chewing,” Harry L. Hollingworth, *Archives of Psychology*, vol. 239, 1939, pp. 67-71. Hollingworth explains:

[W]e have experimentally studied the work of two proficient typists. They worked in the laboratory, following the same work schedule as another group of subjects who were being measured in other kinds of work, during 11 half day periods....

But on Chewing days there is in both subjects a very considerable relaxation reported. Pol’s strain estimates drop 10 points below Normal and 42 points below Control record. Prn’s estimates drop to only about half the Normal rating and to 85 points below the rating on Control periods.

Both subjects, in other words, report themselves as having experienced a feeling of marked relaxation while chewing, even Pol who does not enjoy this activity. This relaxation is reported by the two subjects while they are nevertheless typing at a more rapid rate, and in the case of Prn at least, with greater accuracy. Perhaps it is also significant that the reduction of subjectively felt strain, while chewing, is the greater in the case of that subject who admits a fondness for the sustained use of a masticatory.

**Working While Chewing**

“Influence of Chewing on Output in Routine Work,” Harry L. Hollingworth, *Archives of Psychology*, vol. 239, 1939, pp. 72-87. Hollingworth explains:

All in all we have studied nine different kinds of work and in them have found no evidence that sustained chewing (which reportedly requires a metabolism increment of some 17 percent and consumes 5 or more calories per hour of the worker’s energy) exerts any important effect on work output in routine tasks. Most of the activities show just no measurable change attributable to sustained mastication.