

AN EXPERIMENTAL STUDY OF THE ROLE OF THE EGO IN WORK. I. THE ROLE OF THE EGO IN COÖPERATIVE WORK¹

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For many people in our society, responsibility for personal welfare, for success and failure, rests solely upon the individual. The result is a tendency for many individuals to develop a characteristic pattern of activity in which the ego is focal and the objective situation, background. So many aspects of the objective world, on the other hand, by their intrinsic properties demand and absorb the individual's attention, that for a good portion of his life's activities man's ego recedes into the background of behavior. One may think of these two fundamentally different approaches to reality as 'indirect' via ego wishes and needs, and 'direct,' with the objective situation reacted to, manipulated 'for its own sake.' The contrast, for example, between a child constructing a toy house with a glance every alternate minute at his teacher or parent, and a child completely and selflessly involved in the same task, illustrates the basic difference in approach to the world which forms the subject of this paper.

It is necessary first to clarify the sense in which we are using the term 'ego.' 'Ego' needs mean, in this discussion, 'selfish' needs, that is, needs restricted in scope to the enhancement of the self. The goal of a person whose 'ego' needs are focal is the achievement of some pleasure, reward or improved status for his *self*. The person pursues activity with this self-enhancement or self-reward as his *goal*, to the exclusion of all other demands either from the objective environment or from other people. 'Ego' needs mean, then, in our discussion, 'self' or 'egotistical' needs.

This very narrow conception of the ego is introduced here mainly for purposes of clarity. It is essential that a distinction be drawn between ego or selfish needs, and the needs of the person. If the ego and the person are made synonymous, as is often done, then any

¹ The experiment reported in this paper was performed together with the author's student, Miss Muriel Franklin. Miss Franklin participated actively in the planning and preparation of the experiment and in its administration. Without her the experiment could never have been performed.

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need of the human organism becomes ipso facto an ego need. By restricting the use of the term, ego, to situations in which the person functions selfishly or egotistically, we at least achieve a clear terminology for this report.

Hedonistic theories of motivation have characteristically described only one pattern of relationship between the individual, his goal, the task and reward or 'satisfaction': the individual enters upon and completes a task in order to secure reward or 'satisfaction.' The goal of the individual is thus an ego goal—the attainment of reward—and the completion of the task is a means toward the completion of this goal. Satisfaction in this case need not accompany just the completion of the task, since the goal of the individual and the requirements of the objective situation do not necessarily coincide. Completion of the task will bring satisfaction only if task-completion results in some additional, extrinsic reward for which the person has been striving. Task-completion is just as likely to result in an even further widening of the distance between the individual and his goal of pleasure (reward). Familiar examples of the operation of this pattern of motivation in work are not hard to find: one thinks of the child working at his arithmetic examples in order to achieve a gold star. A child strongly motivated toward the achievement of a gold star may derive no pleasure from the solution of arithmetic problems, which may or may not achieve the teacher's approval.

Schematically, the hedonistic conception of the basic motivational pattern in work would appear as follows:

P————Task————→Ego-goal (pleasure; reward)

That is, the person (P) uses the task as a means to attain an ego-goal: pleasure or reward.

There are, however, many occasions in which the relationship of the individual to his goal in work is much more simple and direct than hedonistic theory would imply. The goal of the individual is the completion of the *task*, so that his goal and the requirements of the objective situation coincide. In these cases, satisfaction or the release of activity tension in work coincides with the completion of the task, but was not the aim of task-completion.

Schematically represented, this simpler pattern of relationship would appear as follows:

P————Task————→Task-goal (task-completion)

The only real sense in which the task goal in this scheme is a personal goal is that it is the goal of the person. The *nature* of the goal is to complete the task.

On still other occasions, man enters upon and pursues tasks in order to help others or to help achieve an ideal. In such cases, the person's aims are not restricted by his own self-demands, which are often pushed aside. The person's needs are, on the contrary, so broad that they include the needs of others, or the needs of the ideal. For these occasions, hedonistic theory has no place at all. This theory characteristically deals with such cases only by distorting the real meaning of the term 'self': given a person displaying this selfless behavior, then selflessness must also be a selfish pleasure—this leads us, by circular reasoning, to an absurd conclusion.

Schematically represented, the relationship between the person, task and goal on these occasions is the same as in the second scheme outlined above. The difference is simply in the breadth of the task-goal.

From this discussion it would follow that, in many instances, the person is objectively oriented, pursuing directly the solution of problems posed by his environment without necessarily pursuing hedonistic aims. This is not to assert that man's physical and psychological needs do not motivate him to action; it does assert, however, that man's needs to action are often aroused by the intrinsic properties of the objective situation which he confronts (including the needs of others), and that satisfaction in the completion of a task therefore results without the addition of rewards extraneous to the task itself.

Certain propositions about competitive and coöperative work derive from these general considerations.

1. A minimum requirement for coöperative behavior is not physical togetherness nor joint action, nor even synchronous, complementary behavior, but a diminution of ego-demands so that the requirements of the objective situation and of the other person may function freely. In truly coöperative work, personal needs can function only as they are relevant to the objective situation; the common-objective, in other words, is more important than any personal objective. In this respect, similar behavior should be expected of the coöperating group and the highly 'individualistic' scientist absorbed in his task. Since the self is not focal, another person's activities—the coöperating person's—may be as satisfactory as your own.

2. Competing for individual rewards, i.e., individualistic competition, on the other hand, involves a heightening of ego-demands, so that the ego-objective is more important than any common objective; i.e., the person is at the focus of consciousness. Self-consciousness is at a maximum—the individual is 'on the spot' so that similar behavior may be expected from the member of the competing group and the person driven by inordinate (neurotic) ambition (Horney, 1).

Competing behavior involves seeing the objective situation as relevant to the personal need to win, or for prestige. Only personal activities, therefore, can be satisfactory.

Two predictions follow, further, from these considerations:

1. Satisfaction in work should be obtainable from the coöperating person's activities as well as from one's own. Since the objective situation is focal, rather than the ego, the actual agent in dealing with the objective world need not necessarily be one's self. What the other person does may be as important, as satisfying as one's own activities.

2. When the ego is focal, when the objective situation is seen only as it relates to the dominant ego-needs, then activity will be directed toward *only part* of the objective situation, principally that part which offers satisfaction for ego-demands. The parts of the situation which satisfy the ego will stand out; the parts which wound it, or do not satisfy it may be avoided, or even repressed.

The experiments to be reported here, and in a second report in this series (2), were designed to study in detail the nature of work undertaken in one of the two quite different contexts described above. Since Zeigarnik's first experimental demonstration of 'tension-systems' (4), there has been a growing amount of evidence indicating that the individual's recall of a series of tasks he has done is a fairly sensitive indicator of attitudes operating in the work situation. We chose therefore to utilize the experimental technique of Zeigarnik as the basis of our study.

EXPERIMENT CW

A. Procedure

In order to create a situation in which work to be done would be focal, and the pressure on the individual's ego minimal, a *coöperative work* situation was devised. Each of 14 Brooklyn College students performed 18 heterogeneous tasks jointly with another student who acted as "planted co-worker."³ Each S was obtained by the planted co-worker who asked each person to "come and help her do some work for" the author. The S was brought by the planted co-worker to the author's office, where the experiment was actually performed. On entering the office the S was told by the planted co-worker that "we have lots of things to do. Let's begin by _____ (the first task)."

Half the tasks were casually interrupted by the co-worker who said: "Oh, I'll finish that up," and proceeded to take the task away from the S and finish it. The other nine tasks were completed by the S alone after the co-worker had quietly withdrawn, saying; "Oh, you finish that." All of the tasks were thus jointly begun by the S and co-worker and completed either by the S or co-worker alone.⁴

The tasks were performed by the S and CW in a friendly, informal, *work* atmosphere. No suspicion obtained at any time (except in the case of one S who 'wondered a while') that a psychological experiment was being performed. A few Ss were friends of the planted CW, who

³ Miss Muriel Franklin served as planted co-worker in this and subsequent experiments.

⁴ The subject will be referred to as S, the co-worker as CW. Tasks finished by the subject will be called S tasks; those finished by the co-worker, CW tasks.

was known to be the author's NYA assistant. The fact that the experiment was performed in the author's office at Brooklyn College enhanced the notion that this was real work in preparation for the experiments of the Psychology Department.

A third person, the observer, was also present in the room during the experimental session. This person was also supposed to be doing NYA work, but entirely unrelated to the work of the *S* and *CW*. The observer actually kept a running record of the time of each task, and of the *S*'s comments. The observer was seated at a desk in a corner of the room quite removed from the experimental table and was quite unnoticed by the *S*s.

The tasks took an average of five min. each to complete. The *CW* interrupted or withdrew to allow the *S* to complete the task after about three or four min. of work. The entire work session took about $1\frac{1}{2}$ hours per *S* and was followed by a $\frac{1}{2}$ hour interview.

Each task was administered as an *S*-completed (completed) task for about half the *S*s, and as a *CW*-completed (interrupted) task for the other half.

At the conclusion of the 18 tasks the planted *CW* took the *S* out of the room (to avoid any cues in recall) and asked: "What tasks did you perform during the last hour or so?" After the recall, a fairly extensive interview took place covering the following questions: attitude toward cooperation, interpretation of 'interruption,' interpretation of the purpose of the work, tasks liked and disliked, etc.

There were, of course, difficulties in the administration of the cooperative work procedure. One *S* (No. 2) felt that the *CW* was 'bossy' when she said, "Oh, you finish that." This same *S* "wondered what he was needed for" while the co-worker was finishing the tasks. Another *S* (No. 3) felt that she was "all armsy and legsy" while the *CW* was finishing. The same *S* also resented the "break in the progress of work" which finishing alone entailed. Another *S* (No. 12) felt it would have been more efficient cooperative work if each had worked alone on all tasks, simply sharing the quantity of work done. He disliked the interruptions, and often told the co-worker to "work on her stuff" without bothering him.

These were inevitable awkwardnesses resulting from the fairly rigid requirements of the experimental design. By and large, our protocols reveal, the *S* did feel that he was participating in a smoothly running, fairly natural cooperative work situation.

B. Results

Table I shows the recall results for each of our 14 *S*s. It will be seen at once that 11 out of our 14 *S*s show a maximum difference of only one task between RI and RC. Of these 11, 8 *S*s show RI/RC ratios of exactly 1.00.

The average ratio is 0.94, which is in striking contrast to Zeigarnik's ratio of 1.90. Zeigarnik found that interrupted tasks are recalled nearly twice as often as completed ones. Experiment *CW* demonstrates that interrupted tasks *completed by a cooperating partner* are not recalled any more often than self-completed tasks. In Zeigarnik's terms, the 'tension-systems' aroused to complete a task is resolved by the activities of someone other than oneself—by the cooperating partner.

If the statistically indefensible procedure of averaging ratios is abandoned, and the ratio calculated between the average number of Completed tasks recalled (Ave. RC) and the average number of Interrupted tasks recalled (Ave. RI), the result is 0.88, which is again in striking contrast to a corrected ratio of 1.61 obtained by Zeigarnik. (See Marrow, 3.)

If completion by a cooperating worker is satisfactory, then the end of our experimental session presumably saw the task-completion

TABLE I
SHOWING RI, RC, RT, RI/RT, RI/RC FOR EACH S IN COÖPERATIVE WORK EXPERIMENT

Subj.	RI	RC	RT	RI/RT	RI/RC
1	5	3	8	.63	1.67
2	5	4	9	.56	1.25
3	3	3	6	.50	1.00
4	5	5	10	.50	1.00
5	4	4	8	.50	1.00
6	4	4	8	.50	1.00
7	4	4	8	.50	1.00
8	3	3	6	.50	1.00
9	4	4	8	.50	1.00
10	4	4	8	.50	1.00
11	4	5	9	.44	0.80
12	3	4	7	.43	0.75
13	3	5	8	.38	0.60
14	1	7	8	.13	0.14
Means	3.71	4.21	7.92	.47	(0.94)

RI = number of interrupted tasks recalled
RC = number of completed tasks recalled.
RT = total number of tasks recalled.

$$\text{Ratio } \frac{\text{ave. RI}}{\text{ave. RC}} = 0.88$$

$$\text{Ratio } \frac{\text{ave. RI}}{\text{ave. RT}} = 0.47$$

tension systems of most Ss altogether resolved. Their recall of interrupted and self-completed tasks should therefore theoretically be a function of chance, and we should have an equal number of ratios above 1.00 and below 1.00 in our 14 Ss. The expected distribution of ratios should, therefore, be 7 below 1.00 and 7 at 1.00 or above. The obtained distribution of ratios is 4 below 1.00 and 10 at 1.00 or above. Applying the chi-square test to this difference between expected and obtained distributions we find a P-value of 0.10. Our hypothesis is thus statistically confirmed. The distribution of ratios obtained in the *CW* experiment does not differ significantly from the distribution one would expect by chance.

1. *Protocols*

The protocols of the Ss make perfectly clear the reason for these results. In the first place, all eight Ss whose ratio was 1.00 did not consider *unfinished* the tasks they had been prevented from finishing personally. They insisted, on the contrary, that they had finished all the tasks. As S No. 8 put it, "It didn't make any difference who finished the task. The task was just as complete in all cases, because I had the general idea, and if you finished it off it didn't matter." Another protocol makes the same point: "I finished them all. Of course I did." Or still another S said: "Tasks bind people together. Even if they didn't know each other before, they would be friendlier

afterward because they had exchanged ideas and worked together. [This S did not know the *CW* before they began the experiment.] If they worked together in space but not toward a common goal this might not happen."

Even more interesting from the protocols was the clear indication that the S could not always remember which tasks had been finished by whom. Unfortunately, sufficiently systematic record was not made of the Ss' memory on this point for statistical analysis to be possible. But the main point of these protocols was that all the tasks were considered *finished*.

The coöperative situation, in other words, engendered for the majority of Ss the kind of work-attitude in which the actual agency of task-completion became unimportant, as long as the tasks were finished. Tension systems aroused by the tasks could be and were, for these 11 Ss, resolved by the activity of another person, the co-operating worker.

Three of our Ss showed a difference of more than one task in the recall of completed and interrupted tasks. For two of them, the difference favors the completed tasks (Nos. 13 and 14); for the remaining S (No. 1) the difference favors the interrupted tasks. The protocols of these Ss make plain the reason for their recall. S No. 1 was the S who vacillated between suspicion that "it was an experiment" and the belief, especially when the planted co-worker was helping her, that maybe it "wasn't an experiment." She said: "In the situation when I felt you weren't experimenting, whether I finished or you finished made no difference. It was complete . . . If you were experimenting on me, I felt I should have a chance to finish."

S No. 13, who recalled three interrupted and five self-completed tasks, shows quite a different process. This S felt that there were "really few things we did together." "I was only doing what you told me to. . . . I was more aware of those tasks which I completed." It is significant that this S spontaneously mentioned his feeling that working together with someone was 'reassuring.' Apparently, this S retained a good deal of ego-orientation despite the apparently coöperative situation.

S No. 14 illustrates this process in an extreme and clarifying fashion. The recall here consisted of one interrupted and seven self-completed tasks. This S felt that "it was my fault rather than yours that I shirked my duty and wasn't coöperative enough. . . . When you finished I felt it was unfair on my part because I felt I was shirking (?) what I should have done." Despite the nature of the work situation, then, this S remained under pressure to maintain her ego-status. Questions of fault, of the relative merit of her contribution,

were dominant in her attitude toward the work. As a consequence, tasks which the *S* was not permitted to finish became failures, while tasks which she herself finished gave her considerable satisfaction.

S No. 14 was, in other words, ego-oriented despite the apparently coöperative situation in which she was working. Her recall, both of interrupted (*CW*) and self-completed (*S*) tasks is unusual. Interrupted tasks, which she seemed to regard as her 'failures' were absent in recall; self-completed tasks, which apparently were 'successes,' were present in great proportion. The reasons for this pattern of recall are not yet clear, although many interesting speculations could be raised. All that can be said, however, so far, is that this *S*'s ego-orientation resulted in an extreme recall ratio.

2. Task-Analysis

We turn next to an analysis of the relationship between recall of tasks in coöperative work and the nature of the tasks themselves. The 18 tasks used in this experiment were:

1. *Winding* thread on a spool: *S* holds the spool and *CW* winds, or vice versa.
2. Solving *Anagrams*: a set of 20 disarranged letters, all names of fruits and vegetables. *S* and *CW* discuss possible solutions, and make them jointly. Some division of labor takes place. It was necessary here for the *CW* to hold back solutions, so that the solutions would appear to be joint, and equally contributed to by *S* and *CW*.
3. *Clay modeling*: *S* and *CW* work jointly to copy a model clay house.
4. *Limerick*: This was made into a routine task of copying, i.e., tracing limericks from a printed page to another page. *S* and *CW* share just the amount of work. *S* copies one; *CW* another limerick, etc.⁵
5. *Cutting and pasting* an article from a newspaper into a scrapbook. *S* and *CW* assisted each other, held paper, wiped paste, etc., for each other.
6. *Adding* a set of three-column numbers. *S* added one column aloud while the *CW* checked; then the *CW* added the other column, while *S* checked.
7. *Copying map* of distribution of Indian cultures in North America. *S* dictates and *CW* copies, or vice versa.
8. *Packing* books and magazines into a box so that the lid closes. *S* and *CW* assist each other—hand each other books, pile, stack, etc.
9. *Alphabetizing* index cards. *S* and *CW* simply share the quantity of work.
10. *Stick problem*: To make 4 boxes of equal size out of 9 squares, with 5 sticks remaining. *S* and *CW* discuss each other's hypotheses.
11. *College plan drawing*: To draw a plan of Brooklyn College, showing principal buildings, walks, etc. *S* and *CW* discuss alternative methods of showing plan.
12. *Jigsaw puzzle*: An 18 piece jig-saw puzzle to be put together with a prepared model visible. *S* and *CW* assist each other to find parts.
13. *Circling vowels*: To draw a circle around each of the vowels in a mimeographed paragraph. *S* and *CW* start from opposite ends of the paragraph, i.e., simply share the quantity of work.
14. *Stapling*: Sorting and stapling together a mimeographed reading list. *CW* sorts and *S* staples, or vice versa.
15. *Rearranged sentences*: 10 sets of disarranged words each to be made into a meaningful sentence. *S* and *CW* discuss alternative possibilities. The procedure is much the same as in *Anagrams*.

⁵ In the other experiments this task, using one of the same limericks, was completely changed in character. In the subsequent experiments the task became to complete the last four lines of a limerick beginning: "There was a young lady from Kent."

16. *Braiding* a length of colored wool. *S* holds and *CW* braids, or vice versa.
17. *Copying list*: A list of psychologists names to be copied from the APA yearbook. *S* dictates and *CW* copies, or vice versa.
18. *Writing a letter*: Copying the text of a letter written by the author informing the Psychology Division of a forthcoming seminar. *S* reads and *CW* writes, or vice versa.

These tasks were chosen to resemble, as far as possible, the tasks used by Zeigarnik. It will be seen, of course, that the actual nature of coöperative work is different for different tasks. In some, for example, there is division and specialization of labor—*S* dictates, *CW* copies, or *S* holds and *CW* braids. So in tasks 1, 4,⁶ 5, 7, 8, 14, 16, 17, 18, *S* and *CW* are each engaged in different operations which fit together to make the whole task. We shall call these tasks Specialization of Labor tasks (*SL*). In other tasks, *S* and *CW* simply split a given amount of work in half and each does his stint. Here there is division without specialization of labor. Both are engaged in similar or identical operations which, added together, make the whole task. This is true of tasks 2, 9, 13 and to a certain extent, 6. We shall call these tasks Equivalent Halves tasks (*EH*). In still other tasks, *S* and *CW* coöperate on a still different level. Here *S* and *CW* each propose a solution, criticize each other and come to an agreement. This is true for tasks 3, 4, 10, 11, 12 and 15. We shall call these tasks Exchange of Ideas tasks (*EI*).

That this difference in type of coöperation is experienced by the *S* is apparent from the protocols. For example, *S* No. 1 says: "Some [tasks] we did together. I couldn't say I finished them alone. Some we were working on and you took away and finished alone, i.e., some we divided up and you finished your part and I finished mine."

The tasks varied also in their internal structure. That is to say, some tasks had clearly defined, objectively unambiguous terminations, for example, the jig-saw and the stick problems. Not only was the termination of these tasks clear, but the quality of *completion* did not permit of variation. The puzzles were either solved or not solved. (This is not true, of course, of the quality of performance leading to completion but it is true of the completion itself.) The termination of these tasks was inherent, in other words, in the structure of the task itself.

The completion of other tasks depended more upon subjective standards of judgments. For example, the clay house could be finished, but every detail could stand improvement.

For still other tasks, the termination point was an arbitrary matter, set entirely by the instructions of the experimenter. Thus the termination point of vowel circling, stapling papers, is clear, but

⁶ See footnote 5.

arbitrary. There might have been 500 vowels instead of 200, 30 sets of papers, instead of 15. Another way of describing the difference in internal structure of the tasks is to say that some are repetitive, consisting of loosely related parts, while others are more highly organized, consisting of more integrated parts. So the jig-saw puzzle and the stick problem are different in structure from the cancellation of letters task or the addition task. Roughly speaking, tasks 1, 4,⁷ 5, 6, 7, 8, 9, 13, 14, 16, 17, 18 can be classed as repetitive or routine (R), as contrasted with tasks 2, 3, 10, 11, 12, 15 which are more highly integrated (NR) tasks.

TABLE II
TASK ANALYSIS
SHOWING RECALL RATIOS FOR EACH TASK IN CW EXPERIMENT

No.	Task	Type	C	RC/C	I	RI/I	RT/T
1	Winding	R-S.L.	6	.33	8	0.00	.14
2	Anagrams	NR-EI	8	.25	6	.83	.50
3	Clay House	NR-EI	8	.38	6	.50	.43
4	Limerick	R-EH	7	.42	7	.42	.43
5	Cutting and Pasting	R-S.L.	7	.29	7	.14	.21
6	Adding	R-EH	9	.54	5	0.00	.36
7	Copying map	R-S.L.	5	0.00	9	.40	.14
8	Packing Box	R-S.L.	9	.54	5	.20	.43
9	Alphabetizing	R-EH	8	.50	6	.33	.43
10	Stick Problem	NR-EI	4	.75	10	.40	.50
11	Drawing College Map	NR-EI	8	.38	6	.50	.43
12	Jig-saw Puzzle	NR-EI	6	.67	8	.50	.57
13	Circling Vowels	R-EH	7	.71	7	.56	.64
14	Stapling	R-S.L.	12	.58	2	0.00	.50
15	Rearranged Sentences	NR-EI	4	.75	10	.80	.78
16	Braiding	R-S.L.	7	.67	7	.50	.64
17	List-Copying	R-S.L.	8	.13	6	.17	.14
18	Letter-Copying	R-S.L.	4	.50	10	.60	.57

C = Number times presented as a completed task, i.e., as a self-completed task.

$$RC/C = \frac{\text{Number completed tasks recalled}}{\text{Number completed tasks presented}}$$

I = Number times presented as an interrupted, i.e., co-worker-completed, task.

$$RI/I = \frac{\text{Number interrupted tasks recalled}}{\text{Number interrupted tasks presented}}$$

$$RT/T = \frac{\text{Total number tasks recalled}}{\text{Total number tasks presented}}, \text{ i.e., recall value of task.}$$

It is apparent at once that the classification into routine and non-routine tasks exactly parallels our classification according to the nature of the coöperative relationship. Routine tasks are also the ones in which coöperation took the form either of division and specialization of labor or equivalent halves of work. This overlapping

⁷The *Limerick* was a routine copying task in the CW experiment, but became a non-routine 'creative' task in the other experiments.

between nature of coöperation and type of task is not, of course, accidental, but neither is it an inherently necessary overlapping. It might have been possible to include in our series tasks which were not routine, and still were done jointly by division of labor. Or the same tasks used in this series might have been performed coöperatively in different ways—for example, the jig-saw puzzle or the clay house could have been divided in half (each person completes his share).

The type of coöperation employed for routine and non-routine tasks in this experiment was simply the easiest and most 'natural' form of coöperation for each. It is obvious that routine laboratory tasks will lend themselves better to division and specialization of labor than non-routine tasks.

This overlapping, of course, is unfortunate for purposes of analysis now, because it is apparent from inspection of Table II that routine, division-of-labor tasks show a slightly different pattern of recall ratio than non-routine, exchange-of-ideas tasks. The routine, division-of-labor tasks are more likely to be recalled when self-completed; the exchange-of-ideas tasks, when interrupted. Our general result in Table I seems then not to be independent of the nature of the task, but an overall result, depending upon the fact that we had in our series two kinds of tasks—routine, division-of-labor tasks better recalled when self-completed, and non-routine, exchange-of-ideas tasks better recalled when interrupted. The distribution of recall ratios in these two categories is apparent in Table III. (There

TABLE III
SHOWING RECALL RATIOS ACCORDING TO NATURE OF TASK AND
NATURE OF COÖPERATIVE RELATIONSHIP

Task	N	Ratios		
		RC > RI	RI > RC	RI = RC
SL } R.....	12	8	3	1
EH } R.....				
EI; N-R.....	6	2	4	0

SL = specialization of labor tasks.
EH = equalization of halves tasks.
R = routine tasks.
EI = exchange of ideas tasks.
N-R = Non-routine tasks.

is no difference in *size* of ratio between the two kinds of tasks, just a difference in direction.)

If one considers for a moment the processes which lie behind the differences in the recall ratios of the two types of tasks, an explana-

tion is readily apparent. Both the nature of the non-routine tasks and the nature of the coöperative relationship in them were such that these tasks afforded an opportunity for greater personal variability in their performance and consequently greater difference in method of work between *S* and *CW*. The number of details one wishes to include in a clay house, the hypotheses one has to offer in solving the stick problem are all much more variable than the steps it is possible to take in order to wind thread, or add numbers or copy a letter (or dictate it). As a consequence a satisfactory completion of such a task by a coöperating worker, while possible, is much more difficult to achieve. There will be some residual ideas (perfectly good ones) which the other member of a coöperating team will find omitted from the final solution of such non-routine, exchange of ideas tasks, even when the agreement between the two workers is quite thorough. As a consequence, some unresolved tensions remained for our coöperating *Ss* in these non-routine tasks, and the recall ratios of these tasks slightly favors the interrupted (*CW* completed) condition.

For routine tasks, it is easier to find a quite satisfactory joint solution and one would have expected the ratios for these tasks to be exactly 1.00, instead of favoring the self-completed condition. The probable explanation of this finding lies, I believe, in certain accidental features of the coöperative relationship established in this particular experiment. The planted *CW*, the one who was being helped, was of necessity something of a leader in the coöperative situation, although she did her best to minimize her own role as 'director' of work. But a certain dependency of the *Ss* on the planted co-worker was absolutely unavoidable. The *CW* knew what work was to be done, introduced each task, was the principal working with an 'assistant.' Some inequality of work burden (responsibility) resulted. The slightly greater recall of self-completed routine tasks is probably a reflection of this inequality. Self-completed tasks belonged a little more to the *S* himself (actually, of course, he worked on them a little longer); interrupted tasks belonged a little more to the *CW*. Had there been no original inequality of attitude, even this difference in belongingness might not have arisen. The completion of interrupted tasks by the *CW* was satisfactory, therefore these tasks were less likely to be recalled. Self-completed tasks belonged to the *S* a little more and so were more likely to be recalled.

This, is then, our guessed explanation for the obtained difference in recall ratios of individual tasks. In exchange-of-ideas, non-routine tasks, solution by the *CW* was not 100 percent satisfactory; these tasks are therefore recalled slightly more often in the interrupted condition. Routine, division-of-labor tasks are satisfactorily com-

pleted by the partner. Since, however, the partner is something of the 'boss' in the work, the Ss' own tasks are slightly better recalled by him than the partner's tasks.

It follows from this analysis that our obtained ratios of 1.00 in this coöperative work experiment depend upon the following basic conditions:

1. *The existence of task-orientation*, so that task solution by another person can be personally satisfactory.

(a) Coöperative work is only one condition under which such task orientation occurs.

2. *The use of tasks capable of joint solution*.—It is interesting that these 18 tasks chosen by us to meet an altogether unrelated requirement (resemblance to Zeigarnik's tasks) should all have been capable of joint performance. Even such highly 'individual' tasks as puzzle-solving lent themselves to genuinely joint performance.

(a) The chief minimum requirements for satisfactory joint solution are: (1) that the task shall have a clear-cut, objectively determined termination; (2) that there shall be equality between the coöperating workers.

(b) These requirements can be satisfied with both routine and non-routine tasks. They can also be satisfied in different kinds of coöperative relationship, whether in division of labor or exchange of ideas.

An important additional set of experiments should be performed on these problems. A systematic variation of type of task, type of coöperative relationship, and degree of equality in coöperation ought to be extremely illuminating.

Certain further additional experiments are also required before the significance of the *CW* Experiment can be fully estimated: (1) a 'control' experiment simply repeating Zeigarnik's experiment in our laboratory; (2) an experiment to test the possibility that no 'responsibility' for work (tension-system to complete a task) arises at all in coöperative work; and (3) an experiment to study the consequences of task completion in a non-coöperative situation. These experiments have been performed and will be reported in the next issue of this *Journal* (2).

Provisionally, then, the results of the *CW* Experiment lead to the following conclusions:

1. Under certain conditions, in this experiment, coöperative working conditions, task completion by another person than oneself can be 'satisfactory.' This is indicated by an equal recall of self-completed and interrupted (partner-completed) tasks in a group of 14 Ss, and by introspective reports.

2. These results offer evidence that motivation in work need not necessarily be egotistical (hedonistic theory), and that, on the contrary, the person is frequently motivated directly by the demands of the objective situation, including the requirements of another person.

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