This explanation is unlikely because E's role was minor and both tapes were recorded by a male voice. Alternatively, female insensitivity to these variables (overall females' scores were slightly higher than comparable male scores) could reflect cultural sex differences, i.e., females are less responsive to incentives in experimental situations.

Assigners, whose role required them to announce money value and assignment, manifested greater value and assignment effects than did assignees. This suggests that these effects may depend on attending to and emphasizing the relevant variables through the active process of repeating aloud. In addition to this increased salience, assigners may have selected words to fit idiosyncratic mnemonic schemes which maximized recall of high-valued and own words, whereas assignees had no such opportunity.

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NOTES

1. This research was partially supported by a grant from the Graduate School, University of Wisconsin, to the first author. Thanks are due to Luana Halm, Susan Miller, and Nancy Olmstead for their assistance in running subjects, to William Epstein and Paul Buckley for helpful comments, and to Jackie Guild for her "cooperation" as a pilot subject.

2. Neither the Bjork et al nor the Glucksberg and King methodology is subject to this criticism, but they both use less direct measures of voluntary forgetting than that of Weiner, and there is some debate about whether the Glucksberg and King paradigm actually taps voluntary forgetting (Weiner & Higgens, 1969; Glucksberg & Ornstein, 1969).

3. After the first recall test, Ss were instructed to write "any other words you recall regardless of assignment." A few words that should have appeared on the first test appeared on the second recall test. The words were counted as recalled even though Ss evidently had not coded assignment (own-other) correctly.

4. These stacks were used to construct a second recognition test, which was administered immediately after the first test.

5. Low-valued words on the first tape and high-valued words on the second tape (the same words) were remembered better: this and higher order interactions involving the tape variable are most likely due to differences in item difficulty and will not be further considered. Assigners kept 50.5% of the 25 cent words and 49.5% of the ½ cent words.

6. Separate analysis for assigners of each sex verifies the greater sensitivity of male Ss to the value and assignment manipulations. Males recalled more high-valued than low-valued words [$F(1,12) = 14.56$, $p < .005$], while females were unaffected by value ($F < 1$). Both males [$F(1,12) = 29.38$, $p < .001$] and females [$F(1,18) = 8.23$, $p < .02$] recalled more of their own words than their partner's words.

Free vs unhibited recall

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This study compared five multitrial free recalls of 20 minimally related words using two instruction conditions: Condition S, standard free recall instructions; Condition U, uninhibited recall instructions in which Ss were told to emit all words occurring to them during recall. Errors were more prevalent for Condition U and were predominately item repetitions. Although level of correct recall was similar for the two conditions on the first trial, Condition U had significantly higher recall than Condition S on the last test trial. This recall superiority was attributable to less intertrial forgetting under Condition U and was independent of the amount of error production.

The present study describes an exploratory attempt to determine the degree of correspondence between covert and overt item recall in the multitrial free-recall (MTFR) task. It is well known that "errors," i.e., the emission of extralist items and intralist item repetitions, are relatively rare in MTFR. On the other hand, the organizational mechanisms of stimulus coding and response cueing (cf. Allen, 1968) involve the implicit use of extralist items for coding and item repetitions for response cueing. This discrepancy, between overt error production and the presumed occurrence of covert errors, may be due to the operation of a selector mechanism (Underwood & Schulz, 1960, pp. 143-144) which serves selectively to filter correct from incorrect items during recall. One set of instructions used in the present study were, in effect, designed to release the inhibitory action of the selector mechanism. It was expected that these instructions would substantially increase the number of extralist intrusions and item repetitions in MTFR.

METHOD

The stimulus list comprised 20 minimally related words randomly selected from a 75-item list (Bousfield, Whitmarsh, & Esterson, 1958). Each item, from five randomizations of the word list, was typed in capital letters on 3 x 5 in. index cards. A practice list of 10 printed numbers was similarly prepared. During input, Ss studied each of the stimulus items for 3 sec. The output trials allowed 80 sec for oral recall, which was tape recorded. The following procedure was followed for each S: practice instructions, one practice trial, instructions reread, five input-output trials with stimulus list.

Introductory psychology undergraduates served as Ss. They were randomly assigned to two groups and were tested individually. Standard MTFR instructions were administered to the 13 Ss of the standard (S) condition. The following special statements were added to the usual MTFR instructions received by the 23 Ss of the

uninhibited (U) condition: "Say any words at all that come into your mind when performing this task, regardless of their nature, and even if you know you are making errors. You are to report exactly what comes into your mind when trying to recall a list of words. The method will differ from the ordinary free-recall procedure in that it is literally to be free. The point of this experiment is to obtain information on what may be labeled uninhibited free recall."

RESULTS AND DISCUSSION

Table 1 presents the means and standard deviations of the errors and correct recall for Conditions S and U on Trials 1 and 5. The apparently greater production of errors under the U vs the S condition, and the increase in errors over trials for both conditions were verified by a two-way ANOVA performed on $(\log_{10} + 1)$ transformed scores using the unweighted means method for unequal N (Winer, 1962, pp. 374-378): condition effect $F(1,34) = 19.08$, $p < .001$; trials effect $F(4,136) = 40.82$, $p < .001$. The insignificance of the Conditions by Trials interaction ($F = .07$) showed that Condition U exceeded Condition S, in total errors, to a similar extent on all trials. It should be noted that Condition U had extremely high inter-S variability in error production. Moreover, the error frequency of Condition U on Trial 1 was considerably larger than that obtained by Keppel & Mallory (1969) in a multiple list FR study that used instructions to guess.

Intratrial repetitions of stimulus items clearly constituted the major portion of the error production for both conditions. The greater number of repetitions for Conditions U and S was significant on both Trials 1 and 5, ts of 1.82 and 1.98, respectively, dfs = 34, $ps < .05$. For both conditions there were significantly more item repetitions, $ps < .01$, on Trial 5 than on Trial 1. Although recalls for Condition U contained few extralist intrusions, their relative frequency was significantly greater than that of Condition S on Trial 1, $p < .05$ for a one-tailed t test, and not significantly larger on Trial 5, $p > .10$.

The number of stimulus words correctly recalled in Conditions S and U on Trial 1 did not differ, $t = 1.00$. On Trial 5, however, the difference in favor of Condition U was significant. This was indicated by a t test, with $t(34) = 3.02$, $p < .01$, and by a Mann-Whitney U test, with $Z = 2.45$, $p < .01$. This finding, of higher recall for Condition U on later trials, was not expected. It was further examined in three post-hoc analyses. The first analysis evaluated whether the recall superiority of Condition U was confined to high error-producing Ss or shown as well by low error-producing Ss within Condition U. A subgroup of Ss from Condition U, referred to here as Subgroup Um, matched Condition S in terms of errors. The performance measures for Subgroup Um are presented in Table 1. As indicated by the means, Subgroup Um exceeded Condition S in correct recall on Trial 5, $t(24) = 2.33$, $p < .05$. This suggests that the instructional recall effect was a function of instructional set and was not directly related to amount of error production. The second post-hoc analysis asked whether the higher recall on Condition U on Trial 5 was due to the increased acquisition of newly recalled items (intratrial retention) or to less forgetting of previously recalled items (intertrial forgetting). An individual item analysis, as suggested by Tulving (1964), was applied to the recall performance of Conditions S and U on Trials 4 and 5. The conditions did not differ in the number of items recalled on Trial 5 that had not been recalled on Trial 4 ($t = .64$). But Condition U and Subgroup Um showed less forgetting on Trial 5 of items previously recalled on Trial 4 than did Condition S (the $\bar{X}$s for Conditions U, Um, and S were 1.65, 1.85, and 3.46, respectively). The condition differences between U vs S and Um vs S were significant, $ps < .01$. The similarity of Condition S's level of intertrial forgetting to that obtained by Tulving (1964) under Type S instructions suggests that U instructions markedly decreased, for both high- and low-error Ss, the amount of intertrial forgetting commonly found in MTFR. The third analysis examined whether or not the resistance to intertrial forgetting shown by Conditions U and Um was related to higher item repetition rates on Trial 4. If both Condition U and Subgroup Um produced high levels of item repetition on Trial 4 then their decrease in intertrial forgetting could be attributed to extra practice of the repeated items on Trial 4. However, the number of item repetitions emitted in Conditions Um and S on Trial 4 did not differ. This finding is in agreement with the first post-hoc analysis in showing that instructional set, not overt error production, was responsible for the intercondition difference in correct recall.

In conclusion, it appears that stimulus coding via the use of extralist items plays a minimal role in MTFR (at least under the present conditions), while the implicit occurrence of intratrial item repetitions are frequent in MTFR. The recall analyses indicate that the facilitory effect of U instructions is: (1) obtained only after initial MTFR practice, (2) tends to be limited to an increase in the recall probability of items emitted on the previous trials, (3) is independent of amount of overt error production. These results imply that standard instructions may implicitly impose a strong inhibition of errors that generalizes to potentially and previously accessible items. If this effect indeed obtains, then studies which aim at determining MTFR capacity should provide instructions which, in effect, stipulate the permissibility of emitting intratrial item repetitions.

Table 1
Performance as a Function of MTFR Instructions*

	Trial	Means of Performance Measures: Total Errors	Extralist Intrusions	Item Repetitions	Correct Recall
Condition U (N = 23)	1	2.74 (3.69)	.91 (1.53)	1.83 (3.09)	8.96 (1.66)
	5	6.61 (7.57)	.57 (1.64)	6.04 (7.29)	16.74 (1.53)
Condition S (N = 13)	1	.31 (.46)	.08 (.26)	.23 (.42)	8.38 (1.47)
	5	1.85 (2.07)	.00 (.00)	1.85 (2.07)	14.85 (2.08)
Subgroup Um (N = 13)	1	.77 (.57)	.15 (.36)	.62 (.62)	9.00 (1.62)
	5	1.77 (1.42)	.00 (.00)	1.77 (1.42)	16.61 (1.70)

* *The first number in each cell is the mean; the second number, in parentheses, is the standard deviation.*

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NOTE

1. Appreciation is extended to Messrs. Roland L. Lizotte and Leslie R. Hankins for assistance in conducting this experiment and in analyzing the data.