Table 2. Rank Correlations (Rho) Between GM and Letter Frequency

	Initial-Letter GM	Terminal-Letter GM
Total-Letter Frequency ¹	.76*	.61*
Initial-Letter Frequency ²	.10	—
Terminal-Letter Frequency ²	—	.47

¹From Mazzyner & Tresselt (1965) for words of length 3-7.

²For words of length 3 only.

Tresselt (1965) have provided tables of single-letter frequency counts as a function of letter position. Correlations between GM and letter frequency are shown in Table 2. Both initial and terminal GM correlate highly with total-letter frequency. It is also clear from Table 2 that the relationship between initial-letter GM and initial-letter frequency of words of length 3 is low; however, this correlation increases from .10 to .71 ($p < .05$) when initial-letter frequency of all word lengths (3-7) are correlated with GM. The fact that the rho for initial letters is low between GM and three-letter words, and increases when all word lengths are included, lends validity to the concept of M since M presumably reflects number of associations regardless of word length. Differences in the stability of the distributions for different word lengths may also be reflected in these correlations.

The same relationships hold for terminal letters. The rho between GM and terminal letters for all word lengths increases from .47 to .66 ($p < .05$). These correlations suggest that initial letters are more important determiners of M than terminal letters which is consistent with Goss & Nodine's (1965) suggestion that M may reflect availability of representational responses. Furthermore, although initial letters may be important determiners of M with nonsense materials, it does not seem to be the case with materials containing semantic content (e.g., Clark, in press).

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Note

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Comment on Serial Isolation by Shock by Louis G. Lippman, Western Washington State College
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In a recent issue of this journal, Raskin, Hattle, & Rubel (1967) reported the results of a serial isolation experiment in which the experimental group (SI) received an electric shock paired with the seventh item of a 12-item CVC list. One control group (C) received no shock, while the other control group (CS) received shock during the intertrial interval. Contrary to the typical results of isolation experiments—i.e., no facilitation of total list acquisition from isolation—these investigators found total list learning to be significantly faster in Group SI than in Group C or CS. Raskin et al attributed their results to increased attention, produced by the evoking of an orienting reflex by electric shock in contiguity with the seventh serial item (Group SI). It is suggested here that there may be additional factors which may not only help account for the enhanced total list acquisition in Group SI, but which may also put this study into relation with other isolation studies in the serial learning literature. One of these factors has its source in differences between isolation by shock and the conventional method of isolation by color—and hypothetical functional differences which are outcomes of these methodological differences in item isolation. The other factor involves S's set and style of learning, as modified by the presence of electric shock.

With the traditional method of isolating by color, the isolated and nonisolated lists are identical except that a distinctive feature (color) is embedded into the elements (letters) of the to-be-learned isolated term. An isolate of this type may be learned more rapidly than its nonisolated counterpart in a control list, but this advantage is at the "expense" of other items in the series (Wallace, 1965). More specifically, Newman & Saltz (1958) have suggested that isolation of an item in the middle of a serial list fails to enhance total list learning because isolation produces accelerated learning of the isolated term as a response. As a response, the isolate tends to be emitted frequently at inappropriate positions within the series and thus precludes correct anticipation of other items on the list, thereby interfering directly with total list performance.

Isolating by shock (qua Raskin et al) differs from isolating by color in two major ways: (1) The isolating stimulus is not spatially proximal to (or embedded into) the to-be-learned item as is the color stimulus; and, perhaps accentuating the absence of spatial proximity, (2) the shock stimulus is in a different sensory modality from the visually presented list item. It is suggested that because of the externality of the shock stimulus to the seventh item, the item was not emitted as often as an intralist

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(cf. Ekstrand, 1966). However, there are two aspects of associative symmetry that may be involved in the present study—acquisition and unlearning. Ekstrand (1966) has suggested that during the learning of a double function list (A-B, B-C, C-D etc.) the backward associations (B-A, C-B, D-C etc.) may be unlearned although the forward associations are not and that this asymmetry in unlearning is what is actually responsible for differential S-R and R-S recall or transfer. If this is the case the symmetry position can be maintained for acquisition (i.e., the weak law of symmetry) but not for unlearning or extinction (i.e., the strong law of symmetry). That is, it can be argued that during PA learning S-R and R-S associations of equal strength are established but subsequent interference effects may differentially

weaken these associations. Although further research will be needed to enable a choice to be made between these alternatives it is clear that the principle of associative symmetry cannot apply to both acquisition and unlearning—if, in fact, it applies in either case.

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Notes

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2. Now at the University of Maryland.

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error as would be an item which had been isolated by color. It is hypothesized that the more the isolating stimulus is an integral part of the to-be-isolated list item, then the greater is the tendency for the isolated list item to interfere with performance as an overt intralist intrusion; since (inversely) the less the isolating stimulus is embedded into the to-be-isolated list item, the less is S's tendency to anticipate the isolating stimulus by emitting the isolated list item. It is thus suggested that isolation by shock may have led to facilitated total list learning in Group SI because overt intralist errors may have been grossly attenuated, in turn allowing for the spread of signal value of the shocked item to its surrounding items.

Wishner, Shipley, & Hurvich (1957) obtained results similar to those of Raskin et al. When each half of a list was differentiated by differences in type-size and color, learning was facilitated in comparison to acquisition of a homogeneous, nondifferentiated list. (The "change-point" around which the greatest intralist facilitation occurred could not be anticipated per se as a to-be-learned response.) Wishner et al attributed this facilitation to not only list differentiation but also to Ss' set, produced by instructions to learn several lists which would differ in color and type. Since Ss in the Raskin et al ex-

periment were informed of the presence of the auxiliary shock stimulus in instructions prior to acquisition, it is possible that shock served to bisect the list into two consecutive 6-item lists: One list was initiated by the termination of the intertrial interval (which represents absence of an item and is not overtly anticipated), and the other by the shock (an extralist stimulus which, likewise, is not anticipated overtly, per se, as a to-be-learned response). To eliminate this possibility, it is suggested that the arousing influence of an evoked orienting reflex upon total list performance could be better tested by varying the serial position at which shock is presented from trial to trial.

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