Paper published in *Psychosomatic Medicine*§
“Reaction time as a predictor of mortality: The Radiation Effects Research Foundation Adult Health Study”
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**[Findings of this study]**
An increase in reaction time consistently led to increased mortality regardless of sex, age and follow-up period, and reaction time was a predictor of mortality. Mortality increased with radiation dose, but reaction time and radiation dose were independent mortality risks, and increased dose did not intensify the association between reaction time and mortality.

**[Explanation]**
Dr. Michiko Yamada (Senior Scientist, Department of Clinical Studies in Hiroshima, Radiation Effects Research Foundation) et al. investigated the association between reaction time and mortality and how radiation exposure relates to that association, by examining the participants of the Adult Health Study, a long-term follow-up study of A-bomb survivors based on biennial health examinations. The results of the study were published in the journal *Psychosomatic Medicine*.

1. **Purpose of the study**
The purposes of the study were to investigate the association between reaction time and mortality by following up a large fixed cohort consisting of a variety of age groups of both sexes over a period of about 30 years, and to review how radiation exposure changes the effects on mortality of an increase in reaction time, which is a result of aging. It is the first report on the association between reaction time and mortality among A-bomb survivors.

2. **Methods of the study**
Physiological functions including reaction time were measured for the Adult Health Study cohort in Hiroshima during the period 1970-’72. Reaction time was defined as the time required for a study participant to turn off 10 neon lamps flashing in a certain order (flash test). We conducted a follow up until the end of 2003 of the death status of 4,912 individuals (1,695 men and 3,217 women) aged 35-74 years at the time of the reaction-time measurement. We also conducted statistical analysis by sex, age and follow-up period, taking into consideration blood pressure, cholesterol levels, obesity, smoking and drinking history, diabetes, and radiation exposure.

3. **Results of the study**
   (1) **Association between reaction time and mortality**
   Mortality risk increased with increase in reaction time for both men and women during their middle-age and elderly years, and the association was observed continually even more than 20 years after the reaction-time measurement.

   (2) **How radiation exposure is related to the effects of reaction time on mortality**
   Reaction time and radiation dose were independent risks of mortality. Even though an increase in radiation dose led to increased mortality, it did not intensify the association between reaction time and mortality.

§An official interdisciplinary scientific journal of the American Psychosomatic Society, publishing experimental and clinical studies on behavioral biology, psychiatric medicine, physiology, and clinical medicine, among other fields (Impact factor of 3.968 in 2011)