Also, the reason for one dose per individual is not simply because there may be variation in time of the individual's responses, but because this variation may not be of the same nature as the inter-individual variation. For example, a small initial dose of poison may repeatedly permit animals to withstand second doses which would have originally been fatal.

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References

1. L. J. Cronbach and G. C. Gleser, *Science* **133**, 1924 (1961).
2. S. Loewe, *ibid.* **133**, 1925 (1961).
3. A. Dvoretzky, "On stochastic approximation," in *Berkeley Symposium on Mathematical Statistics and Probability, Proceedings of the Third Symposium*, J. Neyman, Ed. (Univ. of California Press, Berkeley, 1956), vol. 1, pp. 39–55.

"Hospitalism"

King [*Science* **133**, 1642 (1961)] has urged that those readers interested in the discussion concerning the effects of environmental factors upon intelligence [G. Allen, *Science* **133**, 378 (1961); H. Knobloch and B. Pasamanick, *Science* **133**, 379 (1961)] read the work of Spitz on the effects of "hospitalism" [R. A. Spitz, in *Psychoanalytic Study of the Child* (International Universities Press, New York, 1946), vol. 1, pp. 53–74]. King states that Spitz's report is "carefully documented and lucid." I think it only fair to inform the interested reader that Spitz's work has been critically reviewed by Pinneau [*Psychol. Bull.* **52**, 429 (1955)], who concluded that, because of methodological and other inadequacies, "the results of Spitz's studies cannot be accepted as scientific evidence supporting the hypothesis that institutional infants develop psychological disorders as a result of being separated from their mothers" (p. 448).

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Age Factor in Hilo Disaster

The report by Lachman, Tatsuoka, and Bonk *Science* **133**, 1405 (1961)] is a significant contribution, particularly since it illustrates one way in which the scientific community can be of service in the world of practical affairs.

In this case the authors have done a creditable job of investigating subjects' experiences before, during, and after the recent disaster which occurred when a tidal wave struck the city of Hilo, Hawaii. Of considerable importance are the findings which point out the differences between those who evacuated and those who did not when the warning sirens were sounded. This information should clearly be of great value in minimizing the loss of human lives in similar circumstances in the future.

Since I have been interested in the psychological aspects of aging, I was concerned about the age of those who did not evacuate, thinking that perhaps they might have been somewhat older than those who did. Lachman *et al.* present the age data (their Table 1), but only in terms of the number of subjects in the sample who were between the ages of 18 and 27, 28 and 37, and so on, and no mention was made of this variable in the text of the article. In order to get some idea, I computed a crude average age for the nonevacuees and evacuees by simply assuming that each subject's age was at the midpoint of the category as the data were presented—that is, 22.5, 32.5, and so on. These crude average ages were 46.8 and 39.3 for the nonevacuees and the evacuees, respectively. Intrigued by the possibility of a difference, I then carried out a chi-square analysis (although with all of the data available, the more powerful t test would be more appropriate) and found a chi-square of 11.34, which, with 5 degrees of freedom, is significant at the .05 level of confidence (Table 1).

Table 1. Chi-square analysis, based on age data given by Lachman *et al.* $x^2 = 11.34$; $df = 5$; $p < .05$.

Item	Nonevacuees	Evacuees
	Age, 18–27 years	
O	29	30
E	35.5	23.4
O-E	6.5	6.6
$(O-E)^2$	42.25	43.56
$(O-E)^2/E$	1.19	1.86
	Age, 28–37 years	
O	41	35
E	45.7	30.2
O-E	4.7	4.8
$(O-E)^2$	22.09	23.02
$(O-E)^2/E$	0.48	0.76
	Age, 38–47 years	
O	45	32
E	46.3	30.6
O-E	1.3	1.4
$(O-E)^2$	1.69	1.96
$(O-E)^2/E$	0.36	0.06
	Age, 48–57 years	
O	45	19
E	38.6	25.5
O-E	6.4	6.5
$(O-E)^2$	40.96	42.25
$(O-E)^2/E$	1.06	1.66
	Age, 58–67 years	
O	25	8
E	19.9	13.1
O-E	5.1	5.1
$(O-E)^2$	26.01	26.01
$(O-E)^2/E$	1.31	1.99
	Age, 68 years and over	
O	12	6
E	10.8	7.2
O-E	1.2	1.2
$(O-E)^2$	2.64	2.64
$(O-E)^2/E$	0.24	0.37

Thus, it would appear (pending cross-validation) that the age variable, in addition to the variables described by Lachman *et al.*, is one factor which accounts for the fact that some of the people did not evacuate. The reasons for this are not clear, but one might suspect that since older individuals are more likely to be infirm, they might have been less able to evacuate; also, psychological characteristics such as rigidity and confusion in response to novel stimuli may have contributed, since these characteristics, it is sometimes felt, are more common in older groups.

I do, however, wish to make it clear that age would be but one factor. It would not account for the fact that many individuals between 18 and 47 did not evacuate, or that some people over 68 *did* evacuate. Lachman *et al.* have indicated several other factors as provocative possibilities.

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The mean ages for the evacuees and nonevacuees are 39.8 and 44.7 years, respectively. The difference between means is statistically significant ($CR = 2.98$, $p < .01$) and should have been reported. We agree with McDonald that the age factor is difficult to interpret, since an analysis of the data broken down by age groups did not reveal any consistent trends. The Hilo alert failed to produce an effort, on the part of the agencies responsible, to evacuate the aged, infirm, or disabled. This may have contributed to the age-evacuation relationship.

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