EXPERIMENTAL PSYCHOLOGY: A MANUAL OF LABORATORY PRACTICE. VOLUME II QUANTITATIVE EXPERIMENTS

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649223596

Experimental psychology: a manual of laboratory practice. Volume II Quantitative experiments by Edward Bradford Titchener

Edited by Trieste Publishing Pty Ltd.
Cover @ 2017

www.triestepublishing.com

EDWARD BRADFORD TITCHENER

EXPERIMENTAL PSYCHOLOGY: A MANUAL OF LABORATORY PRACTICE. VOLUME II QUANTITATIVE EXPERIMENTS

Trieste

EXPERIMENTAL PSYCHOLOGY

Set up and electrotyped. Published October, 1905.

PREFATORY NOTE: SUGGESTIONS TO STUDENTS

The Psychological Experiment, Qualitative and Quantitative—The Quantitative Experiment in Practice—Laboratory Partnerships—Note Book, Essay Book, Commonplace Book—The Modern Languages.

The Psychological Experiment, Qualitative and Quantitative.—The object of the qualitative experiment in psychology is—if we may sum it up in a single word—to *describe;* the object of the quantitative experiment is to *measure.* In the former, we seek to gain familiarity, by methodically controlled introspection, with some type or kind of mental process; we live through, attentively and in isolation, some special bit of mental experience, and then give in words a report of the experience, making our report, so far as possible, photographically accurate. Numerical determinations, formulæ, measurements, come into account only in so far as they are necessary to the methodical control of introspection; they are not of the essence of the experiment. The question asked of consciousness is the question 'What?' or 'How?': What precisely do I find here, in this attentive consciousness? How precisely is this fusion put together?—In the quantitative experiment, on the other hand, we make no attempt at complete description: it is taken for granted that the mental processes now under examination have become familiar by practice. What we do is to carry out a long series of observations, under the simplest and most general introspective conditions. Then we gather up the results of these observations in mathematical shorthand, and express them numerically by a single value. The questions asked of consciousness are, in the last analysis, two only: 'Present or absent?' and 'Same or different?' For instance: Do you still hear a tone? or: Is this weight heavier than this other, or lighter than it, or just as heavy? When, as we have said, a great many observations of this sort have been

taken, the whole set of results is thrown into quantitative form. On the average, we can still hear a tone of so-and-so many vibrations; on the average, we can distinguish two weights if they differ by such-and-such an amount. The question which the quantitative experiment answers is, therefore, some variant of the question 'How much?' Notice, however, that this is not the question asked of consciousness. That question is always the one or other of the two just mentioned: Present or absent? and Same or different? Here, then, is a second difference between the qualitative and the quantitative experiment. The former, aiming at description, comes to an end when introspection has made its report; the latter, aiming at measurement, subjects the results of introspection to mathematical treatment. The experiments are complementary, each sacrificing something and each gaining something. The qualitative experiment shows us all the detail and variety of the mental life, and in so doing forbids us to pack its results into formulæ; the quantitative experiment furnishes us with certain uniformities of the mental life, neatly and summarily expressed, but for that very reason must pass unnoticed many things that a qualitatively directed introspection would bring to light.

The Quantitative Experiment in Practice.— In general, the rules for the conduct of a quantitative experiment are the same as those for a qualitative experiment (vol. I., xiii. f.). There are, however, in practice, certain well-marked differences between the two types of experiment.

(1) In the first place, the quantitative experiment demands much more 'outside' preparatory work than does the qualitative. Most, if not all, of the reading done in preparation for the experiments of vol. I. could be done within the laboratory. This is not the case with the experiments that you are now to perform. The quantitative experiment sums up, in a single representative value, the results of a large number of observations. It is clear, then, that the conditions of observation must be the same throughout: otherwise the results will not be comparable. The observations must be arranged, distributed, timed, spaced, varied, repeated, upon a definite plan; and the plan itself must be laid out with a view to the object and materials of the particular ex-

periment. This means that you must know your *method;* you must have made out a complete scheme of work before you enter the laboratory.

It is not necessary that *O*, as well as *E*, know the method to be employed in a given experiment; if *E* has made out his plan, he can give such instruction to *O* as shall secure the object at which the method aims. It is, indeed, advisable that the members of a laboratory partnership, at the beginning of the term, take two different methods for study, so that each serves as *O* in an experiment with the method of which he is not familiar. For even if these two experiments can be done but once, still, *E* and *O* gain a wider experience than they would obtain from the repetition of one and the same experiment; while if they can be repeated,—as they should be, with reversal of function, whenever time allows,—each student has as *E* the advantage of the experience which he gained as *O*.

(2) Again: the quantitative experiment demands a more sustained attention than the qualitative. Many of the experiments of vol. I. could be dropped, as soon as *O* showed signs of fatigue, and resumed, in the next laboratory session, practically at the point at which they had been left. Some of them actually called for a set of separate observations, so that the work naturally fell into short periods, with rest-pauses between. But we cannot drop a method, half finished, and take it up again at a later time. Once begun, the quantitative experiment must be carried through to its proper end. We make out the plan of the experiment beforehand, in order that our results may be comparable and homogeneous; we must, then, and for the same reason, adhere to the plan in practical work.

(3) Lastly, the service of the apparatus is, in general, a more delicate matter in the quantitative than it is in the qualitative experiment. In some cases, this is due to the greater refinement and complication of the instruments themselves. For the most part, however, we employ simple instruments; and the demands of care and accuracy laid upon *E* derive from that main source of difference between these and our earlier experiments, the obligations of method. The disposition of apparatus in the second, third, fourth series must be exactly as it was in the first series; else the results of the different series cannot be grouped together to yield a single result. But further: method-work in psychology

makes certain claims upon the apparatus which qualitative work does not; claims which we cannot here specify, but which will be pointed out as the experiments proceed.—

In fine, then, there is preparatory work to be done outside the laboratory; and in the laboratory *O* must be steadily and uniformly attentive, while *E* has to carry the plan of the method and at the same time to watch his apparatus. Does not this mean that quantitative experiments in psychology are more difficult than qualitative? On the whole, yes. There are, however, two points that you should keep in mind. The first is that there are degrees of difficulty in quantitative, as there are in qualitative work. Several of the experiments prescribed in this volume are easier than experiments prescribed in vol. I. And the second is that you will bring to bear upon the difficulties of this part of the Course all the experience that you have acquired in the first part. The difficulty of passing from qualitative to quantitative work is, in all probability, nothing like as great as the difficulty which you faced on first beginning the Course,—when you were called upon to renounce popular psychology, to take up an entirely new attitude to mind, to examine consciousness at first-hand by introspection. So that, while the work becomes increasingly difficult, there is nothing to be afraid of.

Laboratory Partnerships.—A few of the following experiments can be performed by a single student; but the great majority require the coöperation of two students, *E* and *O*. It is very desirable that the partnership formed for the qualitative work, if it was congenial, be continued during this second part of the Course. If, however, your former partner is not completing the Course, or if you are yourself resuming the work after an interval, it is desirable that you choose your own partner, rather than leave the choice to the Instructor. *E* and *O* must be in sympathy, and must have full confidence in each other, if the quantitative experiments are to be successfully carried out.

It may be, of course, that you cannot make such an arrangement as is here suggested, and that your partner is selected by the Instructor. If, now, he does not prove to be a congenial associate, see to it that the partnership is promptly dissolved, and an exchange made. Do not hold back for fear of offence, or for