

MEMORY FOR COMPLETED AND INCOMPLETED TASKS AS A FUNCTION OF PERSONALITY: CORRELATION BETWEEN EXPERIMENTAL AND PERSONALITY DATA

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In an earlier paper (2) the writer reported on the group data from the first of two related experiments which had been designed to explain within the framework of memory for completed and incompleted tasks some of the seemingly inconsistent findings of previous studies in selective recall. The major premise on which the experiments were based was that the direction of selective recall is a function not so much of the objective fact of completion or incompleteness of the task, as Zeigarnik (31) and others¹ had suggested, as of the personality structure of the individual S. In support of this premise three hypotheses were tested. Hypothesis I stated that S's, unselected for personality factors, would recall incompleted tasks no more frequently than completed tasks both under conditions where self-esteem was not objectively threatened (task orientation) and where self-esteem was being objectively threatened (ego-orientation). This hypothesis was upheld in the analysis of the group data (2). The present paper will report on the correlation between the experimental and the personality data.

Correlations of experimental and personality data support Hypotheses II and III as set up in the original experiment. These hypotheses were stated as follows:

Hypothesis II. Under conditions where equal numbers of completed and incompleted tasks are to be recalled, S's who recall a preponderance of completed tasks will exhibit consistent differences in personality from S's who recall a preponderance of incompleted tasks.

Hypothesis III. The direction of selective recall of a given S will differ in a non-self-esteem involving laboratory situation and in

¹ See Alper (2) for a review of the pertinent literature.

a laboratory situation where self-esteem is objectively threatened in a manner which is consistent with the self-esteem needs of that S

The underlying theoretical assumptions of the experiment are outlined in the earlier report (2)

THE EXPERIMENT

The experimental design, materials, and procedure have been reported in detail elsewhere (2) Only a brief outline, therefore, will be presented here

Experimental Design

The experiment was divided into two one-hour sessions In Session I it was intended that the S be merely task-involved The instructions, therefore, were task-oriented (cf 4) The atmosphere was friendly, informal, and without objective threat to self-esteem Session II, one week later, was designed to arouse self-esteem involvement by being objectively threatening to self-esteem Accordingly, both the instructions and the atmosphere of Session II were ego-oriented (cf 4)

In each session S was allowed to finish only half of the tasks Incompletion in Session I was represented as a function of the difficulty of the materials, while incompletion in Session II occurred in a context of competitive failure on a set of intelligence test tasks That the conditions of Session II actually were significantly more frustrating, more self-esteem-involving than those of Session I has already been shown in the earlier report (2)

The Subjects

Ten draft-age male undergraduates, all S's in the coextensive Diagnostic Council Experiment² conducted between 1941-1943 at the Harvard Psychological Clinic under the direction of Dr Henry A Murray and Dr Robert W White, served as S's in the present experiment Personality ratings on these S's, based on the 40-hour DCE intensive study of each S by the 20 clinic coworkers, were available to the writer for testing the experimental hypotheses The techniques used in the DCE included personal documents, interviews, projective techniques, and clinically oriented experiments

* The Diagnostic Council Experiment will be referred to in this paper as DCE. The major outline of the DCE followed the earlier study *Explorations in Personality* (18) with certain modifications and extensions (cf 12 and 30)

The same S's served in both Session I and Session II

Materials

The main experimental task in each session consisted of a set of twelve 20-word sentences. Each sentence was presented to the S in the form of ten disarranged two-word phrases from which S was to construct a meaningful sentence. The sets for the two sessions were matched in difficulty. Half of the sentences in each set were readily solvable in the two-minute per sentence time limit, and half were either unsolvable or too difficult to be solved in the allotted time, as determined in advance on a control group of S's. Each solvable sentence could be arranged into four equally meaningful, alternative sentences.

Other tasks described in the earlier report (2) were used as interpolated tasks. No reference will be made to them here other than to indicate them in the order of procedure.

Procedure

Session I Nonthreatening to Self-esteem S worked alone in the presence of E. He was told that E was trying out some materials in preparation for a later experiment.

The order of tasks and the time per task were as follows.

- 1 Drawing outline faces (five minutes) S was shown a sample outline face
- 2 Solving twelve sentences (two minutes per sentence)
- 3 Drawing outline faces (five minutes)
- 4 Free drawing (five minutes)
- 5 Incidental recall of the sentences (five minutes)
- 6 A short projection test (ten minutes)

Session II Threatening to Self-esteem S now worked not only in the presence of E but also in the presence of two contemporary accomplices, one a male and the other an attractive young female. S was told that the sentences used in this session had been designed as a brief intelligence test which the Army was finding useful in selecting candidates for Officer Training School.

The presence of the accomplices was explained to S by saying that, in order to save E's time, two subjects would be run at once.

The female accomplice served as a second recorder, the male accomplice as a more successful subject

The order of tasks and the time per task, in Session II, were as follows

- 1 Solving twelve sentences (two minutes per sentence) First and tenth sentences were solved "co-operatively" by the S and the male accomplice³ The arrangement of sentences was such that two easy solvable sentences were in the first half of the set, referred to later as "before failure load," and two were at the end of the set, referred to later as "after failure load" The accomplice working at a near-by table "solved" all of the sentences, while the S was doomed to fail on half of them
- 2 Drawing outline faces (five minutes) This task was introduced after the second co-operatively solved sentence At its completion S and accomplice resumed their individual work on the last two sentences
- 3 A short projective test (ten minutes)
- 4 Incidental recall of the sentences (five minutes)

TREATMENT OF DATA

Since one of the unique contributions of this investigation is its emphasis on the relation between performance and personality variables, a statistical technique which allows for a study of individual patterns of behavior from session to session, as well as for inter-correlations of these patterns with personality variables, was required The syndrome analysis, as outlined by Horn (13), was selected as most suitable for these purposes Accordingly, the scores of each S on twelve experimental and two nonexperimental variables, as listed in Table I, after being adjusted for individual differences in performance, were rank-ordered These rank-ordered scores were used in the syndrome analysis Only variables involving the main experimental task, the sentence material, were included in the analysis of the performance patterns

The raw scores of the first ten variables in Table I were adjusted for individual differences in performance as follows to compute the percentage of alternative solutions obtained by a given S in each part of the experiment, the number of alternative solutions he achieved in Session I and before and after failure load in Session II, exclusive of co-operatively solved sentences in Session II and of comparably placed easy sentences in Session I, were totaled, the

³ A new set of co-operatively solved sentences was used for each S Such sentences, therefore, were equally new to both the S and the accomplice

percentage of this total obtained in Session I represents S's adjusted score for solutions in Session I, the percentage obtained before failure-load in Session II, S's adjusted-before-failure load scores, etc. Adjusted scores for average time required to attain a first solution were similarly obtained, co-operatively solved sentences in Session II and comparably placed sentences in Session I again being omitted from the computations. Thus, although S worked on six easy and six difficult sentences in each session, his performance on only four easy and six difficult sentences in each session is considered.

Selective memory scores also had to be adjusted for individual differences in performance since, as was noted in the earlier report (2, p. 412), the performance of some S's being more disrupted in Session II than that of others, the four easy sentences were not necessarily solved by all S's in Session II. In order to compute the percentage of completed and of incompleted sentences recalled by a given S in each session, his total recall score (TR), adjusted for individual differences in performance, had to be obtained. The formula used for computing TR was as follows:

$$\frac{RC_1}{C_1} + \frac{RI_1}{I_1} + \frac{RC_2}{C_2} + \frac{RI_2}{I_2} = TR$$

In this formula RC_1 = the number of completed sentences recalled by S in Session I, C_1 = the number of sentences completed by S in Session I, RI_1 = the number of incompleted sentences recalled by S in Session I, I_1 = the number of sentences not completed by S in Session I, RC_2 = the number of completed sentences recalled by S in Session II, etc. The percentage that $\frac{RC_1}{C_1}$ is of TR would yield

the percentage of completed sentences recalled by S in Session 1. The other recall percentages could be similarly computed. These adjusted percentage scores were used to rank-order the S's on selective memory.

Rank-order scores for the two "co-operation" variables were computed as described below. A crude ordinal scale of co-operation was constructed which permitted the behavior of the S on co-operatively solved sentences (numbers one and ten in Session II) to be scored for "co-operativeness." Both the E and the female accomplice

rated each S independently, where differences in ratings occurred, as they did in the case of one S, the two ratings were averaged

The co-operation scale ranged from minus three to plus three, as follows

-3 = no co-operation S takes full charge of the material, not allowing the male accomplice to share in any part of the solution For example, two S's in sentence ten (after failure load) not only turned the phrases at an angle of approximately 180 degrees away from the accomplice but also covered them up in such manner that the accomplice was completely prevented from seeing the phrases

-2 = S keeps the upper hand in the solution, tries more combinations of the phrases himself or else *instructs* the accomplice as to what combinations to try

-1 = parallel activity S and accomplice work beside each other, each trying to assemble phrases *without* the help of the other S gives the impression of competing against the accomplice rather than of working with the accomplice

+1 = S stands by while the accomplice does the work, S tries neither to help nor to hinder the accomplice He makes no suggestions

+2 = S watches the accomplice solve the sentence He makes a few suggestions and even tries combinations himself, especially if the accomplice seems to have slowed down or given up He gives the impression of *trying to help* the accomplice

+3 = S and accomplice share work equally, each giving and taking suggestions

Rank order scores on the last two variables in Table I, namely, Scholastic Aptitude Scores (S A T) and average of college grades, were computed on the basis of information obtained from the College Records Office

The intercorrelations of each variable with every other variable are presented in Table I A syndrome analysis based on these intercorrelations yielded five experimental syndromes Each syndrome was then examined in the light of the DCE summary of staff ratings on manifest personality and past history parameters In this summary the personality parameters common to every combination of the ten subjects taken three at a time had been isolated by Dr Daniel Horn (14) on the basis of a syndrome analysis of the final clinical ratings⁴ It was thus possible to note the personality parameters

⁴ The minimum acceptable value of *rho* for inclusion of two or more variables in a cluster of intercorrelated variables in both the experimental and the clinical data of the DCE was $\pm .50$ The P value of a *rho* of $\pm .50$, with an N of ten, following Lindquist's (17, p 248) formula, is between 10 - 05 Although this does not quite reach the 5 per cent level of confidence, it was accepted in the DCE, and therefore in the present experiment, as sufficiently high to disclose important trends.

common to the S's at the high and at the low ends of a given experimental syndrome, respectively, and to interpret the experimental findings in the light of these personality data. All DCE personality ratings were made within the framework of Murray's (18) conceptualization of personality and utilize Murray's need-press terminology.

RESULTS

Five syndromes were obtained from the intercorrelations of the experimental variables in Table I. The first two syndromes involve performance level variables only, while the remaining three reveal relationships between selective recall and performance. A descriptive name has been given to each syndrome in order to characterize the behavior at the two ends of the syndrome. The S's at the high and low ends of each syndrome, respectively, are referred to by the names given these S's in the DCE. The five syndromes and related personality parameters are summarized in Tables II and III. Parentheses are used in these tables to indicate negatively intercorrelated items.

Syndrome I Efficient Productivity vs Inefficient Nonproductivity in an Atmosphere Objectively Nonthreatening to Self-esteem
This syndrome includes positive intercorrelations between per cent of alternative solutions in Session I, per cent of time in Session I, and Scholastic Aptitude Test Score (S A T).

The relationships at the high end of Syndrome I are between "intelligence" as measured on the S A T and the ability not only to achieve a first solution of solvable sentences quickly in an informal laboratory setting but also to shift one's frame of reference quickly and obtain one or more alternative solutions of the material. At the opposite end of this syndrome are the S's who do poorly on the laboratory material under these conditions and who also achieve poorer S A T scores. To do well on this experimental task in a nonstressful setting requires, apparently, not only a high verbal intelligence but also the ability quickly to restructure a structured stimulus-field. That high verbal intelligence alone will not assure good performance here is shown by the fact that Yackle, who ranked second of the ten S's on the S A T, was not among the three best performers in Syndrome I.

The three S's who are high on this syndrome are Commitless, Dupressey, and Idin; the three who are low are Helmler, Luke, and Spurnessey. The DCE summary of staff ratings indicates that the three high S's share in common two personality parameters, *n* Dominance, Ideas (a need to control the sentiments and behavior of others by suggestion, education, persuasion, or command) and in Sentience, Aesthetic (an interest in one or more of the arts). They also have in common a past history variable, Oral Achievement (a history of adolescent successes in debating, public speaking, acting, singing, or writing). The three low S's, on the other hand, have no personality parameters in common, according to the DCE summary ratings. It would seem, then, that there is even less uniformity of personality structure among inefficient nonproducers in a nonstressful atmosphere than there is in the personality structure of the efficient producers.

The interpretation of Syndrome I in terms of experimental and nonexperimental variables permits of four generalizations: (1) In a non-self-esteem-involving (task-oriented) atmosphere verbal intelligence is a necessary, but not a sufficient, factor for performing at a high level on the given task. (2) Subjects who do perform well in such a setting are individuals who, in addition to high verbal intelligence, have had past verbal successes during adolescence and have present verbal and aesthetic interests and aptitudes. (3) Subjects who perform poorly in such an atmosphere seem to be characterized by lower verbal intelligence. (4) There is less uniformity of personality structure among inefficient nonproducers in a nonstressful atmosphere than there is in the personality structure of efficient producers.

Syndrome II Efficient Unsustained Productivity vs Initially Inefficient, Counteracted Nonproductivity in an Atmosphere Threatening to Self-esteem. This syndrome includes both positive and negative intercorrelations. Per cent of alternative solutions obtained in Session II *before* failure load and per cent of time in Session II for attaining a first solution *before* failure load are positively correlated though negatively intercorrelated with average time for attaining a first solution *after* failure load in Session II. In other words, S's high on this syndrome work quickly and productively

TABLE II

THE FIVE SYNDROMES DEFINED IN TERMS OF THE CHARACTERISTICS OF THE HIGH END OF THE SYNDROME

	Name of Syndrome	S's	Intercorrelated Experimental Variables*	DCE RATINGS COMMON TO S's AT THE HIGH END OF THE SYNDROME**	
				Manifest Personality	Past History
I	Efficient productivity in an atmosphere objectively nonthreatening to self-esteem	Commitless Dupressey Idin	Per cent of alternative solutions in Session I Per cent of time to obtain a first solution in Session I S.A.T. score	n Dominance, Ideas n Sentence Aesthetic	Oral Achievement
II	Unsustained productivity in an atmosphere objectively threatening to self-esteem	Helmier Youngman	Per cent of alternative solutions before failure load in Session II Per cent of time to obtain a first solution before failure load in Session II (Per cent of time to obtain a first solution after failure load in Session II)	Ego-strength Conative Conjectivity n Dominance, Conduct n Affiliation, Diffuse n Deference, Compliance (Neurotic Tendencies) (Ego-Ideal, Intraggression) (Dejection, Pessimism) (n Rejection) (n Seclusion) (n Autonomy, Resistance)	p Praise, Encouragement (p Strict Parental Standards) (Disobedience) (Temper Tantrums) (Sex Curiosity) (Childhood Illnesses) Social Adjustment Leadership
III	Socially facilitated productivity	Helmier Youngman	Per cent of alternative solutions before failure load in Session II Co-operation before failure load in Session II Recall of incompleting tasks in Session I (Recall of completed tasks in Session I)	Ego-strength Conative Conjectivity n Dominance, Conduct n Affiliation, Diffuse n Deference, Compliance (Neurotic Tendencies) (Ego-Ideal, Intraggression) (n Rejection) (n Seclusion) (n Autonomy, Resistance)	p Praise, Encouragement (p Strict Parental Standards) (Disobedience) (Temper Tantrums) (Sex Curiosity) (Childhood Illnesses)
IV	Counteractive productivity after competitive failure	Commitless Luke	Per cent of alternative solutions after failure load in Session II Recall of completed tasks in Session II	Striction n Harmavoidance (n Affiliation Focal) (n Sex, Focal) (n Sex, Diffuse) (Energy) (Excitance, Adventure)	(p Parental Discord)
V	Orientation away from failure after competitive failure	Helmier Spurnessey	Co-operation after failure load in Session II College grades (Recall of incompleting tasks in Session II)	Ego-Strength Conative Conjectivity Ego-Ideal Pride n Counteractive Achievement	

*Parentheses are used to indicate negative intercorrelations

**Parentheses are used to indicate parameters on which the S's rank low

when first put under the stress of competitive failure. But as failure piles up they are unable to maintain this high level of performance. This is shown by the fact that the average time for achieving first solutions increases in the second half of the set of sentences. S's low on this syndrome start slowly under the stress of competitive failure but show signs of counteracting failure in that they achieve a first solution *more* rapidly on the second half of the sentence series after failure has piled up than they did on the first half.

It is significant to note that unlike the positive relationship between good performance and high S A T found under nonstressful conditions (Syndrome I), good performance under stress is not necessarily associated with high intelligence either *before* failure load, or *after* failure load. The correlation between S A T and per cent of solutions attained in the first half of Session II is $-.01$, and in the second half of Session II, $-.27$ (cf Table I). Nor is good performance under nonstress in Session I positively correlated with good performance under stress in Session II. The correlations are $-.06$ *before* failure load, and $-.67$ *after* failure load. The S's who perform best under nonstress are apparently the least successful counteractors of stressful failure.

The two S's who were high on Syndrome II, Helmler and Youngman, have in common, according to the DCE summary of staff ratings, a parameter which Murray (19) has termed Ego-Strength (to know what one wants to do and has the capacity realistically to do, and to do it).⁵ They support this strength by high Conative Conjunctivity (the ability to organize one's efforts, to make plans and to follow them, to force drives into an efficient pattern), high *n* Dominance, Conduct (to seek to control the behavior of others, to lead others, to get others to co-operate), high *n* Affiliation, Diffuse (to be friendly to almost everyone, to enjoy large gatherings of diverse acquaintances), and high *n* Deference, Compliance (to be co-operative and obliging, responsive and respectful to one's superiors, to accept suggestions and advice gracefully). At the same time these S's rate low on Neurotic Tendencies (absence

⁵ "Ego-Strength manifests itself chiefly as a successful *n* Achievement, giving proof of the power to persist" (19). Murray suggests further that this parameter also describes the individual who is said to have an "unconquerable will," and whose tolerance for frustration is high.

of trends which predispose the individual to neurosis, e g , phobias, anxiety, obsessions, psychosomatic disorders), low on Ego-Ideal Intraggression (to feel humiliated and ashamed after failure, to be burdened by feelings of inferiority), low on Dejection, Pessimism (to worry about one's shortcomings, to recover slowly from disappointment), low on n Rejection (to turn away from things, persons, or ideas which are alien to his interests), low on n Seclusion (to seek and relish solitude), and low on n Autonomy, Resistance (to rebel against dogmatic views or standards) These are the personality characteristics of the Strong Egos who, unhampered by neurotic anxieties and feelings of inferiority, are realistic in a failure situation Finding themselves doing much more poorly than a contemporary in the first half of Session II, these S's can concede it without serious damage to self-esteem They acknowledge the superiority of their opponents, and, as it were, cease to strive for the impossible their working time for attaining a first solution in the second half of Session II *increases* per unit of work as compared with their performance in the first half of Session II This, it would seem, is the efficient reaction, under the circumstances, and suggests high frustration-tolerance

In addition to the manifest personality parameters listed above, eight past history variables are shared in common by Helmmler and Youngman Three of these ratings are high, five are low The high ratings include Praise, Encouragement (to have been praised by parents and other adults for good work), Social Adjustment (the ability to get along well with people) and Leadership (the capacity to lead and to direct others efficiently) The low ratings are p Parental Strict Standards (parents' ideals and moral norms rigid and difficult for child to live up to, parents frequently felt justified in disciplining or punishing him for breach of principles), Disobedience (lack of deference, submission to parental control, unruliness during childhood), Temper Tantrums (tending to resort to temper tantrums as a means of controlling parents), Sex Curiosity (interest in sex during childhood inspection of anatomies, numerous attempts to satisfy curiosity with others or from books), and Childhood Illnesses (history of frequent illnesses during childhood) Although it cannot be said on the basis of the present correlational findings

that the above pattern of good family relationships is responsible for the high frustration tolerance of these S's, such a relationship is nevertheless in line with current theories of child development (cf. for example, Ribble, 22; Gesell, 8; and Levy, 10)

The three S's who were low on Syndrome II—Commitless, Luke, and Spurnessey—were characterized in the DCE summary of staff ratings by parameters very different from the Strong Egos. They have in common only high Striction (inhibition, control, governance and management of impulses, whether rational or irrational), and low Affiliation, Focal (friendliness to few people). They have no past history parameters in common.

Further analysis of the DCE ratings reveals that two of these S's, Commitless and Spurnessey, received the two highest ranks on Ego Ideal, Pride (to be governed by ambition, by a high level of aspiration, to keep self-respect on as high a level as possible, particularly to prevent, or to counteract a fall of ego status) and combined this with high Narcism (to perceive the world from a personal or subjective viewpoint, to be disdainful of others, to be dominated by ruthless self-seeking). The *immediate* reaction of such individuals to experimentally induced stressful failure, apparently, is collapse—they work slowly and unproductively at the beginning of Session II. Yet narcissistic individuals, having set high goals for themselves, would seem to be under tension to better their performance, if possible, they must counteract the initial failure because failure for them might well be in the nature of a catastrophic threat (cf. Goldstein, 9, pp 85-87). The counteraction shows itself experimentally in the second half of Session II in a *decrease* in working time per unit for attaining first solutions.⁶

A different pattern of counteraction under stress is suggested by the DCE ratings on Luke, the third S low in Syndrome II. His personality structure differs markedly from that of Commitless and Spurnessey. Luke ranks *lowest* of the ten S's both on Ego Ideal, Pride, and Narcism. Luke is slow, unemotional, and intellectually

⁶ Interestingly enough, although these S's achieve the first solution rapidly after failure has piled up, this does not necessarily result in the attainment of a large number of alternative solutions within the two-minute working time per sentence. It may be that we have here on the experimental level a form of rigidity, or a lack of flexibility, noted by Goldstein (10), which is congruent with the *personality rating of high Striction*.

the most inferior of the DCE S's (S A T score is well below the average of Harvard undergraduates) Yet Luke has either made his peace with himself, or has never lost it, for he also ranks lowest of the DCE S's on Dejection, Pessimism Apparently Luke does not expect success and therefore is not disturbed when success does not come Since he is not disorganized by the competitive failure, he can solve the two easy sentences at the end of the series quickly and seem actually to do better *after* the failure load than *before* In spite of his high rating on Striction, Luke's performance under objective stress suggests high frustration-tolerance, whereas that of Commitless and Spurnessey suggests low frustration-tolerance

Interpretation of Syndrome II allows for five generalizations (1) Good performance under nonstressful conditions does not assure good performance under the stress of competitive failure (2) Good performance under stress is not merely a function of high intelligence (3) Good performance under stress before failure piles up is not necessarily maintained after failure piles up (4) The ability to maintain a high level of performance under the immediate threat of failure in a social situation is associated with a past history of good social adjustments during adolescence and of good parental relationships, with high Ego-Strength, high Conative Conjectivity, a disinclination to worry over failure, and an absence of neurotic tendencies These S's seem to be under no inner pressure to maintain their original high performance level Instead, they realistically accept their inability to compete, cease to counteract on the behavioral level, and work at a slower pace (5) The tendency to speed up performance after failure has piled up may be regarded as an attempt to counteract failure This "speeding up" is not necessarily accompanied by increased work output On the personality side it is associated with a tendency toward low affiliative needs, marked inhibition of and control of impulses, and with either high narcissistic pride and its accompanying low frustration-tolerance, or low narcissistic pride and high frustration-tolerance

Syndrome III Socially Facilitated Productivity vs Socially Inhibited Nonproductivity This syndrome consists of three experimental variables which are positively intercorrelated and one which is negatively intercorrelated The positive correlations include per-

centage of alternative solutions attained *before* failure load in Session II, co-operation *before* failure load in Session II, and recall of incompleting tasks in Session I. Negatively correlated with these variables is the recall of completed tasks in Session I.

S's at the high end of this syndrome work well on a co-operative task before failure and maintain a high level of performance in the early stages of competitive failure. These are the S's, moreover, whose selective memory scores for the nonstressful session fulfil the Zeigarnik (31) expectations in that they recall more incompleting than completed tasks. S's at the low end of this syndrome not only do not co-operate well before experimental failure, but they also do not perform well under stress even before failure has piled up. These S's contradict the Zeigarnik ratio and react more like the "proud" children studied by Rosenzweig and Mason (26) since, in an objectively nonstressful atmosphere, they recall completed rather than incompleting tasks.

Insight into the dynamics of selective recall under non-self-esteem-involving conditions is furnished by an examination of the personality structure of the S's in Syndrome III. Two S's, Helmler and Youngman, were high on Syndrome III. They were also high on Syndrome II. As already noted, Helmler and Youngman are characterized by good personal and social adjustment, high Ego-Strength,⁷ high Conative Conjointivity, high *n* Affiliation, Diffuse, high *n* Deference, Compliance, and low Neurotic Tendencies. As previously noted, this is the personality pattern of the strong, well-adjusted ego. Such S's, apparently, recall many *incompleting* tasks in a nonstressful situation and few completed tasks.

The three S's, Commitless, Idin, and Spurnessey, who are low on Syndrome III and who recalled a preponderance of completed rather than of incompleting tasks in Session I, have in common, according to the DCE summary of staff ratings, high *n* Achievement (to exert oneself with great energy on occasion, to set difficult goals for oneself, to get things done), high *n* Understanding (to seek explanations always, to enjoy dealing with theories and ideas, to initiate or enter into discussions on momentous topics); high *n* Autonomy, Independence (to choose to do things independently,

⁷ Personality variables which have been defined earlier in the text will not be redefined.

neither requiring nor asking for guidance, to dislike to be shown, to love freedom), high *n* Autonomy, Resistance (to be contrary-minded, negativistic, argumentative, resistant to persuasion), high *n* Aggression, Verbal (to attack a disliked opponent verbally, to criticize, belittle, reproach, slander, or ridicule people), high *n* Construction (to build things or put things in order, to collect, to organize a group) The needs which are low in these S's are *n* Deference, Compliance, *n* Abasement, Submission, *n* Succorance (to rely on, or if necessary to seek the advice, consolation, or aid of an older person, to depend on sympathy and encouragement from friends, to be depressed if they are not obtained), and *n* Affiliation, Emotional (to love platonically, to love members of the family or a member of the opposite sex) The low S's are further characterized by Endocathexis (the cathexis of thought or emotion for its own sake, a preoccupation with inner activities, withdrawal from practical life), by Intensity of Sentiments and by Originality of Thought They also share in common a past history of intellectual achievement during adolescence Thus the pattern which characterizes S's at the low end of Syndrome III seems to be rich in individualism These individuals are the "go-getters," the aggressive, independent nonconformers They are ambitious, intense people, original in thought and behavior, and because they are intense, ambitious, and individualistic, it may be that S's at the low end of Syndrome III could not be as completely non-self-esteem-involved in the laboratory situation as E had intended by the task-oriented instructions If self-esteem were aroused in these S's, incompleteness might well be experienced as personal failure, completion as personal success Under these circumstances the recall of completed tasks would protect self-esteem (pride) in much the manner that Rosenzweig (24) suggests It is important to note, however, that Rosenzweig postulated the presence of ego-defensive needs (recall of successes) in adults under conditions *intended* to arouse self-esteem, whereas in the present experiment ego-defensive needs would have been aroused in the S's at the low end of this syndrome under objectively non-self-esteem-involving conditions In this respect, then, the findings of Syndrome III would be more comparable to the Rosenzweig and Mason (26) studies of "proud" children than to Rosenzweig's (24) work with adult sub-

jects That we are dealing at the low end of Syndrome III with "proud" adults is evidenced by the fact that two of the S's, Commitless and Spurnessey, were the proud, narcissistic S's of Syndrome II The third S, Idin, rates high on n Recognition and average on Narcism

The personality parameters associated with Syndrome III throw light not only on the dynamics of selective recall but also on the dynamics of co-operation under stressful failure If work is to be done co-operatively, mutual respect and mutual compliance may be requisite factors When these characteristics are lacking, as they are in S's at the low end of Syndrome III, co-operation is difficult.

As for performance under stress, when affiliation and deference are high, other things being equal, one may be more ready to admire a successful contemporary than when these needs are low Admiration is, on the whole, an "expansive," socially oriented emotion Admiration combined with deference might well operate in the direction of "I will try to do likewise"—i.e., perform well At the low end of the syndrome where abasement and deference are low, the orientation is likely to be more egocentric than exocentric The superior performance of the accomplice would then be more likely to function as an ego-threat, counteraction would still be possible, but probably not immediately possible It takes time "to gather one's forces" The immediate behavioral consequence is the poor performance and immediate non-co-operativeness which occurs at the low end of Syndrome III

The interpretation of Syndrome III in terms of experimental and personality variables allows for three general conclusions (1) Good performance when first placed under the threat of competitive failure is associated with the ability to work co-operatively before failure piles up, poor performance with an inability to work co-operatively (2) Recall of more incompleated than completed tasks in a non-self-esteem-involving atmosphere is associated with high frustration-tolerance under conditions which objectively threaten self-esteem The personality structure associated with this pattern is high ego-strength supported by good social and personal adjustment (3) Recall of more completed than incompleated tasks in a nonthreatening atmosphere is associated with low frustration-toler-

TABLE III

THE FIVE SYNDROMES DEFINED IN TERMS OF THE CHARACTERISTICS OF THE LOW END OF THE SYNDROME

	Name of Syndrome	S's	Intercorrelated Experimental Variables*	DCE RATINGS COMMON TO S's AT THE LOW END OF THE SYNDROME**	
				Manifest Personality	Past History
I	Inefficient non-productivity in an atmosphere objectively non-threatening to self-esteem	Helmmler Luke Spurnessey	(Per cent of alternative solutions in Session I) (Per cent of time to attain a first solution in Session I) (S A T score)		
II	Counteracted nonproductivity in an atmosphere objectively threatening to self-esteem	Commitless Luke Spurnessey	(Per cent of alternative solutions before failure load in Session II) (Per cent of time to obtain a first solution before failure load in Session II) Per cent of time to obtain a first solution after failure load in Session II	Striction (n Affiliation Focal)	
III	Socially inhibited non-productivity	Commitless Idin Spurnessey	(Per cent of alternative solutions before failure load in Session II) (Co-operation before failure load in Session II) (Recall of incompleting tasks in Session I) Recall of completed tasks in Session I	n Achievement n Understanding n Autonomy, Independence n Autonomy, Resistance n Aggression Verbal n Constriction (n Deference, Compliance) (n Abasement Submission) (n Succorance) (n Affiliation, Emotional) Endocathetion Intensity of Sentiments Originality of Thought	Intellectual Achievement
IV	Noncounteractive, non-productivity after competitive failure	Dupressey Gruel Idin	(Per cent of alternative solutions after failure load in Session II) (Recall of completed tasks in Session II)	n Sex Focal Verbal Aptitude (Optimism)	Oral Achievement
V	Orientatation toward failure after competitive failure	Gruel Luke Yackle	(Co-operation after failure load in Session II) Recall of incompleting tasks in Session II (College grades)	(n Achievement)	

*Parentheses are used to indicate negative intercorrelations

**Parentheses are used to indicate parameters on which the S's rank low

ance when self-esteem is objectively threatened. The personality structure associated with this pattern is ambitious individualism, the achievement needs being under considerable tension.

Syndrome IV Counteractive Productivity vs Noncounteractive Nonproductivity after Failure Load in an Objectively Threatening Atmosphere Two experimental variables are included here: per cent of alternative solutions after failure load in Session II, and recall of completed tasks in Session II. These variables intercorrelate positively. In other words, S's who recall more completed than incomplete tasks after competitive failure in Session II work productively *after* failure has piled up.

Two S's were high on Syndrome IV, Commitless and Luke. Commitless, it will be remembered, performed well in Session I, and Luke performed very poorly (Syndrome I). Commitless achieved the highest S A T score of the group of ten DCE S's, Luke the lowest. Both did poorly in the first half of Session II but both seem able to counteract the threat of failure *after* failure has piled up and show *increased* productivity in the second half of Session II (Syndrome II). Commitless, not Luke, needed to recall completed tasks even in Session I and was unable to work cooperatively in Session II before the failure experience of Session II (Syndrome III).

According to the DCE summary ratings Commitless and Luke both rank high on Striction and on n Harmavoidance (to be physically timid, to avoid dangerous situations and endeavors, to shun a fight, if possible), but low on n Affiliation, Focal, low on both n Sex, Focal (to enjoy the company of the opposite sex, especially of one girl) and n Sex, Diffuse (to enjoy the company of many members of the opposite sex), low on n Excitance, Adventure (to enjoy emotional adventures and exciting events, to dramatize his experiences, making the most of everything, to get satisfaction out of doing dangerous things), and low on Energy (the need and capacity for activity, zest, and motility). They also rank low on the past history parameter p Parental Discord (parents bicker and argue with each other in presence of children). Both Commitless and Luke, apparently, are inhibited and egocentric. The need to counteract competitive failure is consistent with this personality pattern. It can

be shown that the need to recall completed tasks subsequent to stressful failure is also consistent with this pattern

It has already been noted in Syndrome II that Commitless is a proud, narcissistic individual, with marked neurotic symptoms and poor social adjustment. If Commitless needed to protect his self-esteem by recalling completed tasks in Session I (Syndrome III), how much more must his self-esteem have needed protection in Session II! Failure for Luke, on the other hand, the slow plodder in Syndrome II, probably never would be catastrophic, since Luke's manifest level of aspiration is not high. Moreover, Luke rates low on manifest level Ego-Ideal, Pride, low on Narcism, and low on Neurotic Symptoms. Yet apparently Luke does have pride, pride which shows itself primarily on the covert rather than on the manifest level of personality, pride which makes him imagine himself always as a hero in Thematic Apperception Test stories: he ranks high on Ego-Ideal, Pride (the need to prevent or counteract a fall of ego-status), as rated on the Thematic Apperception Test. In Thematic Apperception stories this variable is usually fused with n Achievement, n Counteraction (to overcome weakness, inferiority or timidity for forcing oneself to justify one's actions, to offer excuses for oneself) and n Rejection, Pride (to reject the rejector out of pride). Luke's recall of completed tasks in Session II could be a prideful reaction to support covert rather than overt pride. When there is no objective threat to self-esteem, however, as in Session I, Luke would not feel threatened and would not need to protect self-esteem. It is understandable, therefore, that Luke should recall a high percentage of both completed and incompleted tasks in Session I and that he therefore does not appear in Syndrome III. The highly narcissistic Commitless, on the other hand, who ranks high on both manifest and covert level pride, recalls completed tasks in *both* objectively non-self-esteem-involving and objectively self-esteem-involving situations. Under *both* conditions, pride can be protected by "memory optimism," if pride is threatened.

The pattern which characterizes the three S's who are low in Syndrome IV—Dupressey, Gruel, and Idin—is very different from that outlined for the high S's. The DCE ratings show that the low S's have in common the following parameters of personality: low

Optimism, high n Sex, Focal, high Verbal Aptitude (the ability to express oneself in speech or writing with fluency and discrimination), and a past history of oral achievement

The telling parameter here for understanding the dynamics of both the poor performance and the recalling of few completed tasks under stress of competitive failure is probably low optimism. Judging from the fact that all three of the low S's obtained above average S A T scores, other things being equal, they might have been expected to maintain in Session II the high level of performance which two of them at least, Dupressey and Idin, had attained in Session I (Syndrome I). Under the stress of experimentally induced failure, however, these S's appear to give up. They cease to strive and cease to produce. On the memory level the recall of few completed tasks in Session II can also be interpreted to reflect low optimism. The memory collapse is especially clear for one of the three S's, Idin, who had recalled more completed than incompletd tasks in Session I (Syndrome III).

It is just such reversals in selective recall under different experimental conditions as that of Idin which the present experiment was designed to study (2). It would seem that the aggressive, ambitious individualism of Idin carries him forward to successful performance in a nonstressful session (Syndrome I), and to the subsequent recall of such successes (Syndrome III). Yet in the presence of objective self-esteem threat, Idin's defenses break down. He performs poorly under stress and recalls few of the successes he does experience (Syndrome IV). Thus ego-defensive tensions fail to display themselves operationally in a personality characterized by high n Recognition though low manifest level Optimism when self-esteem is objectively threatened, yet they *can* function when self-esteem is not objectively threatened. Under stress "memory optimism" gives way to "memory pessimism."

Dupressey and Gruel, who lack the aggressive, ambitious individualism of Idin, may conceivably have experienced even Session I as threatening to self-esteem. There is evidence in support of this in Syndrome V.

It would seem, then, that when the ego-status of a proud individual is objectively threatened, as it is designed to be in Session II.

self-esteem can be protected, or morale bolstered, by recalling one's successfully completed tasks. And, conversely, when pride is low, the need for recalling one's successes under these conditions is correspondingly low. This, in part, is what Rosenzweig (24), Lewis (15), Cartwright (6), Prentice (21) and others contended but have not had sufficient clinical data to support.

The interpretation of Syndrome IV may be summed up in four general conclusions: (1) A high performance level *after* failure load in Session II may be associated with either high or low performance in Session I, as already pointed out in the interpretation of Syndrome II. (2) The recall of completed tasks in Session II is positively correlated with increased productivity *after* failure load in Session II, whereas the recall of few completed tasks in Session II is negatively correlated with productivity *after* failure load in Session II. (3) The recall of completed tasks in Session II is characteristic of S's who are rated high on Pride. Pride may be narcissistic pride which is high both on the manifest and the covert levels, or pride may be low on the manifest level but high on the covert level. In both cases a primary factor here is the need to prevent or to counteract a fall of ego-status. (4) The failure to recall completed tasks in Session II is characteristic of S's who tend to be low on Pride and low on Optimism.

Syndrome V Orientation away from Failure vs Orientation toward Failure. This syndrome includes intercorrelations between co-operation after failure, grades in college, and recall of incompleting tasks in Session II. The first two variables are positively correlated, and the third is negatively intercorrelated with the other two. That is to say, S's at the high end of this syndrome are capable of co-operating with the accomplice even after failure, while S's at the low end are not. Of even greater interest for the dynamics of achievement, however, is the relation between high achievement in college and the tendency to recall few incompleting tasks in Session II, and the opposite relationship of poor achievement in college and the tendency to recall many incompleting tasks in Session II.

Two S's, Helmler and Spurnessey, were high on Syndrome V. Helmler was low on Syndrome I (performance level in Session I low, S A T low), and high on Syndromes II and III (performance

before failure load in Session II high) Spurnessey, on the other hand, was low on Syndromes I, II, and III Helmler recalled incompleting tasks in Session I, Spurnessey recalled completed tasks (Syndrome III) Yet in Session II both recall few incompleting tasks (Syndrome V) In short, Helmler and Spurnessey arrived in Syndrome V by very different routes—the one, Helmler, after poor performance in the nonstressful session which he counteracts under stress, the other, Spurnessey, after good performance under nonstress which he is unable to maintain under stress

In the DCE summary of staff ratings, both these S's are high on Ego-Strength, Conative Conjectivity, and n Counteractive achievement It is Helmler's performance rather than Spurnessey's, however, which seems better to fit this pattern of the Strong Ego Yet Spurnessey also has achieved a kind of Ego-Strength, enough apparently to fall into this syndrome On the other hand, while Helmler's frustration-tolerance for failure seems high, Spurnessey's is actually low Spurnessey is highly narcissistic, yet unsure of himself For example, he ranks highest of the ten DCE subjects on both Narcism and Ego-Ideal Intraggression He ranks next to the highest on Insecurity Feelings (to lack a system of reliable expectations, due either to the feelings that the environment is unstable and uncertain, or to the lack of self-confidence) Spurnessey's ego-strength, therefore, would seem to be under considerable tension Like that of Commitless, Spurnessey's narcissistic pride is too easily threatened to permit immediate counteraction under stress But whereas Commitless can recover in the failure situation and can focus on his successes (Syndrome IV), the best Spurnessey can do is to identify with the successful accomplice, co-operate with him and then recall *few* of his own incompleting tasks (Syndrome V) The driving force in Spurnessey's life is n Achievement he ranks first on this parameter, whereas Commitless ranks fifth Little wonder that Spurnessey can tolerate no memory of his incompleting tasks either in Session I (Syndrome III) or in Session II (Syndrome V) By turning away from his failures in the failure situation he can protect his tenuous self-esteem even though he cannot immediately counteract the failure on the performance level He does, however, counteract failure, once out of the failure situation, and in spite of a

comparatively low S A T score he does achieve high academic standing⁸

Helmier, on the other hand, is under far less tension. His pattern of defense is to counteract immediately in the failure situation on the behavioral level. The recall of few incompleted tasks in Session II can be regarded as another indication of counteraction of failure. Helmier, in other words, is not disorganized by the failure and can focus his energies on achieving.

Gruel, Luke, and Yackle are at the low end of Syndrome V. They have in common only one DCE parameter—low in Achievement. They tend, however, to rate low on all parameters which characterize S's at the high end of the syndrome. Low grades, many incompleted tasks recalled in Session II, poor co-operation *after* failure load in Session II, then, would seem to be the pattern of the S who too readily admits defeat, is too easily discouraged (n Defence low), and lacks the Ego-Strength to combat defeat. Consistent with low frustration-tolerance on the performance level is the "memory pessimism" or recall of incompleted tasks after failure. It can be said, therefore, that these S's are oriented toward failure and in many respects seem actually to cathect it. For them, and especially for Gruel and Yackle, the recall of incompleted tasks under stress is clearly not a matter of residual task-tensions, but rather of residual ego-defensive tensions. In other words, admission of defeat before others can accuse them of it can be just as much a mechanism of self-esteem-defense when self-esteem is objectively threatened as is the recall of completed tasks under these conditions. Luke, who recalls a high percentage of incompleted and completed tasks in both Session I and Session II, may be exhibiting both ego-defensive and task tensions within a single session.

Thus, recall of few incompleted tasks in Session II seems to be associated with a strong, well-adjusted, conatively conjunctive, counteractive personality structure. The mechanism of ego-defense which these S's use is the immediate "turning of one's back on failure." This mechanism permits them to utilize their energies in the failure situation itself and actually to improve their performance.⁹ Recall

⁸ Spurnessey graduated from college *magna cum laude*.

⁹ Perhaps it is just this mechanism of the immediate counteraction of failure which makes for academic achievement, over and above what one might anticipate for a given intelligence level (cf. Fischer, 7, and Schofield, 28).

of many incompleting tasks after self-esteem threat, on the other hand, seems to be the reaction of the "weak" S, the S whose ego-structure lacks strength, whose manifest level pride is low and whose tolerance for failure is poor. This S seems to be overwhelmed by failure and to lack both the capacity and the desire for retraining

In summarizing the findings of Syndrome V, three main relationships are noteworthy (1) The S who recalls few incompleting tasks under stress is capable of identifying himself with a successful competitor and can work co-operatively after failure, while the S who recalls many incompleting tasks under these conditions is unable to work co-operatively (2) The tendency to recall incompleting tasks in the stressful atmosphere of Session II is associated with a personality structure which is characterized by low *n* Achievement These S's also tend to rate low on Ego-Ideal, Pride, and on *n* Counteraction In the failure situation these S's can and do admit defeat Moreover, they do not strive to redeem their performance This reaction pattern is associated with low academic achievement (3) The tendency to recall few incompleting tasks in the stressful atmosphere of Session II is associated with a personality structure which is characterized by high Ego-Ideal, Pride, high *n* Counteraction, and high *n* Achievement Because pride is high these S's cannot admit defeat in the failure situation Instead they recall few incompleting tasks and retrain in the failure situation itself This reaction pattern is associated with high academic achievement

DISCUSSION

Earlier research in the field of selective recall had suggested that the personality structure of the S may be an important factor in determining the direction of recall (1, 6, 20, 23, 24, 25, 26, 27) For example, Rosenzweig and Mason (26) found that children rated high on pride tend to recall more completed than incompleting tasks In this experiment the children had been told "that they were to be given a test to determine how well they could do puzzles and that a prize would be given the one who did best" (26, p 249) Although the authors had not intended to arouse self-esteem-needs, it is likely that their instructions did do so and that the situation was not directly comparable to the informal setting of Zeigarnik's (31)

experiments¹⁰ In an earlier experiment with these same children, Rosenzweig (25) had found that the younger children, rated low on pride, chose to repeat their successes, the older children, rated high on pride, their failures Rosenzweig (25, p 480) comments on this, "it seemed likely by way of interpretation that the older children, because prouder, were more sensitive to failure and hence strove for self-vindication, whereas the younger children, not wounded by failure, ignored it" Consistent with these findings were the results of another experiment by the same author (24) in which adults working in a context of "intelligence test task" recalled more completed than incompleted tasks Ratings on pride were not obtained on the adults, though in both cases pride was experimentally aroused There were, however, a sufficient number of reversals in the direction of selective recall under the two experimental conditions for Rosenzweig (25, p 482) to remark, "One is led to suspect in these instances an underlying personality trait strong enough to override the intention of the stimulus situation" The interpretation of these and similar experiments has been that under conditions where self-esteem is objectively threatened the ego defends itself by recalling its successes, under objectively non-self-esteem-involving conditions, or in a child too young intellectually or chronologically to experience failure on a laboratory task, the ego requires no defense and task-tensions alone prevail—incompleted rather than completed tasks are recalled

That this is too simple an explanation has already been suggested by Rosenzweig (25, p 482), as noted above, as well as by Cartwright (6), Rosenthal (23), and Alper (2) Some S's need to protect their self-esteem by recalling their successes even in objectively non-self-esteem arousing conditions, others do not Again, some S's seem incapable of protecting self-esteem when it is objectively threatened They behave as if overwhelmed by their failures and, in the failure situation, unable to forget them In a sample of S's, unselected for personality factors, these various patterns of personality are likely to be represented Group data for selective

¹⁰ There is some question, moreover, as to whether these children, crippled and in a home for handicapped children, could be task-oriented even by Zeigarnik's instructions (cf Alper, 4, for further discussion of the concept of task-orientation vs task-involvement)

recall, therefore, will not necessarily yield significant differences in the direction of recall, as has been noted earlier by Alper (2), since selective recall is determined by individual differences in personality structure rather than by the experimental *Aufgabe* alone. A study of the *same* adult S's under different experimental conditions has helped to establish this point in the present experiment.

Two major patterns of selective recall have been isolated in the present experiment, and there is some evidence for two additional patterns. The first pattern may be labeled the *Strong Ego* pattern. This includes those S's who recall a preponderance of incompleting tasks when self-esteem is not objectively threatened and a preponderance of completed tasks when self-esteem is objectively threatened. On the behavioral side, these individuals have a high frustration-tolerance for failure. They tend, for example, to counteract actual failure and to perform better under objective threat of failure than when there is no external threat. Moreover, such counteraction under self-esteem threat is not correlated with intelligence, but is positively correlated with present academic achievement. On the personality side, these individuals are characterized by a pattern of needs which center around self-confident, ego-strength (Ego-Strength high, Conative Conjectivity high, n Recognition high, n Dominance high, Dejection, Pessimism low, and Ego-Ideal Intraggression low). Self-confident, strong egos seem to be both "ambitious" (Ego-Strength high, and n Dominance high), and "proud" (n Recognition high). It is understandable, therefore, that under nonstress the selective recall of these S's could be consistent, on the one hand, with Zeigarnik's (31) findings that "ambitious" S's recalled an even higher percentage of incompleting tasks than did other S's, and on the other, with the results of Rosenzweig (24), who showed that pride can be protected by recalling completed tasks.

The important point for understanding the dynamics of the selective recall of the Strong Ego is that ambition and pride are supported by a high level of ego-organization and integration (Conative Conjectivity high). Failure arouses counteraction, not guilt or inferiority feelings (Dejection, Pessimism low, and Ego-Ideal, Intraggression low). Incompletion qua incompleting arouses neither counteraction nor guilt. Since they *can* counteract failure

they need not react to every situation as a potential threat to self-esteem, they need not constantly be on the defensive. Thus, when told by the experimenter that the *materials* are being tested, they can accept these task-oriented instructions without self-esteem involvement, and task tensions rather than self-esteem tensions are aroused, as Zeigarnik (31) would hypothesize. Yet if these individuals are told that the material is really an intelligence test, they can accept this too, and will exert themselves far more to perform well than they did under nonstress. Under stress their performance, therefore, gives the appearance of an *increase* in productivity. Incompletion and completion are now experienced in a context of failure and success, respectively, and self-esteem tensions rather than task tensions are aroused, as Rosenzweig (24) would hypothesize. Since these subjects have objective evidence of their "poor" performance under stress, self-esteem must be supported. It can be supported immediately in the failure situation by recalling the tasks one has managed to complete. It is the context in which completion or incompletion takes place, and not the incompletion or completion *per se*, then, which gives a memory trace stability and makes it available for later recall. And, as is suggested below, whether the context is "success" or "failure" would in large part seem to be determined by the personality structure of the individual S.¹¹

A second pattern of selective recall may be labeled the *Weak Ego* pattern. This consists of the recall of a preponderance of completed tasks when there is no objective threat to self-esteem but of incompleted tasks when such threat is experimentally induced. This pattern is the reverse of the first and is characteristic of individuals with

¹¹ That the counteractive pattern exhibited under conditions of competitive failure by the Strong Egos in the present experiment is to be regarded as their typical reaction pattern to stress is evidenced by the behavior of these S's under other types of experimental stress. Helmler, for example, shows the same ability to *improve* his performance under the threat of electric shock for failure over and above what he does in the nonshock series (29). Again, in an emotional conditioning experiment by Haggard (11), Helmler showed himself not only capable of rapid autonomic readjustment after the removal of stress, as compared with other less stable S's, but at the same time Helmler retained his reality-orientation and was highly realistic in the estimation of the strength of the electric shocks. This same adjustment to reality was exhibited in his responses to Holt's (12) level of aspiration experiment: after success Helmler anticipated less success, after failure, more success. The Strong Ego, in other words, is neither carried away by his successes nor depressed and deflated by his failures.

A fuller description of Helmler's behavior is reported by White, Tomkins, and Alper (30).

low frustration-tolerance for failure On the behavioral side, these S's perform less well under experimental stress than under experimental nonstress Consistent with low experimental counteraction is their low academic achievement, but again there is no correlation with intelligence On the personality side these individuals are characterized by parameters indicative of *low self-confidence* and *low ego-strength* (n Recognition low, Narcism low, n Defendance low, Counteractive Achievement low, and Dejection, Pessimism high) Like the "proud" children studied by Rosenzweig and Mason (26), the individuals represented by this second pattern of selective recall seem to have low self-esteem thresholds But the adults in the present experiment are neither proud (n Recognition low, Narcism low) nor ambitious (Counteractive Achievement low) They tend to blame themselves for their failures (Ego-Ideal, Intraggression high), and to be easily dejected by their failures (Dejection, Pessimism high) Even when the situation is not objectively a failure situation, they react, subjectively, as if potentially it were Yet just so long as the failure threat is not objectively present, weak-ego S's are not disorganized by the subjective failure Again, like the "proud" children (26), weak-ego adults support their low pride thresholds by recalling their successes (completed tasks) When the external situation is clearly a failure situation, however, they cannot counteract the failure either on the performance level or on the memory level under stress their performance breaks down and they recall failures (incompleted tasks) The recall of incompleted tasks here may be regarded as an admission of failure before others can accuse them of it (n Defendance low) It is as if they try to defend themselves by taking the offensive against themselves

The recall of incompleted tasks under conditions of competitive failure by individuals with weak self-esteem organization is dynamically very different, then, from the recall of incompleted tasks by Strong Egos under objectively nonstressful conditions The recall of the later group is consistent with Zeigarnik's (31) task tension and Rosenzweig's (24) need-persistive theory, while the recall of the former suggests a mechanism of defense which is more accurately described as ego-offense rather than ego-defense It is only under conditions where the threat to self-esteem is seen as potential but not

actual that weak egos can protect their tenuous self-esteem by recalling successfully completed tasks, under stress they take the offensive and admit failure before others can accuse them of it. This is, of course, a defensive mechanism.

A third pattern of selective recall is suggested by the behavior of a highly narcissistic S. It consists of the superior recall of completed tasks both when self-esteem is, and is not, objectively threatened. This pattern may be characteristic of insecure, narcissistic individuals who are under a constant need to support self-esteem. Such individuals may achieve a semblance of ego-strength, yet their strength seems actually to cover considerable ego-weakness. They differ from the strong egos both in selective recall and in performance. Under the immediate threat of failure they exhibit more rigid behavior, as has been posited by Goldstein (10) their performance level drops as compared with their previous performance under objectively non-esteem-involving conditions (Commitless) or else it remains low in both sessions (Spurnessey).

A fourth pattern of selective recall should be demonstrable. It would consist of the superior recall of incompleted tasks both when self-esteem is, and is not, objectively threatened. In line with our earlier theory, this pattern might be characteristic of individuals with high ego-strength, high conative conjunctivity, and high self-esteem thresholds (Insecurity Feelings low, Narcism low, n Recognition low, Dejective Pessimism low, Psychotic and Neurotic Tendencies low). Such an individual would not necessarily experience either the noncompetitive or the competitive failure of the *laboratory* situation as a threat to self-esteem. Accordingly, task tensions could predominate under both conditions, and under both conditions incompleted tasks would be recalled. One subject, Nailson, exhibited this pattern though he did not appear at either end of any syndrome. The performance level of this subject was neither good nor bad, it stayed uniformly mediocre under both experimental conditions. Similarly, his academic performance remained undistinguished, in spite of a high S A T score. Such a personality structure, apparently, has ego-strength, though he does not achieve. He competes neither with himself nor with others.

A further test of the patterns disclosed by the small sample of

S's in the present experiment would consist of selecting S's in advance of the experiment on the basis of their personality structure and predicting the direction of their selective recall. This was done for the two major personality patterns, the Strong Ego and the Weak Ego, in a second experiment by the writer (3). The results of this second experiment verified the relationships disclosed in the present report. Strong Ego S's recalled incompleting tasks in the nonstressful laboratory setting and completed tasks in the objectively self-esteem threatening setting, Weak Ego S's showed the reverse pattern. The differences found were statistically significant.

Evidence was also obtained from the second experiment which suggests that, contrary to the interpretations of many investigators in this field, the recall of completed tasks cannot be considered evidence for Freudian repression. Delayed recall, measured one week later, revealed a reversal in the direction of recall by both Strong and Weak Egos. This reversal has important implications for understanding the manner in which failure is handled by an S. The Strong Ego, once out of the failure situation, *can* recall his past failures and utilize them to improve subsequent performance. In the failure situation itself, however, he bolsters himself by focusing on his successes. For this reason, perhaps, his performance in the failure situation remains good. The Weak Ego, on the other hand, once out of the failure situation, seems unable to tolerate the memory of his failures. One week later he recalls completed rather than incompleting tasks, though in the failure situation the failure overwhelms him and performance collapses. Nor can he profit from his past failures, for, once out of the failure situation, he no longer can recall them. The fate of the memory trace here is suggestive of the Freudian mechanism of repression, a mechanism which requires a time lapse. In the failure situation itself, however, for these S's selective memory can be explained more readily in terms of suppression rather than of repression.

Further study of the genetic origins of the different personality patterns outlined above, and of their behavioral consequences, is greatly needed.

SUMMARY

This study is a continuation of an experiment reported in part in an earlier paper (2). In the present paper evidence is presented to show that selective recall is not an isolated process but is instead subject to certain basic laws which function in the service of the self-esteem needs of the personality as a whole. The recall of incompleted tasks in a context of personal failure is dynamically not equivalent to the recall of incompleted tasks in an impersonal context of task incompletion. Nor is the recall of completed tasks in a context of personal failure dynamically equivalent to the recall of completed tasks in an objectively non-self-esteem-involving situation. It is suggested, moreover, that it is the S's personality structure, and not the experimenter's *Aufgabe* which determines what the context for the S is. The failure to recognize this fact in the past may be largely responsible for the seeming contradictions and equivocal nature of previous studies in the field of selective recall, as well as in other aspects of learning (5), and memory (4).

Two major patterns of selective recall were isolated by studying the recall of the same S's under two objectively different experimental conditions, a large body of personality data being available for interpreting the behavior of each S. The recall of incompleted tasks when self-esteem is objectively threatened is a pattern characteristic of the Strong Ego who needs to protect his self-esteem only when it is objectively threatened. The recall of completed tasks in an objectively non-self-esteem-involving situation and of incompleted tasks when self-esteem is objectively threatened is characteristic of the Weak Ego who can protect his self-esteem only when the threat is not objectively present. Further characteristics of both the Strong Ego and the Weak Ego, and the relation between selective recall and achievement, are discussed. These two patterns of selective recall have been subjected to further study in another experiment by selecting S's of the given personality structures in advance and predicting the direction of their selective recall. The results of the second experiment were statistically significant and fully support the theoretical assumptions of the present study.

Other patterns of selective recall are mentioned and discussed in relation to personality structure and achievement.

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