

PSYCHOLOGY 711:
QUANTITATIVE ISSUES IN THE USE OF RESPONSE TIME
AS A MEASURE OF PSYCHOLOGICAL PROCESSES
January 9, 2015

Instructors

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When and Where

Tuesday January 13	2:30-5:20	Room 316 – Orientation/Planning (Week 0)
Tuesday January 20	2:30-5:20	Room 204 – Week1
Tuesday January 27	2:30-5:20	Room 204 – Week2
Tuesday February 3	2:30-5:20	Room 204 – Week3
Tuesday February 10	2:30-5:20	Room 204 – Week4
Tuesday February 24	2:30-5:20	Room 204 – Week5
Tuesday March 3	2:30-5:20	Room 204 – Week6

Course Objectives

The primary objective of the course will be to introduce students to analytical issues associated with the use of response time as a dependent measure in psychological experiments. Each of a series of six selected topics will be covered, one per week for six weeks. For each of the topics there will be a set of required readings, as well as an assignment that in some cases will require hands-on work with a set of data. Each student in the course will be asked to lead the discussion of one of the assigned readings during Weeks 1 to 5. If not leading the discussion, students will be required to complete the weekly assignment. In Week 6, all students will prepare a short presentation on a contemporary topic related to those covered in the course.

Assessment

Weekly Assignments	60%
Oral Presentation	40%
Total	100%

Each student will complete 4 of the 5 weekly assignments during the Week 1-5 period. All students will complete the assignment in Week 6 (short presentation of a contemporary topic). Each of these five assignments will contribute 12% toward the final grade. The oral presentation in which a student leads to discussion of a reading will contribute 40% toward the final grade.

Assigning of Grades

Initially, all assignments and presentations will be given numerical grades. Final letter grades will be assigned based on the table below.

Numerical Grade	Letter Grade
90 – 100	A+
85 – 89	A
80 – 84	A-
77 – 79	B+
73 – 76	B
70 – 72	B-
0 – 69	F

TENTATIVE SCHEDULE OF TOPICS AND READINGS

Week 0 (January 13) – Introduction, Organization/Planning for course
(no assigned readings)

Week 1 (January 20) – History (2)

* Donders, F.C. ([1868] 1969). On the speed of mental processes. In W.G. Koster (Ed.), *Attention and Performance II*, 412-431. Amsterdam: North-Holland

* Sternberg, S. (1969b). Memory-scanning: Mental processes revealed by reaction-time experiments. *American Scientist*, 57, 421-457.

Sternberg, S. (1969a). The discovery of processing stages: Extensions of Donders' method. In W.G. Koster (Ed.), *Attention and Performance II*, 276-315. Amsterdam: North-Holland.

Week 2 (January 27) – Speed/Accuracy (2)

* Pachella, R.G. (1974). The interpretation of reaction times in information-processing research. In B.H. Kantowitz (Ed.), *Human information processing: Tutorials in performance and cognition* (pp. 41-82). Potomac, MD: Erlbaum.

* Wagenmakers, E.J., van der Maas, H.L.J. & Grasman, R.P.P.P. (2007). An EZ-diffusion model for response time and accuracy. *Psychonomic Bulletin & Review*, 14, 3-22.

Wickelgren, D.A. (1977). Speed-accuracy trade-off and information processing dynamics. *Acta Psychologica*, 41, 67-85.

Week 3 (February 3) – Treatment of Outliers (2)

* Miller, J. (1988). A warning about median reaction time. *Journal of Experimental Psychology: Human Perception and Performance*, 14, 539-543.

* Miller, J. (1991). Reaction time analysis with outlier exclusion: Bias varies with sample size. *Quarterly Journal of Experimental Psychology*, 43A, 907-912.

* Van Selst, M. & Jolicoeur, P. (1994). A solution to the effect of sample size on outlier elimination. *Quarterly Journal of Experimental Psychology*, 47A, 631-650.

Week 4 (Feb 10) – Distributional Issues (2)

* Heathcote, A., Popiel, S. J., & Mewhort, D. J. K. (1991). Analysis of response time distributions: An example using the Stroop task. *Psychological Bulletin*, 109, 340–347.

Mewhort, D.J.K., Braun, J.G. & Heathcote, A. (1992). Response time distributions and the Stroop task: A test of the Cohen, Dunbar & McClelland (1990) model. *Journal of Experimental Psychology: Human Perception and Performance*, 18, 872-882.

* Spieler, D.H., Balota, D.A. & Faust, M.E. (2000). Levels of selective attention revealed through analyses of response time distributions. *Journal of Experimental Psychology: Human Perception and Performance*, 26, 506-526.

Mid-Semester Break (Feb 16-21)

Week 5 (February 24) – Cascaded Processing (2)

* McClelland, J.L. (1979). On the time relations of mental processes in cascade. *Psychological Review*, 86, 287-330.

* Coles, M.G.H., Gratton, G., Bashore, T.R. Eriksen, C.W. & Donchin, E. (1985). A psychophysiological investigation of the continuous flow model of information processing. *Journal of Experimental Psychology: Human Perception and Performance*, 11 529-553.

Week 6 (March 3) – Contemporary Issues

The readings for this week will be compiled by both students and instructors over the course of the term. If you know of a relevant article please forward to the instructors.

Note 1: The penalty for assignments submitted after the due date is 10% per day late. Application of this penalty is at the discretion of the instructor.

Note 2: The instructor and university reserve the right to modify elements of the course during the term. The instructor and university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course website weekly during the term and to note any changes.

Note 3: Attention is drawn to the Statement on Academic Ethics and the Senate Resolutions on Academic Dishonesty as found in the Senate Policy Statements distributed at registration and available in the Senate Office. Any student who infringes one of these resolutions will be treated according to the published policy.