PHENOMENAL SELF CONCEPT, ANXIETY, AND ACADEMIC PERFORMANCE

by

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CHAPTER I

PROBLEM AND BACKGROUND

Considerable attention has come to be focused in recent years on the attempt to identify the personality correlates of academic performance. Impetus for such inquiry derives from widespread acceptance of the idea that while innate factors may set limits to learning ability, few people achieve near the limits set by their innate capacity. Ample research evidence also exists that although ability measures are at present the best single predictors of academic performance, they account at most for only half the variance in such performance. The search for non-intellective correlates of academic performance has not achieved any spectacular success. Paradoxically, the limited success has not resulted from dearth of research but from the confusion engendered by identifying too many variables and by too many contradictory findings.

Among personality correlates alleged to be operative in adacemic performance are impulsivity, reflectivity, extraversion, introversion, adjustment, fear of failure, desire for social approval, hope, foresight, need for achievement, interest, level of aspiration, anxiety and self-esteem. Considering the definitional ambiguity of these terms, and the vast interdependence of psychological processes, it does not appear that knowledge in this sphere has been advanced by such duplication. The need exists, therefore, to concentrate further attention on a few of the most important of these variables, to see whether a combination of these possesses greater predictive force than any alone, and whether

they can be manipulated in such a way as to result in improved academic performance. Such an undertaking would not only increase the practical utility of these motivational constructs, but also indicate which can be subsumed within the others, thereby eliminating much of the redundancy which now characterize this area. This reasoning represents, therefore, the context within which the present study was conceived.

The two personality variables selected for study were self-esteem and anxiety. These two seem to be on top of the hierarchy of motivational constructs because, on the one hand, a vast psychological literature attests to their importance, and on the other, they can be conceived as subsuming most of the other constructs. At first sight, it might seem that these factors should be highly correlated, in a negative direction. If so, it could be argued speculatively that they will not contribute any independent variance to the prediction of academic performance. However, some evidence[1,2] exists which contradicts the assumption of a negative relationship between anxiety level and verbal self-estimation. On the condition that a high anxiety level does not necessarily accompany a negative self image or vice versa, these two personality variables should be able to contribute some independent variance to the prediction of academic performance. Hence, the model chosen for the present study is that of a bivariable motivational construct consisting of self-esteem and anxiety.

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[1]C. Taylor and A. W. Combs, Self acceptance and adjustment. Journal of Consulting Psychology, 1952, 16, 89-91.

[2]H. Zimmer, Self acceptance and its relation to conflict. Journal of Consulting Psychology, 1954, 18, 447-449.

Previous studies have already established fairly well that a correlational relationship exists between these variables (studied independently) and academic performance. One logical extension of such research would be to see if a causal relationship exists between these factors and to examine their combined relationship with academic achievement. The present study was designed to extend previous research in this direction. Specifically, the major concern was to see if academic self-esteem could be improved by experimental manipulation, and if so, whether such improvement would be accompanied by an increase in academic performance. Another intent was to see if the combined power of self-esteem and anxiety in predicting academic performance exceeds that of self-esteem alone. Furthermore, the present study was designed to examine the part played by general as well as specific anxiety in the improvement of both self-esteem and academic performance.

Phenomenological Self Theory

Psychological literature is replete with divergent conceptions of the term self. Wylie[1] feels, however, that over the years, two major meanings of this term have emerged. First, the self as subject or agent, and second, the self as object, as the individual who is known unto himself. Diggory[2] elaborates this point: "To be an agent is simply to exercise any function of which organisms are capable: thinking, loving, caressing, striking, smelling, conceiving, classifying and evaluating

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[1]Ruth C. Wylie, The self concept: A critical survey of pertinent research literature. Lincoln: Univer. of Nebraska Press, 1961.

[2]James C. Diggory, Self-Evaluation: concepts and studies. New York: John Wiley and Sons, Inc., 1966.

and a host of others. . . . To be the object of an act is merely to be that which is thought about, caressed, loved, or evaluated, etc." The dichotomy attempted appears, however, more apparent than real, especially since it is the self which is being evaluated and which is, at the same time, doing the evaluation. Most writers accept, therefore, that the self is best conceived as both subject and object and self concepts can then be regarded as resulting from the interplay of these functions.

Discrepant formulations notwithstanding, several writers[1,2,3,4] have made the self a focal point of their personality theories. Not only do such writers believe that the self plays a vital role in the determination of behavior but also that it constitutes an integrative force for the whole personality structure as well as a major factor in achieving mental health. However, unable to live down completely the subjectivity of its religious and philosophical antecedents, the term self, in the psychological literature, is still a term of divergent and often conflicting conceptions. One such conception which has nevertheless found much use in recent years is the 'phenomenal self,' a conception which has received its greatest currency mainly at the hands of

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[1]Alfred Adier, The neurotic constitution. New York: Dodd, Mead, 1926.

[2]P. Lecky, Self-consistency: A theory of personality. New York: Island Press, 1945.

[3]C. R. Rogers, Client-centered therapy: Its current practice, implications and theory. Boston: Houghton Mifflin, 1951.

[4]A. W. Combs and D. Snygg, Individual behavior: A perceptual approach to behavior. (rev. ed.) New York: Harper and Brothers, 1959.

Combs and Snygg,[1] but also at the hands of Rogers[2] and Lecky.[3] The distinguishing features of the phenomenological approach to the study of the self is that it proclaims the primacy of the conscious (phenomenal) self concept--as opposed to the projected and the observed self concept--in the determination of behavior.

In one sense, the phenomenological approach in psychology is essentially a reaction against psychoanalytic theory at the one extreme and behaviorism at the other. While the fullest understanding of human behavior is perhaps best obtained by a combination of all three approaches, it is considered appropriate to adopt any particular approach as long as its shortcomings are constantly kept in view. The approach adopted in the present study is a phenomenological one. Its basic tenet is that the frame of reference in which the behavior of an individual becomes understandable is in terms of the way in which he perceives the various situations which confront him. Each person has a phenomenal field which is a definition of events as they appear to him; his behavior is entirely determined by his field and predictions of his behavior demand a knowledge of that field. Of particular importance in determining behavior is that part of the phenomenal field which the individual perceives as part or characteristic of himself. This subdivision of the phenomenal self is the self concept, which according to Combs and Snygg[4]

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[1]Combs and Snygg, Individual behavior.

[2]Rogers, Client-centered therapy.

[3]Lecky, Self-consistency: A theory of personality.

[4]Combs and Snygg, Individual behavior, p. 112.

"includes those parts of the phenomenal field which the individual has differentiated as definite and fairly stable characteristics of himself." Also significant within the phenomenological framework is Rogers'[1] conception of the self concept as "an organized configuration of perceptions of the self which are admissible into awareness."

While the phenomenological approach is perhaps the best acknowledged of all approaches to the study of *self*, it is not implied here that there are no contradictions within its theoretical framework. One such instance of theoretical inconsistency is that although most phenomenologists believe that the self is, in essence, a totally private, subjective experience of the individual which by definition is never observable by any other. Combs and Snygg,[2] as if yielding to the pressure of the behaviorists, concede that "the outside observer using the perceptual approach may infer the nature of the phenomenal self or of the self concept from the nature of the individual's behavior." These writers, however, make no such concessions to psychoanalytic theory since they have consistently maintained that a dichotomy of conscious-unconscious is a meaningless and artificial distinction.

Little wonder, therefore, that the phenomenological viewpoint has come under the attack of both the psychoanalysts and behaviorists. Typical of the criticisms of the former are the remarks by Smith[3] who,

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[1] Rogers, *Client-centered therapy*, p. 136.

[2] Combs and Snygg, *Individual behavior*.

[3] M. B. Smith, The phenomenological approach in personality theory. *Journal of Abnormal and Social Psychology*, 1958, 45, 516-522.

while agreeing that this approach "brings psychology somewhat closer to the world of common sense, . . ." attacks its abandonment of the unconscious. Likewise, the behaviorists observe that such theories as those of the self or the ego commonly tend to make living things out of mere abstractions, and Underwood[1] characterized these concepts as "spooks, or pixies or elves" which tend to get out of control and pursue unpredictable lives of their own. And Lowe,[2] in a well-known critique, set out to examine "whether the self concept is indeed a fact of nature or an artifact of men's minds" and he concluded that "it is as an artifact that the self concept finds meaning." Furthermore, critical reviews[3,4,5,6] of self concept theory and measurement have emphasized the need for further clarification of the conceptual bases of this construct and for demonstrating the validity of self-report measures. One objective of the present study is to correct some of these shortcomings.

Perhaps one of the most basic of these shortcomings is that much confusion has been caused in the literature by the use of terms which suggest that there is only one self concept. Many writers, among them

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[1] B. J. Underwood, Psychological research. New York: Appleton-Century-Crofts, 1957.

[2] C. M. Lowe, The self concept: Fact or artifact? Psychological Bulletin, 1961, 58, 325-336.

[3] Lowe, Psychological Bulletin, 1961, 58, 325-336.

[4] Wylie, The self concept.

[5] D. P. Crowne and M. W. Stephens, Self acceptance and self-evaluative behavior: A critique of methodology. Psychological Bulletin, 1961, 58, 104-121.

[6] P. E. Vernon, Personality assessment: A critical survey. New York: John Wiley and Sons, 1964.

Super[1] and Wylie,[2] have shown, however, that there are many types as well as many dimensions of self concepts. The particular aspect of self conception studied here is that often referred to as self-evaluation or self-regard or self-esteem. Only one type of self-esteem was singled out for attention--academic self-esteem. This is defined as a student's evaluation of his own capacity to perform in the academic achievement situation. For the sake of continuity with previous studies, it is necessary to note that what some writers have loosely termed the Academic Self Concept is more precisely designated as academic self-esteem in the present study.

Empirical Studies of Self Concept

The writings of self theorists have given rise to a boom in self concept research during the last two decades. The earliest group of studies such as those by Rogers and Dymond[3] and by Taylor[4] dealt with changes that occur in self-evaluation during counseling and psychotherapy. Other studies such as those by Chodorkoff[5] and by Berger[6] on the other

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[1]D. E. Super, Toward making self concept theory operational. In D. E. Super et al., Career development: Self concept theory. Essays in vocational development. New York: College Entrance Examinations Board, 1963. Pp. 17-32.

[2]Wylie, The self concept.

[3]C. R. Rogers and R. F. Dymond (Eds.), Psychotherapy and personality change. Chicago: Univer. of Chicago Press, 1954.

[4]D. M. Taylor, Changes in the self concept without psychotherapy. Journal of Consulting Psychology, 1955, 19, 205-209.

[5]B. Chodorkoff, Adjustment and the discrepancy between the perceived and ideal self. Journal of Clinical Psychology, 1954, 10, 266-268.

[6]E. M. Berger, The relation between expressed acceptance of self and expressed acceptance of others. Journal of Abnormal and Social Psychology, 1952, 47, 778-782.

hand, dealt with relationships between self concepts and personal adjustment. Some other investigators, among them Super[1,2] and Miner[3] have also studied various dimensions of self concepts in relation to vocational choice and other personality characteristics. According to these reviews, the findings of most of these studies were contradictory; the significant relationships found were very low, the designs were inappropriate and the instruments were poor. Moreover, as these studies were mostly correlational, no causal relationships can be inferred.

More recently, the interests of educators have become increasingly focused on self concepts, for they appear to be among the psychological factors which influence learning and development. It seems that if a student perceives that he is unable to learn, for example, mathematics or reading, this perception of his ability becomes the functionally limiting factor of his school achievement. The term "functional limit" here implies an exclusion of genetic organic limits on learning and an emphasis on those perceptions of what is appropriate, desirable and possible for him to learn.

To test these assumptions, several studies have examined the relationship between self concepts and different aspects of academic

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[1] D. E. Super et al., Career development: Self concept theory.

[2] D. E. Super, Self concept and vocational development theories applied to college choice and planning. Paper read at Chicago Invitational Conference on Counselor Education, College Entrance Examination Board, Chicago, Feb. 23-26, 1966.

[3] W. R. Miner, The measurement of self concept metadimensions: an exploratory study. Unpublished doctoral dissertation, Columbia University, 1966.

performance. As most of these studies have been fully described elsewhere[1,2,3] only the relevant trends discernable among them will be discussed here. Studies by Bodwin,[4] Coppersmith[5] and Wattenberg and Clifford[6] have demonstrated a positive relationship between self concept and academic achievement. But while this constitutes the dominant trend in the literature, studies by Nameroff,[7] Nicholson[8] and Bledsor and Garrison,[9] among others, have found no such relationship. Many investigators have also reported sex differences in instrument reliabilities and in the relationships found, these being usually lower for girls than boys. A case in point is the Bledsoe and Garrison[9] study of girls, in which,

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[1]David E. Lavin, The prediction of academic performance. New York: John Wiley and Sons, Inc., 1965.

[2]Don E. Hamachek (Ed.), The self in growth, teaching and learning. New Jersey: Prentice-Hall, Inc., 1965.

[3]Ruth C. Wylie, The self concept.

[4]R. I. Bodwin, The relationship between immature self concept and certain educational disabilities. Dissertation Abstracts, 1959, 19 1945-46.

[5]S. Coppersmith, A method of determining types of self-esteem. Journal of Abnormal and Social Psychology, 1959, 59, 87-94.

[6]W. W. Wattenberg and C. Clifford, Relationships of self concepts to beginning achievement in reading. Child Development, 1964, 35, 461-467.

[7]D. Nemeroff, The relationship between self attitudes, academic achievement, socio-economic status and intelligence. Dissertation Abstracts, 1955, 15, 6395.

[8]L. O. Nicholson, The relationship between self concept and reading achievement. Dissertation Abstracts, 1955, 15, 6063.

[9]J. C. Bledsor and K. C. Garrison, The self concepts of elementary school children in relation to their academic achievement, intelligence, interests, and manifest anxiety. Cooperative Research Project, No. 1008. Georgia: Univer. of Georgia, Athens, 1962.

only one out of the fourteen correlations calculated between achievement factors and self concept was significantly different from zero. This indicates the need for further clarification of self theory in this respect as it applies to girls. Moreover, as an overwhelming majority of these studies was conducted among children of elementary school age, it will be necessary to test self theory with late adolescents and young adults.

On the whole, a close examination of these studies reveals some serious limitations. First, many of them used measures of global self concept despite the ample evidence that self concepts consist of several segments which differ evaluatively and which differentially affect behavior. There is the need, therefore, to develop and use academic self-evaluation scales which tap only that part of self-conception which concerns academic performance. Second, most of the instruments used were assembled intuitively and were not subjected to appropriate item selection techniques. And, in spite of the desirability of such a procedure, no psychophysical methods of any type were used to derive any of them. The present study was designed to correct some of these defects.

Payne and Farquhar[1] and Brookover et al.[2] carried research in the right direction when they employed carefully constructed academic self concept scales in studying the relationship between self concepts and academic performance. Both studies confirmed the positive relationships

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[1]D. A. Payne and W. W. Farquhar, The dimensions of an objective measure of academic self concept. Journal of Educational Psychology, 1962, 53, 187-192.

[2]W. B. Brookover et al., Self concept of ability and school achievement. Sociology of Education, 1964, 37, 271-281.

found by earlier investigators. Finding such relationships to be only correlational however, Brookover[1] emphasized the need for demonstrating "the possibility of changing students' self concepts of academic ability and thereby their level of performance." The present study was designed to extend previous research in the direction suggested by Brookover.

Theoretical Background of Self Concept Change

While most self theorists conceive of the self concept system as a relatively stable organization, striving to maintain consistency, they nevertheless believe that it changes and that it can be changed. As Raimy[2] has pointed out, "the self concept not only influences behavior but is itself altered and restructured by behavior and unsatisfied needs." His view is essentially in accord with Sullivan's[3] characterization of self concept as "made up of reflected appraisals" of others. Moreover, Combs and Snygg[4] have emphasized that although self concepts resist change, it does not mean that once established no further changes are possible. "An adequate self" they say, "must be stable but not rigid; it must be changing but not fluctuating." Such enigmatic statements seem to have paved the way for the variable successes of attempts in the literature to change self concepts.

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[1]Brookover et al., Sociology of Education, 1964, 37, 271-281.

[2]V. C. Raimy, The self concept as a factor in counseling and personality organization. Unpublished doctoral dissertation, Ohio State Univer., 1943.

[3]H. S. Sullivan, Conceptions of modern psychiatry. Washington, D.C.: White Psychiatric Foundation, 1947. P. 10.

[4]Combs and Snygg, Individual behavior, p. 157.

Two general methods of changing self concepts have been employed in the literature. The first is by counseling or psychotherapy. This process is usually long and the actual procedures used might differ from one therapist to the other. In most cases, the ultimate goal is to increase, either through insight or some other method, the subject's self-esteem, i.e., his self-acceptance or self-ideal self congruence. If, as it often happens, success in psychotherapy is defined as greater self acceptance, then, it is possible that the process may not involve an actual improvement in self conception, but lowering of the ideal self concept to conform more with the existing self concept. While, perhaps, perfectly acceptable in psychotherapy, such goals and procedures seem hardly justifiable in the academic achievement situation where it might only signify a lowering of aspirations or a fatalistic resignation to failure.

The second method of changing self concepts is derived from learning theory and it is by the use of operant conditioning procedures. The rationale for this procedure is that, if self concepts are learned and made up of the reflected appraisal of significant others--parents, teachers and peers--then it should be possible to lower or enhance self concepts through negative or positive reinforcements administered by such significant others. Following this line of approach, Dittes[1] and Gollob and Dittes[2] successfully manipulated self esteem by making

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[1]J. E. Dittes, Effect of changes in self esteem upon impulsiveness and deliberation in making judgments. Journal of Abnormal and Social Psychology, 1959, 58, 348-356.

[2]H. F. Gollob and J. E. Dittes, Effects of manipulated self esteem on persuasibility depending on threat and complexity of communication. Journal of Personality and Social Psychology, 1965, 2, 195-201.

subjects experience success or failure on an ego-involving task. Likewise, the present study attempted to enhance academic self-esteem by making subjects experience success on ego-involving tasks.

Some writers, Diggory[1] and Borislow[2] among them, have been able to identify some of the conditions which must be fulfilled if the attempt to improve self concepts by this method is to succeed. (1) The task must relate to a well-defined goal which could be achieved under clearly specified conditions of work; (2) the task must be meaningful and important enough that the subjects will be motivated to succeed; and (3) the subjects must perceive their alleged successes as success and their alleged failure as failure. But the characteristic weakness which the method of success conditioning shares with all conditioning procedures is that human subjects have the capacity for self-evaluation and for self regulation which, under many circumstances, alters the direct consequences of input variables. This procedure's susceptibility to manifestations of individual differences, attitudinal biases, and other subtle influences may therefore act to limit or nullify its effectiveness even when the above conditions are fulfilled.

However, in order to be able to make the necessary discriminations in the present experiment, one other condition was specified: the success feedback must be ego-oriented and not task-oriented. An ego-oriented success feedback is a general although elaborate form of praise, directed at some aspects of personality relevant to academic performance

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[1]Diggory, Self-Evaluation: Concepts and studies.

[2]B. Borislow, Self-evaluation and academic achievement. Journal of Counseling Psychology, 1962, 9, 246-254.

self-statements to induce improved self concepts over a one week period. It was hypothesized that those subjects with negative pretest self concepts would show an increase when acting out roles involving the articulation of positive self concept statements provided by the experimenters. This prediction was not confirmed. Moreover, while Maehr, Mensing and Nafzger[1] found that when high school students in a physical education class experienced approval or disapproval by a stranger who was testing their calisthenic performances, self-evaluations correspondingly rose or fell; Backman, Secord and Pierce[2] extended such findings by demonstrating that pressure on subjects to change evaluations of their own traits was more effective for traits of low concensus than for those with high concensus.

On the whole, it seems that only very few attempts in the literature have succeeded in enhancing self concepts by experimental manipulation. Even for the few studies which produced changes in verbal self-referrents, the validity of such changes was not examined by seeing if they had actual behavioral concomitants. A study by Brookover and others[3] was addressed to this issue. The study's purpose was to enhance the self concept of ability of low-achieving junior high school students and thereby their academic achievement. In three separate experiments,

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[1]M. L. Maehr, J. Mensing and S. Nafzger, Concept of self and the reaction of others. Sociometry, 1962, 25, 353-357.

[2]C. W. Backman, P. F. Secord and J. R. Pierce, Resistance to change in self concept as a function of consensus among significant others. Sociometry, 1963, 26, 102-111.

[3]W. B. Brookover et al., Self concept of ability and school achievement II. U.S. Office of Education Cooperative Research Project No. 1636. East Lansing: Bureau of Educational Research Services, Michigan State University, 1965.

three methods of enhancing self concepts were used: (1) modification of images and expectations held by parents, (2) direct contact with an 'expert' communicating information to enhance self concept of ability and (3) interaction with a counselor holding positive and high expectations for the students. Three one-year experiments with ninth grade students and a longitudinal study of approximately 500 students in an urban school system revealed that a significant increase in both self concept and grade point average was affected by working with parents who represented academic 'significance' to their children. 'Expert' and counseling treatments failed to induce significant changes in either self concept or achievement.

There were, however, too many uncontrolled sources of variance within the treatment entitled 'working with parents,' especially over a one year period. Such factors make it extremely difficult to specify the actual change agent and to replicate the whole procedure. The present study was designed, therefore, to see if a relatively short period of success conditioning by an 'expert'--i.e., a psychologist--can improve self-esteem and thereby academic performance.

As indicated above, the mediating effect of anxiety--another major motivational construct--was also examined in the present study. This, in the writer's knowledge represents the first study to examine the joint effects of self esteem and anxiety on academic performance. While a vast literature attests to the importance of self concept and performance on the one hand and of anxiety and performance on the other, no investigator has actually examined the possibility of anxiety and self concept being one and the same thing as far as the prediction of academic performance is concerned. The assumption here, as implied in the

literature, is that self esteem and anxiety are not the same thing and this assumption, until tested further, provided the basis for generating the hypotheses in the present study.

Anxiety: Theory and Empirical Studies

According to the Psychiatric Glossary,[1] anxiety is "apprehension, tension or uneasiness which stems from the anticipation of danger, the source of which is largely unknown or unrecognized." On the one hand, anxiety has been conceived in the literature as a signal of danger which mobilizes the human organism's resources in the interests of conservation, defense and self-preservation. On the other hand, it is recognized as a sign of disorganization which in larger quantities leads to further disturbance and regression of functioning. For centuries anxiety has been recognized as an underlying factor in psychological illness, but only in recent years has there been a concentrated attack upon it as a personality variable in normal subjects. More recently still, the concern for the mental health of the school population and the search for personality correlates of academic achievement have brought some definitive attack on the problem of the part played by anxiety in learning.

Theories of Anxiety and Learning

A search of the literature revealed three general viewpoints on the effects of anxiety on learning. The first viewpoint conceives of anxiety as an energizing drive. Studies like those of

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[1] American Psychiatric Association, A psychiatric glossary. Washington: American Psychiatric Association, 1957. P. 18.

Taylor,[1] Spence[2] and Dollard and Miller[3] were influenced by the theorizing of Hull[4] and conceive of anxiety as an acquired drive which has the capacity to generally energize the organism. Anxiety thereby ought to facilitate performance and increase the speed of learning. Extensive research has however modified this theory to the effect that anxiety facilitates performance only on simple tasks but leads to performance decrements on complex tasks.

The second viewpoint conceives of anxiety as a situationally determined reaction. It will be noted that in the former theory, anxiety is used in the sense of a constant characteristic or trait of the individual and most research with it has employed the Taylor Manifest Anxiety Scale (MAS), a general anxiety scale. An opposing view has been advanced by Mandler and Sarason.[5] The essence of this position is that anxiety is a strong learned drive which is situationally determined. The reaction of the individual to this specific anxiety may either be 'task-irrelevant'--that is, tending to disrupt performance, or, they may be 'task-relevant'--facilitative of performance, because they move the person to reduce anxiety by completing the task

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[1] J. A. Taylor, A personality scale of manifest anxiety. Journal of Abnormal and Social Psychology, 1953, 48, 285-290.

[2] K. W. Spence, Behavior theory and conditioning. New Haven, Conn.: Yale Univer. Press, 1956.

[3] J. Dollard and N. E. Miller, Personality and psychotherapy. New York: McGraw-Hill, 1950.

[4] C. L. Hull, Principles of behavior. New York: Appleton-Century-Crofts, 1943.

[5] G. Mandler and S. B. Sarason, A study of anxiety and learning. Journal of Abnormal and Social Psychology, 1952, 47, 166-173.

successfully. Using the Test Anxiety Questionnaire (TAQ), Mandler and Sarason have demonstrated that high test anxious individuals produce more task-irrelevant responses and therefore perform less well than low test anxious individuals.

The third viewpoint on the effect of anxiety and learning is the Yerkes-Dodson Law.[1] Essentially, this law holds that the relationship between fear, conceptualized as a drive, and learning is curvilinear. A low drive level facilitates learning only slightly or not at all, presumably because the motivation it provides is inadequate to affect performance. A high drive level interferes with the learning process so that performance is similar to, or worse than that obtained with low drive level. The level of drive which stimulates optimal performance lies somewhere in the middle range of drive intensity.

The above viewpoints are indicative of problems which still demand research attention in this area. Some of these are (1) the effect of anxiety on performance on simple and complex tasks, (2) the relationship between measures of general and specific anxiety and (3) the interactive effects of anxiety with other variables bearing a potential or established relationship to academic performance.

An example of the first of the above problems will make the situation clear. One prediction from the Hull-Spence position is that on complex tasks low anxious subjects will be superior in performance to high anxious subjects while the opposite will obtain

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[1] R. M. Yerkes and J. D. Dodson, The relation of strength of stimulus to rapidity of habit-formation. Journal of Comparative Neurology and Psychology, 1908, 18, 459-482.

on simple tasks. Montague,[1] Spence, Taylor and Ketchel[2] have obtained results favoring the theory. On the other hand, Ramond,[3] among others, failed to find any differences between high and low anxious groups. More recently, in the first of two experiments employing a concept learning task, Sassenrath[4] found some results favorable to the theory but in the second experiment,[5] the results were directly contradictory to the theory. In a subsequent experiment[6] to clear up the tangle, he found that even where response competition is shown to be high or low, anxiety drive, as measured by the MAS does not affect the learning of paired-associates. He also found that where task difficulty is known to be either low or high and even where some degree of control is had over subjects' denotative meaning of the paired items, anxiety drive as measured by the TAQ does not affect the learning of paired-associates.

The evident confusion calls for further research. A look at the experimental literature relating anxiety to task difficulty and learning shows that the definition of task difficulty might have been one cause

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[1]E. K. Montague, The role of anxiety in serial rote learning. Journal of Experimental Psychology, 1953, 45, 91-95.

[2]K. W. Spence, J. Taylor and R. Ketchel, Anxiety (drive) level and degree of competition on paired associates of learning. Journal of Experimental Psychology, 1956, 52, 306-310.

[3]C. Ramond, Anxiety and the task as determiners of verbal performance. Journal of Experimental Psychology, 1953, 46, 120-124.

[4]J. M. Sassenrath, Manifest anxiety and transfer of complex learning. Psychological Report, 1963, 12, 913-914.

[5]J. M. Sassenrath, Test anxiety, manifest anxiety and concept learning without awareness. Psychological Report, 1963, 12, 71-78.

[6]J. M. Sassenrath, K. R. Howard and I. Athey, Verbal learning and anxiety. Psychological Report, 1964, 15, 379-386.

of contradictory findings. A complex task has often been defined in terms of *interlist* or *intralist similarity* which produces response competition. A simple task on the other hand, is one with minimal intralist or interlist similarity. These definitions are inadequate for two reasons. First, while concentrating entirely on characteristics of the task, they ignore those of the individual and assume that a 'complex' task is difficult for everyone irrespective of ability. Second, these definitions are applicable to lists of items and not to tasks such as reading prose passages or working with a programmed textbook. The present study therefore used as a definition of simple and complex tasks a combination of intralist similarity and the level of cognitive ability required for successful completion of the task. Thus, a task requiring mere knowledge of facts is simpler than one requiring comprehension, or application, or synthesis or evaluation--as already pointed out by Bloom.[1]

Concerning the problem of general and specific anxiety scales, some writers believe that each individual brings to a threatening situation, a general anxiety of his own compounded by the specific anxiety aroused by that situation. Both types of anxiety should determine performance in any particular situation. The present study therefore used a combination of general and specific anxiety scales in order to see if both are more effective than either alone. Finally, as indicated above, the possible mediating effects of another major motivational construct (self-esteem) was also investigated.

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[1]B. S. Bloom (Ed.), Taxonomy of educational objectives: The classification of educational goals. Handbook I. Cognitive domain. New York and London: Longmans, Green and Co., 1956.

Specifically, the following hypotheses were tested:

1. Subjects who are made to experience success on an ego-involving task show greater improvement in self-esteem than subjects who are not so affected when performing the same task.
2. Subjects who are made to experience success on an ego-involving task perform better than subjects who have not been so affected when performing the same task.
3. Anxiety is more reduced in subjects who are made to experience success on an ego-involving task than in subjects who are not so affected.
4. Self-esteem and anxiety are together more highly predictive of academic performance than is self-esteem alone.
5. General anxiety and test anxiety are together more highly predictive of academic performance than is test anxiety alone.

CHAPTER II

DESIGN AND PROCEDURE

The present study used an experimental design in which two initially equivalent groups were selected and measures of the relevant variables were obtained from them. The two groups were then exposed to different experimental treatments while they completed a series of academic tasks. Post-treatment measures of the relevant variables were again obtained and the groups were compared on pretest-posttest changes as well as on academic performance.

Subjects

The sample used in this study consisted of 130 female student nurses from three diploma nursing schools in the New York metropolitan area. The mean age was 18.12 years (s = 1.01; range = 17-24). All subjects had at least a high school education and were all in their first semester in nursing school. Participation in the study was obligatory in two schools, while in the third, it was on a voluntary basis. The 130 subjects represent those for whom data were analyzed after 12 subjects had been eliminated, four for being males and eight either for missing experimental sessions or to maintain the equality of matching. As the four males were not initially included in the matching procedures and as the eight other subjects were systematically eliminated from both groups, the loss of subjects, as will be shown later by pre-treatment measures, did not affect the equivalence of the two groups. Table 1 shows the distribution of subjects.

Table 1

Distribution of Subjects

	Experimental Group (N = 65)	Control Group (N = 65)	Total N = 130
School 1	35	35	70
School 2	24	24	48
School 3	6	6	12

Measuring Instruments

Chambers and Hopkins[1] have indicated that one of the difficulties in the research on anxiety has resulted from the use of only a single measure. The same can be said of research on self concepts. Like anxiety, relatively little is known of its actual components, and as such, of the universe of items that will tap it completely. The existing instruments have low inter-correlations and therefore share negligible variance with respect to the construct they profess to measure. As often indicated in the literature, a combination of many of these measures might be advantageous. The present study therefore used multiple measures of the major variables.

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[1]A. C. Chambers and K. D. Hopkins, Anxiety, physiologically and psychologically measured, and its consequence on mental test performance. U.S. Office of Education, Cooperative Research Project No. S.227. Los Angeles: Univ. of Southern California, 1966.

Measures of Academic Self-Esteem

Two measures of academic self-esteem were used. These were made into a booklet under the title "Student Nurse Academic Survey" and designated as Parts I and II (Appendix A).

Part I: The Self Concept of Academic Ability Scale developed by Brookover[1] and others was slightly modified to apply to student nurses. The scale consists of eight 5-choice items which require the student to compare herself to her peers on the dimension of academic competence. Guttman scalogram analysis of the scale yielded a reproducibility coefficient of .95 for males and .96 for females, and internal consistency reliability calculated by Hoyt's analysis of variance methods was .82 for males and .77 for females. The authors have also established adequate concurrent, construct and predictive validity for the scale. This instrument will subsequently be referred to as the first self-esteem scale (S-EI).

Part II: The Measure of Academic Self Concept developed by Payne and Farquhar[2] was the second self-esteem instrument used (S-EII). Only the 47 items cross-validated for females were included and the four choices to each item were rearranged so as to minimize response sets. These items require students to rate themselves on certain concepts closely related to academic functioning. For these 'female' items, the

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[1]W. B. Brookover, A. Patterson and S. Thomas, Self concept of ability and school achievement. U.S. Office of Education, Cooperative Research Project No. 845. East Lansing: Bureau of Research and Publications, Michigan State Univer., 1962.

[2]D. A. Payne and W. W. Farquhar, The dimensions of an objective measure of academic self concept. Journal of Educational Psychology, 1962, 53, 4, 187-192.

authors reported Hoyt's analysis of variance reliability estimates ranging from .88 to .93 with a median value of .90. Multiple scalogram analysis of these items yielded a reproducibility coefficient of .81 and a minimal marginal reproducibility coefficient of .76. Adequate construct and concurrent validity have also been established for this instrument by the authors.

Measures of Anxiety

Four paper-and-pencil tests of anxiety were used. These were made into a book under the title "Student Nurse Biographical Inventory" and designated as Parts I, II, III and IV. (See Appendix B.)

Part I: S-R Inventory of Anxiousness (S-RI). The S-RI, developed by Endler, Hunt and Rosenstein[1] employs fourteen responses quantified on a five-step scale ranging from none to very much. The scale is designed to measure responses associated with many experiences, one of which is the examination situation. The Coefficient Alpha reliability was .87 when a final examination was used as the stimulus. The S-RI correlates .46 with the Taylor Manifest Anxiety Scale and .66 with the Mandler and Sarason Test Anxiety Quotient (TAQ).

Part II: Affect Adjective Check List (AACL). The AACL, developed by Zuckerman,[2] is a list of 61 adjectives with affective connotations to be checked either the way the individual feels at present (the "today"

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[1]N. S. Endler, J. M. Hunt, and A. J. Rosenstein, An S-R inventory of anxiousness. Psychological Monographs, 1962, 76, 17, whole no. 536.

[2]M. Zuckerman, The development of an affect adjective check list for the measurement of anxiety. Journal of Consulting Psychology, 1960, 24, 457-462.

scale) or the way the individual usually feels (the "general" scale). Only 21 of the adjectives are actually scored. Eleven anxiety-plus words, such as afraid, are scored one if marked true and ten anxiety-minus words, such as calm, are scored one if marked false. The reliability for the "today" scale was .85 by the Kuder-Richardson Formula 20 and .30 for retest reliability. The "general" scale, which was the one used in this study, yielded a reliability of .72 by the Kuder-Richardson Formula 20 and .68 with retest reliability. The AACL correlated .44 ($p < .05$) with the MAS.

Part III: Test Anxiety Scale (TAS). The TAS, developed by I. G. Sarason[1] was designed to measure the anxiety associated with test-taking experiences. It is composed of sixteen true or false statements describing responses related to examinations. The TAS correlated .45 ($p < .05$) with the MAS for male college students and .53 ($p < .01$) for female college students.

Part IV: Taylor Manifest Anxiety Scale (MAS). The MAS was developed by Janet Taylor[2] and shortened by Bendig.[3] It was designed to measure the general anxiety experienced. The reliability for the short form was .75 for males and .74 for females by the Kuder-Richardson Formula 21. The MAS correlated .46 ($p < .05$) with the S-RI, .40 ($p < .05$) with the AACL, .45 ($p < .05$) for males and .53 ($p < .01$) for females with the TAS.

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[1]I. G. Sarason, Effects on verbal learning of anxiety, reassurance and meaningfulness of material. Journal of Experimental Psychology, 1958, 56, 472-477.

[2]J. A. Taylor, A personality scale of manifest anxiety. Journal of Abnormal and Social Psychology, 1953, 48, 285-290.

[3]A. W. Bendig, The development of a short form of the manifest anxiety scale. Journal of Consulting Psychology, 1956, 20, 384.

Measures to Check Effectiveness of the Experimental Manipulation

Two measures, designed to check effectiveness of (1) the ego-involvement manipulation and of (2) the success manipulation, were used.

The Ego Involvement Questionnaire was specially developed for the present study to measure the effectiveness of the ego-involving instructions. Extensive search of the literature was made for theoretical formulations of ego involvement. This was then defined as a "feeling that one's prestige and personal worth as an intelligent being is at stake, and as a condition of total participation in a task believed to be relevant to a value (academic success) already interiorized as part of the ego." Ten multiple-choice items were constructed concerning how important the subjects regarded the tasks, how tense they were while performing them, how much they wanted to do well and how success or failure would affect them. Such indications have been suggested in the literature as acceptable indices or operational definitions of ego involvement. The ten items, along with theoretical and operational definitions of ego involvement, were then submitted to three professors in the field of measurement and evaluation for ratings of content validity and for editorial comments. From the returns, five four-choice items rated as having high or very high content validity were included in the final form of the Ego Involvement Questionnaire. Subsequent analysis showed this scale to form a Guttman Scale with a reproducibility coefficient of .84 and to have a Kuder Richardson Formula 21 reliability of .75.

The Perception of Success Scale, also specially developed for this study, was designed to find out how far subjects perceived that they have succeeded on the academic tasks. Trial items were again submitted to three professors in the field of measurement and evaluation,

and the four items highest in content validity were put into the Perception of Success Scale. Subsequent analysis showed that the scale forms a Guttman scale with a reproducibility coefficient of .87 and a Kuder Richardson Formula 21 reliability of .76. Such analysis also showed that this scale discriminates between a group which has been experimentally made to experience success and another group which has not been so affected. (See Chapter III.)

The Ego Involvement Questionnaire and the Perception of Success Scale were combined into a booklet: "Test Attitude Survey" and designated only as Part I and Part II respectively. (See Appendix C.)

Measures of Academic Performance

Two indices of academic performance were used in the present study:

(a) Grade Point Average (GPA) was obtained from each of the three schools. This is the average of all tests and examinations during the three months of nursing training. Methods of calculating GPA vary from school to school. The average includes grades on theoretical topics and excludes practical courses.

(b) Specially devised Academic Tasks. The second index of academic performance was obtained from scores on four academic nursing tasks. Each task consisted of two parts. The first part was an immediate memory task in which the subjects were required to learn material of four types: (1) the effects of certain drugs, (2) the clinical tests for certain diseases, (3) drugs used in the treatment of certain diseases and (4) the antidotes to certain poisons. The materials to be learnt were arranged in paired-associate form and the subjects were tested immediately

afterwards by a matching test. The actual items were assembled by three nursing education specialists: one professor of nursing education, one advanced doctoral student in nursing education and one tutor at a diploma school of nursing. From several items provided by these specialists, ten of each of the four types mentioned above were then assembled into each task. The paired-associate items in each task were chosen so that there was minimal intralist competition in the formal characteristics of the task elements. The first part of each of the four tasks and the corresponding tests are shown in Appendix D.

The second part of each task consisted of working from a programmed textbook[1] on Asepsis. Subjects were also tested immediately afterwards on multiple choice tests supplied with the book. The actual pages involved in the tasks and the items included in each test are shown in Appendix E.

These tasks were chosen--on the advice of experts--not only because of their importance to the subjects at this stage of their training but also because of their importance to nursing education as a whole. They were also ideal from the point of view of this investigation because they were tasks on which subjects could readily be made ego involved.

In order to determine which of the two parts of each task--learning of paired-associates or working from a programmed textbook--could be designated as 'simple' tasks and which as 'complex' tasks, interjudge agreement was sought. In addition to the intralist similarity issue, a 'simple' task is defined as one requiring mere recall of facts and a

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[1] M. M. Seedor, Introduction to Asepsis: A programmed unit in fundamentals of nursing. New York: Bureau of Publications, Teachers College, Columbia Univer., 1963.

'complex'one as one requiring in addition, any one of Bloom's[1] levels of cognitive ability, i.e., comprehension, application, analysis, synthesis and evaluation. This definition of the simplicity-complexity continuum along with definitions of Bloom's six levels of cognitive ability and all the tasks and their corresponding tests were presented to two professors of nursing education. They were requested to classify each task as either 'simple' or 'complex' on the above criteria. There was perfect agreement between them that part one of each task--paired-associate learning and the corresponding matching test--is a simple task. Likewise, part two of each task--working from a programmed textbook and the following multiple choice test--is designated as a 'complex' task. The most appropriate time-limits for these tasks were then established through a short pilot study.

It must be noted that while the content and general format of these tasks may be similar to that of other classroom and state board examinations, the way they were administered in this study makes them unique in several ways. So as to control for possible previous knowledge of these tasks, a pretest was given. This pretest was then followed by the task and this by the posttest which was the same as the pretest. The score on any task was therefore, the pretest-posttest difference. Academic performance here was thus measured in terms of subject gain, and this could be regarded as a pure measure of the ability to perform on these tasks. By contrast, classroom tests require subjects to recall specific elements

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[1] B. S. Bloom (Ed.), Taxonomy of educational objectives: the classification of educational goals. Handbook I. Cognitive domain.

from a larger body of materials learned in the recent, but not in the immediate past. Conditions under which learning occurred could have varied widely from one subject to another. All the above, along with the teacher source of variability in school marks, make the GPA very different from the tasks used in this study as a measure of academic performance. Also contributing to this difference is the fact that programmed instruction, which forms part of the tasks, tends to reduce variability among subjects.

Elements of the Experimental Manipulation

(a) Ego-Involving Instructions. These are written instructions designed to make subjects in the experimental condition ego-involved in the academic tasks. These instructions described the tasks as measuring intelligence and academic skills highly related to successful training as a nurse and urged subjects to try their best as their results would be made known to the school authorities. (See Appendix F.) The effectiveness of this manipulation was later checked by the Ego Involvement Questionnaire.

(b) Success Feedback (Success Manipulation). These are notes given to subjects in the experimental condition after each session. These notes described their performance as very high, placing them among the top group of nurses who have taken the tests earlier and as one which the school is very proud of and which they should try to maintain. The first two notes were signed by the psychologist and the last by the school principal and by the psychologist. (See Appendix G.) The effectiveness of this manipulation was later checked by the Perception of Success Scale.

Procedure

Using the random-blocks procedure, subjects were divided by schools into two groups matched for nursing aptitude and for socio-economic status as determined by the Hamburger scale.[1] One of the two groups thus formed was then randomly assigned to the experimental condition and the other group was placed in the control condition.

The study was conducted in three sessions of about two hours each at each of the three schools. Favorable testing locations which were well-lighted, adequately heated, and free of distractions were provided at each school. In School 1 and School 3 there were two days between the first and the second sessions and between the second and the third. In School 2, there were two days between the first and the second sessions, but there were two weeks between the second and the third sessions.

At the first session, subjects were given a standard opening instruction which was followed by the distribution of experimental code numbers. The subjects completed the Personal Data Sheet and Secrecy Pledge (Appendix H), the self-esteem and anxiety scales and both parts of Task 1. They were then given the standard closing instructions. Six hours later, subjects in the experimental group received the first success feedback note.

At the second session, subjects completed both parts of Tasks 2 and 3 and were again given the standard closing instructions. Six hours later, the experimental group received the second success feedback note.

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[1] M. Hamburger, Realism and consistency in early adolescent aspirations and expectations. Unpublished doctoral dissertation. Teachers College, Columbia University, 1958.

At the third session, subjects completed both parts of Task 4 after which there was a fifteen-minute recess. Subjects were requested to step into the corridor so that "the experimenters could score the tests with the quick-scoring keys they have brought." After fifteen minutes, the subjects were called back into the hall one at a time, the experimental group first, although this was not made apparent to the subjects. As subjects in the experimental group came past the door, they were given the third success feedback note. Those in the control group were also called in one at a time, as if a roll-call was being made and were told to sit down. All subjects then completed the self-esteem and anxiety scales, the ego-involvement questionnaires and the perception of success scale and the post-experimental questionnaire (Appendix I). The third session was then concluded with a debriefing period during which the subjects learnt the actual details of the experiment and asked various questions about the study. It was emphasized that not all those who had done well received the notes and the investigator promised to send their actual scores on the academic tasks through the mail. A detailed step by step sequence of each session and the corresponding standard instructions and time limits are provided in Appendix J.

Attempts to Control Possible Methodological Errors

Experimenter's bias, known in some quarters as the "Rosenthal effect," was adequately controlled in the present experiment since the three sessions were conducted by two other experimenters who were not aware of the particular hypotheses being tested. During these sessions, the writer maintained an unobtrusive presence as far as the subjects

were concerned and came in only to answer questions about procedural matters. The Hawthorne effect, on the other hand, seems to be controlled by the fact that both groups were being tested--and in the same room too. Concerning the issue of subjects' awareness of experimenter's hypotheses, post-experimental inquiry showed that the subjects had no idea of what the experiment was about, other than that it was somewhat concerned with student learning--which was what they were told in the opening instructions.

The source of error which could have arisen from paying too much attention to subjects in the experimental group was largely avoided here--at least in the experimental room. Subjects completed exactly the same measures and the only different procedure--the ego-involving instructions--was casually placed during the distribution of material before each experimental subject (identified by number) wherever she sat in the hall. However, not so much success was achieved with control of certain factors outside the experiment or in the general school situation. Thus, such factors as concern for impending school examinations, dissemination of the details of the ego-involving instruction to control subjects despite the secrecy pledge and, of course, subjects' personality differences and conditioning history, were all not effectively controlled in this experiment and they might have contributed to reduce the effectiveness of the experimental manipulation.

Methods of Analyzing Data

Zero-order correlations were computed between relevant variables and *t*-tests were used in the comparison of group means. Analysis of

covariance was used in the comparison of pretest-posttest changes, using the pretest scores as covariate and the posttest scores as criterion. This statistical method has been indicated by Campbell and Stanley[1] as being more precise than the use of simple gain scores. Finally, stepwise multiple regression analysis was used in testing whether an increase in predictive power is achieved by combining one variable with another.

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[1]D. T. Campbell and J. C. Stanley, Experimental and quasi-experimental designs for research. Chicago: Rand McNally, 1963. P. 23.

CHAPTER III

RESULTS AND CONCLUSIONS

This chapter presents the results of the investigation in terms of the hypotheses formulated in the first chapter. When an hypothesis is not supported, additional analyses are made so as to help determine whether the theory is inadequate and should be modified, whether the hypothesis was inappropriately derived from the theory, or whether the reason lies in the measuring instruments or in the sample used.

Similarity of Groups

First, the assumption of initial equality of groups was tested and results in Table 2 indicate that the two groups were initially well equated. There were no significant differences between experimental and control groups in nursing aptitude (the matching variable), age and GPA, and in pre-experimental levels of self-esteem and anxiety. These results were also analyzed by schools[1] since subsequent analyses might involve interschool comparisons. Tables 3 and 4 present results pertaining to the similarity of groups in School 1 and School 2 respectively. In each of the schools, there were no significant differences between the two groups in nursing aptitude (the matching variable) and on all other variables except Self-Esteem II in School 2. This significant

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[1]Data were further analyzed for only School 1 and School 2 because there were only 12 subjects from School 3.

Table 2

Similarity of Experimental and Control Groups, Pretest

Variable	Experimental Group (N = 65) Mean	SD	Control Group (N = 65) Mean	SD	t
Nursing Aptitude[a]	76.66	18.5	77.66	18.4	-.26 (NS)
Age	18.06	.86	18.18	1.15	-.69 (NS)
GPA	60.76	21.55	60.82	21.68	-.02 (NS)
Self-Esteem I	26.25	3.73	26.33	3.20	-.96 (NS)
Self-Esteem II	34.34	12.02	35.37	11.25	-.50 (NS)
Anxiety I (S-RI)	36.32	9.28	36.26	10.34	.04 (NS)
Anxiety II (AACL)	4.81	4.89	4.97	4.71	-.18 (NS)
Anxiety III (TAS)	7.52	3.61	7.52	3.92	0.00 (NS)
Anxiety IV (MAS)	7.43	4.07	7.03	4.06	.56 (NS)

[a]Matching Variable.

difference indicated the need for statistically equating the two groups on this variable before making further comparisons on increase in self-esteem.

Effectiveness of the Experimental Manipulation

Table 5 shows the results of a check on the effectiveness of the hypothesized critical variables involved in the experimental treatment. The experimental group perceived significantly greater success and reported liking the experiment better than the control group. There was, however, no significant difference between the two groups on ego involvement although the observed difference was in the expected direction.

Table 3

Similarity of Experimental and Control Groups in School 1, Pretest

Variable	Experimental Group (N = 35) Mean	SD	Control Group (N = 35) Mean	SD	t
Nursing Aptitude[a]	82.23	11.90	82.31	11.86	-.03 (NS)
Age	17.91	.50	17.97	.57	-.44 (NS)
GPA	74.14	7.42	74.00	7.04	.08 (NS)
Self-Esteem I	26.25	3.46	26.42	3.38	-.20 (NS)
Self-Esteem II	36.54	13.14	33.62	10.91	1.00 (NS)
Anxiety I (S-RI)	37.05	10.90	38.80	10.66	-.67 (NS)
Anxiety II (AACL)	4.28	5.02	5.68	4.89	-1.18 (NS)
Anxiety III (TAS)	7.82	4.00	8.45	3.89	-.69 (NS)
Anxiety IV (MAS)	7.40	4.27	7.91	4.25	-.50 (NS)

[a]Matching Variable

Similar results are presented for School 1 and School 2 in Tables 6 and 7 respectively. These tables also show that the experimental group perceived significantly greater success than the control group in each of the schools. However, there were no significant differences between the groups on ego involvement in either of the schools, although again, the observed differences were in the expected direction.

The experimental group perceived greater success because it received the success feedback. For the most part, it liked the experiment better, presumably because of the complimentary remarks on the success feedback note. The lack of significant difference between the

Table 4

Similarity of Experimental and Control Groups in School 2, Pretest

Variable	Experimental Group (N = 24) Mean	SD	Control Group (N = 24) Mean	SD	t
Nursing Aptitude[a]	77.16	15.40	78.12	13.98	-.22 (NS)
Age	17.95	.62	17.87	.33	.57 (NS)
GPA	34.41	3.82	34.29	2.57	.13 (NS)
Self-Esteem I	25.29	3.74	26.83	2.92	-1.58 (NS)
Self-Esteem II	30.29	10.04	38.00	11.20	-2.50*
Anxiety I (S-RI)	37.12	6.42	33.37	10.10	1.53 (NS)
Anxiety II (AACL)	5.87	5.00	4.20	4.70	1.18 (NS)
Anxiety III (TAS)	7.33	3.19	6.33	3.67	1.00 (NS)
Anxiety IV (MAS)	7.83	3.88	6.37	3.60	1.34 (NS)

[a]Matching Variable

*$p < .05$

Table 5

Total Group: Comparison of Experimental and Control Groups on Treatment Variables

Variable	Experimental Group (N = 65) Mean	SD	Control Group (N = 65) Mean	SD	t
Ego-Involvement	10.38	2.44	10.03	3.60	.66 (NS)
Perception of Success	14.01	1.70	12.23	1.43	6.45**
Liking of Experiment[a]	5.74	1.86	5.06	2.20	1.90

[a]Considered a logical result of experimental treatment.

*$p < .05$ **$p < .0005$

Table 6

School 1: Comparison of Experimental and Control Groups on Treatment Variables

Variable	Experimental Group (N = 35) Mean	SD	Control Group (N = 35) Mean	SD	t
Ego Involvement	9.54	2.50	9.20	3.75	.44 (NS)
Perception of Success	13.65	1.66	12.17	1.36	4.09**
Liking of Experiment[a]	4.85	2.03	3.94	2.09	1.85*

[a]Considered a logical result of the experimental treatment.

*p < .05 **p < .01

Table 7

School 2: Comparison of Experimental and Control Groups on Treatment Variables

Variable	Experimental Group (N = 24) Mean	SD	Control Group (N = 24) Mean	SD	t
Ego Involvement	11.16	2.01	10.54	3.25	.79 (NS)
Perception of Success	14.45	1.84	12.00	1.25	5.41*
Liking of Experiment[a]	6.62	.92	6.29	1.51	.91 (NS)

[a]Considered a logical result of the experimental treatment.

*p < .01

two groups on ego involvement might have resulted from equally high motivation among Control Subjects to perform well on these tasks which were all nursing tasks, and as such, were important to them too. Control subjects might also have heard of the importance of these tasks (as contained in the ego-involving instructions) by talking to the Experimental Subjects who received these instructions. On the whole, however, the single most important treatment variable was the perception of success, and on this, the two groups differed significantly. By generating differential perception of success between the two groups, the experimental manipulation was therefore considered effective.

Improvement in Self-Esteem

In order to test the first hypothesis, that subjects who are made to experience success on an ego-involving task will show greater improvement in self-esteem, the two groups were compared using a two-way analysis of covariance with "treatment" and "schools" as main effects. The pretest self-esteem scores were used as covariate (X) and the posttest scores as criterion (Y).

Results contained in Tables 8, 9, 10, and 11 show no support for the hypothesis on the two self-esteem scales. There were, however, observed differences between the two groups in the predicted direction, especially on the second self-esteem instrument.

To test whether insufficient differential perception of success between the two groups could have caused the lack of support for the hypothesis, subjects high in perception of success in the experimental group were compared with subjects low in perception of success in the control group. As the latter subjects were not success-conditioned,

Table 8

Experimental and Control Group Means on Posttest Self-Esteem I with Pretest Scores Held Constant

School	Experimental Group n	X-Means	Y-Means	Adjusted Y-Means	Control Group n	X-Means	Y-Means	Adjusted Y-Means
1	(35)	26.25	26.48	26.69	(35)	26.42	27.05	27.13
2	(24)	25.29	25.04	25.95	(24)	26.83	25.95	25.74
3	(6)	29.99	30.49	27.95	(6)	29.16	28.66	26.73

Table 9

Analysis of Covariance for Posttest Self-Esteem I with Pretest Scores Held Constant

Source of Variation	D.F.	Sums of Squares	Mean Square	F
Schools	2	2.36	1.18	3.49*
Treatment	1	.16	.16	.48 (NS)
Interaction	2	.70	.35	1.04 (NS)
Within	123	41.66	.33	

*$p < .05$

the two groups thus formed should be extreme on this variable. High and Low Perception of Success were defined as a score of 15 and above and of 11 and below respectively on the perception of success scale. Analysis of covariance comparing these two groups on mean self-esteem

Table 10

Experimental and Control Group Means on Posttest Self-Esteem II with Pretest Scores Held Constant

School	Experimental Group n	X-Means	Y-Means	Adjusted Y-Means	Control Group n	X-Means	Y-Means	Adjusted Y-Means
1	(35)	36.54	35.48	33.99	(35)	33.62	33.11	34.19
2	(24)	30.29	32.37	36.39	(24)	37.99	34.45	31.68
3	(6)	37.66	37.83	35.35	(6)	34.99	32.83	32.70

Table 11

Analysis of Covariance for Posttest Self-Esteem II with Pretest Scores Held Constant

Source of Variation	D.F.	Sums of Squares	Mean Square	F
Schools	2	.00	.00	.00 (NS)
Treatment	1	8.54	8.54	2.68 (NS)
Interaction	2	6.05	3.02	.95 (NS)
Within	123	391.46	3.18	

improvement showed no significant differences between them (F = .02 (NS) and 2.68 (NS) on Self-Esteem I and II respectively). While not significant, observed differences were in the expected direction.

One possible source of lack of support for the first hypothesis might lie in the situation prevailing in the schools when the study was

conducted. Post-experimental inquiry revealed that, in School 1, there was an overwhelming concern for impending final school examinations while, in School 2, such concern was much less because final examinations were less imminent. This disparity in concern for impending examinations is evident in the test anxiety (TAS) scores in the two schools as shown in Tables 3 and 4. Moreover, there was only one week between pretest and posttest in School 1 while the corresponding period in School 2 was three weeks. Negative affect towards the study and a 'sleeper' effect in self-esteem improvement might have combined to negate treatment effects in School 1. And with half the study's total number of subjects from this school, this might have caused lack of support for the hypothesis when all schools were pooled. This situation suggested separate data analysis for School 2 where conditions seem to have been closer to ideal.

Tables 12 and 13 show the results of data analysis for School 2 using the second self-esteem instrument. These results confirm the hypothesis that subjects who are made to experience success on an ego-involving task show greater improvement in self-esteem than subjects who have not been so affected.

Conclusion. On the whole, for all subjects in the present investigation, the prediction that receiving success feedback on an ego-involving task will improve self-esteem was not borne out. The hypothesis that success conditioning can improve self-esteem cannot be rejected, however, for it seems that where conditions are closer to ideal in the sense of lack of excessive external pressures on subjects and more time for treatment effects to emerge, success conditioning does indeed improve self-esteem.

Table 12

School 2: Experimental and Control Group Means

on Covariate (Pre S-E II) and Criterion (Post S-E II)

Group	n	Covariate (Pre S-E II)	Criterion (Post S-E II) Unadjusted	Adjusted
Experimental	24	30.29	32.37	35.48
Control	24	37.99	34.45	31.35

Table 13

School 2: Analysis of Covariance for Posttest

Self-Esteem II when Pretest Scores are Held Constant

Source of Variation	D.F.	Sums of Squares	Mean Square	F
Between	1	180.05	180.05	5.03*
Within	45	1607.80	35.73	
Total	46	1787.85		

*$p < .05$

Improvement of Academic Performance

The second hypothesis predicts that subjects who are made to experience success on an ego-involving task perform better than subjects who have not been so affected. The implication here is that improvement of self-esteem predicted by the first hypothesis causes a corresponding improvement of academic performance since the experimental manipulation was designed only to achieve the former.

In operational terms, the second hypothesis predicts that the experimental group will perform significantly better than the control group on simple as well as on complex tasks. To test this hypothesis the mean performance of the two groups on the four simple and the four complex academic tasks were compared by a t test. Results contained in Table 14 show no support for the hypothesis. In fact, control subjects tended to perform better on simple tasks while on complex tasks there was no significant difference between the two groups ($p < .10$). When data were further analyzed for School 2 there were no significant differences between the two groups either on simple tasks ($t = .43$) or on complex tasks ($t = .78$).

Conclusion. There was no support for the hypothesis that subjects who have received success feedback on an ego-involving task will perform better than subjects who have not been so affected. The hypothesis was based on the expectation that the experimental manipulation would enhance self-esteem to the extent that it would efface anxiety effects and cause performance increments on simple as well as on complex tasks. This expectation was not fulfilled but, instead, there was possible

Table 14

Comparison of Experimental and Control Groups on Simple and Complex Tasks

	Experimental Group (N = 65)		Control Group (N = 65)		
	Mean	SD	Mean	SD	t
Simple Tasks	26.03	5.82	27.76	6.17	-1.65
Complex Tasks	5.8	3.04	5.06	3.47	1.28 (NS)

support for the Hull-Spence position that high anxious subjects (control subjects in the present context) perform better than low anxious subjects on simple tasks.

Decrease in Anxiety Level

As a logical concomitant of the first two hypotheses, the third hypothesis predicts that anxiety will be significantly more reduced in subjects who are made to experience success on an ego-involving task than in subjects who have not been so affected. In collecting data on anxiety during the experiment, four different anxiety scales were used: two scales (Anxiety II and IV) tapping general anxiety and the other two (Anxiety I and III) tapping test anxiety. Product-moment intercorrelations among the four anxiety scales are shown in Table 15.

In testing the third hypothesis data were analyzed for only two anxiety scales: (1) Anxiety III: Taylor Manifest Anxiety Scale (MAS)

Table 15

Product-Moment Intercorrelations among Anxiety Scales

(N = 130)

Measure	1	2	3	4
1. Anxiety I (S-R I)	1.00	.35*	.69*	.37*
2. Anxiety II (AACL)		1.00	.45*	.52*
3. Anxiety III (TAS)			1.00	.43*
4. Anxiety IV (MAS)				1.00

*$p < .01$

and (2) Anxiety IV: Sarason Test Anxiety Scale (TAS). Raw scores on the two anxiety scales not used in the analysis were very similar to scores on the two scales used and the limited resources available for the present study precluded the duplication of any analyses that would yield no new information. Moreover, the MAS and the TAS are the better known scales in the literature and are therefore the more appropriate for interstudy comparisons. So as to test whether anxiety was more significantly reduced in the experimental group and at the same time bring out inter-school differences, a two-way analysis of covariance was made with treatment and schools as main effects. Pretest anxiety scores were used as covariate (X) and posttest scores as criterion (Y), thereby comparing post-experimental anxiety differences with initial anxiety held constant.

Results of the analysis of covariance contained in Tables 16 and 17 show that general anxiety was significantly more reduced in the experimental group. However, similar analysis for test anxiety shown in Tables

Table 16

Experimental and Control Group Means on Posttest General Anxiety Scores with Pretest General Anxiety Held Constant

	Experimental Group				Control Group			
School	n	X-Means	Y-Means	Adjusted Y-Means	n	X-Means	Y-Means	Adjusted Y-Means
1	35	7.39	6.79	6.65	35	7.91	8.05	7.48
2	24	7.83	6.24	5.74	24	6.37	6.24	6.97
3	6	5.99	3.49	4.53	6	4.49	3.99	6.29

Table 17

Analysis of Covariance for Posttest General Anxiety Differences with Pretest Scores Held Constant

Source of Variation	D.F.	Sums of Squares	Mean Square	F
Schools	2	2.74	1.37	2.84 (NS)
Treatment	1	2.42	2.42	5.02*
Interaction	2	.22	.11	.22 (NS)
Within	123	59.52	.48	

*$p < .05$

18 and 19 show no significant differences between experimental and control groups on this variable. It must be concluded, therefore, that the hypothesis was confirmed for general anxiety, which was significantly more reduced in the experimental group by making subjects experience success on ego-involving tasks. It lacks support, however, for test anxiety on which the two groups showed no significant differences despite the experimental manipulation.

The Combined Predictive Power of Self-Esteem and Anxiety

The fourth hypothesis of the present study postulates that self-esteem and anxiety will together predict academic performance more effectively than will self-esteem alone. In testing the hypothesis, Self-Esteem I, Self-Esteem II, Anxiety III (TAS) and Anxiety IV (MAS) were used in combinations as predictor variables while GPA, Simple Tasks and Complex Tasks were used independently as indices of academic performance

Table 18

Experimental and Control Group Means on Posttest Test Anxiety Scores with Pretest Test Anxiety Held Constant

School	Experimental Group n	X-Means	Y-Means	Adjusted Y-Means	Control Group n	X-Means	Y-Means	Adjusted Y-Means
1	35	7.82	7.19	6.93	35	8.48	7.37	6.54
2	24	7.33	6.33	6.49	24	6.33	6.33	7.35
3	6	6.49	5.83	6.71	6	6.66	5.66	6.40

Table 19

Analysis of Covariance for Posttest Test Anxiety Differences with Pretest Scores Held Constant

Source of Variation	D.F.	Sums of Squares	Mean Square	F
Schools	2	.13	.06	.22 (NS)
Treatment	1	.00	.00	.01 (NS)
Interaction	2	.49	.24	.80 (NS)
Within	123	37.57	.30	

--the criteria being predicted. As GPA could not be logically summed across schools due to lack of comparability of grading systems, this hypothesis was tested separately in each of School 1 and 2.

The hypothesis was tested using stepwise multiple regression analysis. There were only two steps in the present analysis since there

were only two predictor variables in any one calculation. The results of the F test on entering the second predictor variable into the multiple regression equation thus determines whether the hypothesis is confirmed or not. This analysis showed no support for the third hypothesis ($F = .68$). Self-esteem and anxiety together did not predict academic performance more highly than self-esteem alone. Zero-order correlation matrices relevant to testing this hypothesis in School 1 and 2 are presented in Tables 20 and 21 respectively. Since in no case did entering the second variable significantly improve the predictive power of the first, it was considered unnecessary to give details of the stepwise multiple regression analyses. The same results could be derived directly from the correlation matrices presented in Tables 20 and 21.

Table 20

School 1: Correlation Matrix Relevant to Testing Hypotheses 4 and 5

(N = 70)

		1	2	3	4	5	6	7
1	Self-Esteem I		.347**	-.323**	-.315**	.256*	.156	.047
2	Self-Esteem II			-.080	-.343**	.199	-.094	-.011
3	Anxiety III (TAS)				.534**	-.139	.007	.061
4	Anxiety IV (MAS)					-.214	-.024	.123
5	GPA						.199	.162
6	Simple Tasks							.181
7	Complex Tasks							

*$p < .05$ **$p < .01$

Table 21

School 2: Correlation Matrix Relevant to Testing Hypotheses 4 and 5

(N = 48)

		1	2	3	4	5	6	7
1	Self-Esteem I		.477**	-.511**	-.370**	.486**	-.164	.070
2	Self-Esteem II			-.224	-.347*	.069	-.043	.022
3	Anxiety III (TAS)				.427**	-.327*	-.019	-.286*
4	Anxiety IV (MAS)					-.297*	.100	-.029
5	GPA						.152	.193
6	Simple Tasks							-.044
7	Complex Tasks							

*p .05 **p .01

In summary, stepwise multiple regression analyses for the various combinations of self-esteem and anxiety as predictors of academic performance were all nonsignificant. The predictive power of self-esteem with respect to academic performance--as measured by either GPA or experimental tasks--was not improved by the addition of anxiety indices.

The Combined Predictive Power of General and Test Anxiety

The fifth hypothesis, that general anxiety and test anxiety are together more highly predictive of academic performance than is test anxiety alone was tested, again using stepwise multiple regression analysis. Correlation matrices relevant to testing this hypothesis are presented in Tables 20 and 21. Stepwise multiple regression analyses

showed no support for the hypothesis in either School 1 or 2 ($\underline{F}$ = .74). This result is evident in the two correlation matrices presented above. The addition of general anxiety scores to those of test anxiety does not improve the latter's power to predict academic performance as measured either by GPA or the experimental tasks. In fact, both types of anxiety seem to be poor predictors of academic performance as measured by these experimental tasks. In short, there was no support for the fifth hypothesis of the present study.

Summary of Conclusions

Within the context of the present experiment, the following conclusions can be made on the basis of the above findings.

1. On the whole, receiving success feedback on ego-involving tasks does not improve the self-esteem of all types of subjects. Such improvement only occurs where there are no excessive external pressures and when enough time is allowed for the treatment effects to emerge.

2. Receiving success feedback on ego-involving tasks does not improve actual performance on these tasks even when such feedback is successful in enhancing self-esteem. Improvement in self-esteem does not automatically generalize to academic performance.

3. General anxiety and not test anxiety is reduced by giving success feedback when subjects perform ego-involving tasks.

4. Self-esteem and anxiety level taken together do not predict academic performance better than self-esteem taken alone.

5. General anxiety and test anxiety taken together do not predict academic performance better than test anxiety taken alone.

CHAPTER IV

DISCUSSION

In discussing the findings and conclusions of the present study, the following steps are followed. First, a conceptual model based on the previous review of the literature is outlined, and the problems tackled by the study are presented as directly derived from the model and as constituting, essentially, an attempt to validate it. Then, the methods employed in studying these problems and the peculiarities and limitations of the experiment are discussed as background against which the results are best understood. Finally, after attempting an interpretation of the results and of their significance within the context of previous findings in this area, suggestions are made for further research.

Conceptual Model of the Study

The conceptual model of the present study is one in which the phenomenal self concept is represented as a personality factor or intervening variable of the first order which plays a central role--beyond and above that of innate ability--in determining academic performance (see Figure 1). A large number of other personality correlates of academic performance proferred by the literature are conceived in this model as second order intervening variables since, in one sense, they can be subsumed within self-concept, and in another, they can be conceived as engendered by it. Anxiety is considered the most important of

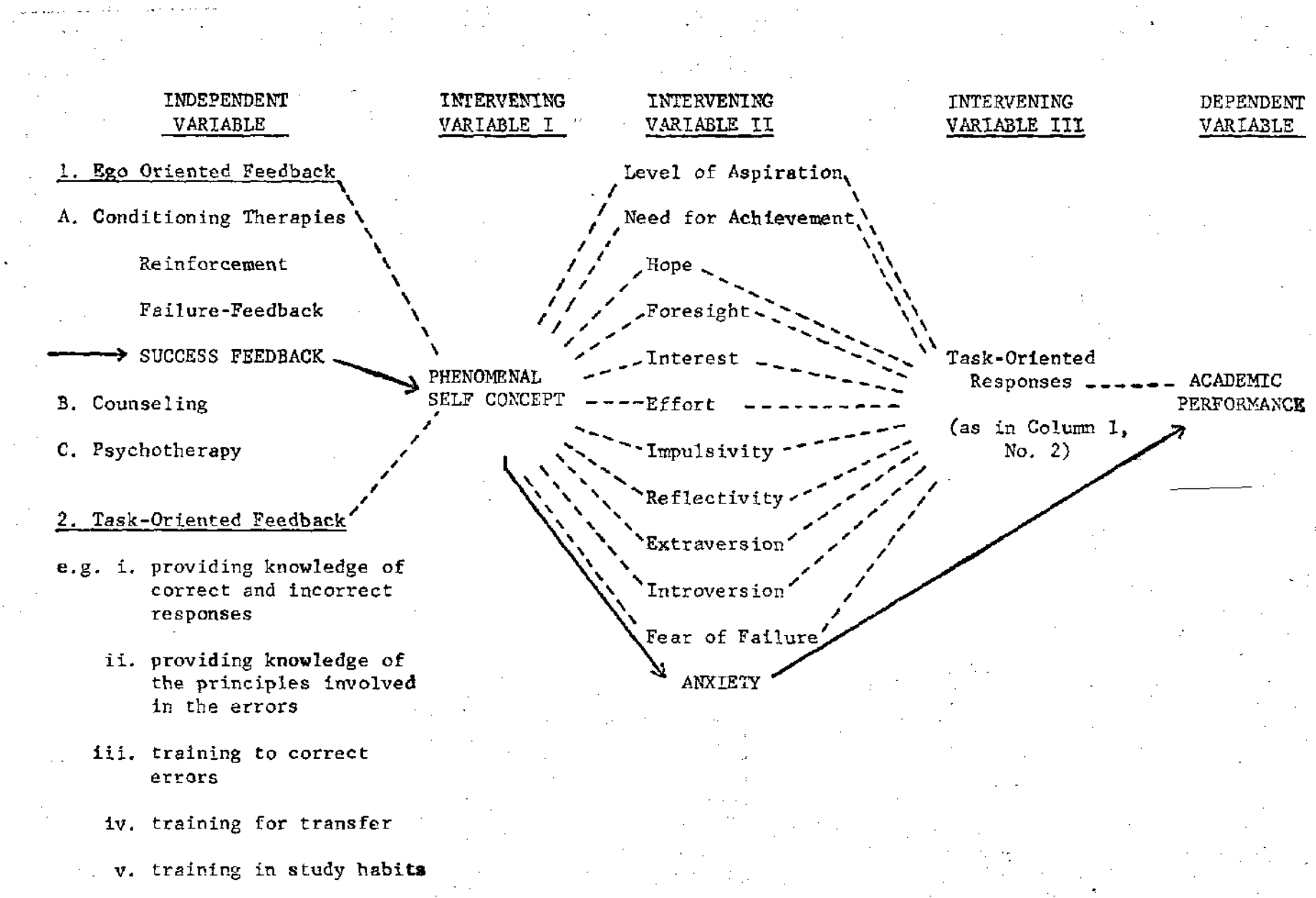


Fig. 1. Conceptual Model of the Study

these second order personality variables.

In cases of unsatisfactory academic functioning which cannot be attributed to lack of innate ability or to organic defect, several types of interventions or "treatments" have been suggested in the literature as means of raising self-concept and thereby academic performance. These treatments are considered in this model as independent variables of two general types (Figure 1). First, there are the Ego-Oriented Procedures which are designed to boost the ego and are directed towards raising self conception and thereby academic performance. Then there are the Task-Oriented Procedures which consist essentially of academic training of a remedial nature designed to improve performance directly. Since it is unlikely that academic performance will be improved unless subjects make the task-oriented responses, then even when their self-esteem is enhanced through success feedback or any other method, they must still make these task-oriented responses (now self-initiated) in order to improve their academic performance. In this case, the task-oriented responses fit into the model as third-order intervening variables, i.e., as self-training mediating the effects of treatment plus enhanced self-concept on academic performance (Figure 1).

The basic problem here is that of validating the model. The questions raised by this task are (1) Can self-esteem be improved by conscious intervention, and if so, is anxiety level automatically lowered and academic performance improved through such self-esteem improvement? (2) How much overlap exists between the most important second order and first order variables in this model? That is, is the prediction of academic performance improved by a combination of self-esteem and anxiety?

The present study was designed to attempt answers to these questions and it is at them that the five hypotheses of the study were directly aimed.

A further problem posed by this conceptual model concerns the best location of the task-oriented processes. This is an issue of whether such processes should be designated as intervening variables of the third order, mediating the self-concept and academic performance, or as task-oriented feedback, an independent variable, which must be given to subjects in the same way as the ego-oriented feedback. In practical terms, the question is whether it is more effective in improving academic performance to give task-oriented feedback or to expect the subjects to make such responses themselves once their self-esteem is improved by the success manipulation. It would be desirable if subjects could make such responses by themselves since they would then be intrinsically motivated and might sustain their efforts longer. The risk being run when subjects are expected to make these task-oriented responses by themselves is that such responses may not lie within their repertoire, in which case, the response will never be made even when self-esteem is enhanced. Thus, even with an enhanced self-esteem, subjects may not know what mistakes they have made, the principles involved in these mistakes, the best methods of correcting them and so on. The question therefore is whether self-esteem can improve academic performance by making subjects generate these task-oriented responses on their own or whether such improvement should be ensured by directly teaching subjects to make such responses. The present study offered only partial answers to this problem.

The third problem posed by this model concerns the time required for treatment effects to emerge even when the experimental manipulation

is effective. Obviously, an immediate or sudden increase in self-esteem or academic performance is hardly probable nor even desirable since sudden increments are characteristic of unsteady processes which are also subject to sudden decrements. The critical question therefore, concerns the minimal time required for treatment effects to emerge and be manifested in enhanced self referrents and improved academic performance. The present study also offered only partial answers to this question.

Peculiarities and Limitations of the Study

Giving success feedback while subjects perform ego-involving tasks was chosen in this study as a method of enhancing academic self-esteem and thereby lowering anxiety and improving academic performance. Where the present study fits into the model is shown in Figure 1 by an arrow and a solid line linking the particular independent variable used to the intervening variables and the dependent variable. First-year student nurses were chosen as subjects because they could readily be made ego-involved in nursing tasks and, as they were new to the field, the contents of the tasks were relatively new. Novelty, combined with the complexity of the pretest-task-posttest procedure, was designed to prevent subjects from having subjective certainty about the quality of their performance, leaving open the possibility of manipulating reported results. Evidence that the success manipulation was effective is provided by the significantly greater perception of success among subjects in the experimental group.

One peculiarity of the present study is that subjects were generally older (mean age: 18.12 years) than subjects in previous studies

of self concept and academic performance. These mainly used elementary or junior high school children. O'Hara and Tiedeman[1] have shown that by late adolescence self-concepts become more realistic. They are therefore probably more stable, and self-esteem requires more time and stronger stimulus to change, especially since the striving for self-consistency and identity goes on at the same time. A possible limitation of the experiment might be the brief time involved: one week in School 1 and 3 and three weeks in School 2. One week might be too short for treatment effects to emerge. Another possible limitation might be the excessive pressure of school examinations in School 1, a concern revealed in subjects' test anxiety scores and in the post-experimental inquiry. External stress of this nature along with the negative affect thus generated might have combined to blight the effects of the experimental manipulation in that school. It should be noted, however, that the existence of external stress need not necessarily be regarded as a limitation since it could be viewed as an added parameter along which to examine treatment effects. In any case, it is against the background of the above peculiarities and limitations that the findings and conclusions of the present study should be viewed.

Interpretations of the Findings

Many reasons could be advanced for the lack of support of the first hypothesis, that receiving success feedback while performing ego-involving tasks would enhance self-esteem. Perhaps the most appealing

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[1]R. P. O'Hara and D. V. Tiedeman, Vocational self concepts in adolescence. Journal of Counseling Psychology, 1959, 6, 292-301.

might be the general psychoanalytic criticism of behavior therapy as being too superficial a procedure to deal successfully with deep-seated personality issues. A closer look would show, however, that this reason is insufficient to explain the results of the present experiment. Self-esteem was enhanced in School 2 which differed from School 1 (where such enhancement was not found) in (1) the absence of external stress and (2) the longer time available for treatment effects to emerge. These two conditions should therefore account for the success of the treatment in School 2. The question regarding which of these conditions is operative or more operative cannot be answered by this experiment since both conditions coexisted in that school and there are no means of separating their effects. On the whole, the results seem to be largely consistent with Brookover's finding[1] that 'expert' treatment was ineffective in raising self-esteem and academic performance, although the elements of his 'expert' treatment were rather fuzzy as compared with the treatment in the present experiment. The major significance of results of testing this unconfirmed hypothesis seems to lie in the specification of some additional conditions for self-esteem improvement: lack of excessive external pressure on subjects, more intensive or extensive treatment, and longer time for treatment effects to emerge.

In examining the lack of support for the second hypothesis, that academic performance will be improved by the experimental treatment, the following points should be borne in mind. First, subjects in the experimental group might have been prevented by excessive external

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[1] W. B. Brookover et al., Self concept of ability and school achievement II. U.S. Office of Education Cooperative Research Project No. 1636. East Lansing: Bureau of Educational Research Services, Michigan State University, 1965.

pressure from engaging in or completing the three processes of attitude change, i.e., compliance, identification and internalization. In this case, self-esteem enhancement would not have occurred at all as in School 1. Conversely, it might be that such enhancement, even when it occurs, does not constitute a sufficient condition for the improvement of academic performance either because there was little time or subjects were unable to generate the task-oriented responses necessary for academic performance increment. This seems to have been the case in School 2. In summary, although the second hypothesis was not confirmed, the findings suggest that self-esteem enhancement may not be a sufficient condition for the improvement of academic performance. The implication here is that, since subjects, however willing, may not be able to improve their academic performance unaided, it may be necessary to give task-oriented feedback along with ego-oriented, in the attempt to improve both self-esteem and academic performance. This also suggests that in the conceptual model set up for this experiment (Figure 1), task-oriented feedback should be made an independent variable instead of, or as well as, an intervening variable of the third order. Whichever procedure is used, however, it would seem necessary to continue such treatment for longer periods.

The results showing that general anxiety rather than test anxiety was lowered by the experimental manipulation might seen anomalous at first sight, especially since general anxiety is often considered a more stable personality factor than test anxiety. This finding seems less anomalous, however, if general anxiety is viewed not as static, but as fluctuating within certain boundaries, and as having been reduced in the present experiment within its usual fluctuating limits. That test

anxiety was not similarly reduced is explained, of course, by the threat of imminent school examinations--a threat which existed for all subjects although at different intensities. One other valid explanation of these results seems to be that the attitudinal statements contained in the Taylor Manifest Anxiety Scale are more open to change by the method used here than the physiological responses contained in the Sarason Test Anxiety Scale. It is reasonable to expect that a verbal treatment such as is involved in the experimental manipulation should affect verbal attitudes more than physiological responses. On the whole, it seems significant that the results have shown that anxiety, at least of one type, can be reduced by this type of experimental treatment. Such findings have not thrown much light, however, on the actual mechanics of such anxiety reduction. It is also difficult to determine whether it was the enhancement of self-esteem or the experimental treatment directly that caused the reduction in general anxiety. Only further investigation could throw some light on these questions.

The test of the fourth and fifth hypotheses of the present study has shown that the prediction of academic performance is not improved either by combining self-esteem and anxiety as predictors or by combining general anxiety and test anxiety also as predictors. Such findings are chiefly explainable in terms of the considerable overlap between these constructs not only as they are conceived, but also in the way they are measured. Self-esteem, for instance, correlates between -.3 and -.5 with anxiety. While these two constructs cannot, logically, be reduced to one, they overlap to the extent that their combined predictive power does not significantly exceed that of the best one among them. It is also noticeable (Tables 20 and 21) that Self-Esteem I correlates more highly with academic performance as measured by GPA than anxiety, even

though Self-Esteem II correlates less with GPA than the anxiety scales. If S-E I is a better measure than S-E II, this would justify placing self-esteem as a first order intervening variable in the conceptual model set up for the present experiment. But evidence on the relative validity of the two self-esteem measures is virtually lacking.

Moreover, the finding that the addition of general anxiety does not improve the power of test anxiety to predict academic performance as measured by GPA seems explainable in terms of the overlap between the two anxiety types as shown by an intercorrelation ranging from .4 to .5 (Tables 20 and 21). When the fourth and fifth hypotheses were tested using the specially devised simple and complex tasks as criteria of academic performance, it was found that not only were the hypotheses not supported, but both anxiety and self-esteem were also poor predictors of performance on these tasks. These results seem largely consistent with findings of the Sassenrath study[1] already mentioned in the first chapter. One possible explanation for the absence of any relationship between either self-esteem or anxiety and these tasks is that the tasks are unique since they contain much less of the sources of variance (e.g. teacher characteristics, differences in study time and conditions, past experience, and so on) that are present in GPA. It may be that it is only within the context of such sources of variance that self-esteem and anxiety become potent determiners of academic performance. Once such sources of variance are held constant, as was largely done by these tasks, then self-esteem and anxiety will have little or no effect on academic performance. However, these explanations are purely speculative and need further experimental proof.

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[1] J. M. Sassenrath et al., Verbal learning and anxiety. Psychological Reports, 1964, 15, 379-386.

On the whole, the major significance of the results of testing the fourth and fifth hypotheses is the demonstration that the addition of anxiety scores to those of self-esteem will not improve the prediction of GPA. Likewise, the addition of general anxiety to test anxiety will not improve the prediction of GPA. This does not mean that self-esteem and anxiety on the one hand, and general and test anxiety on the other, are reducible to one and the same construct. In fact, these constructs could still be used independently for clinical prediction and for academic counseling.

Suggestions for Further Research

Several areas requiring further investigation were revealed by the results of the present study. First, there is need, as with all studies, for a replication of the experiment to see if the present findings will be bolstered by additional evidence. Second, it will be necessary to vary experimentally the external stress to which subjects are exposed so as to see if such stress has the effect of blighting the experimental treatment as it seems to have done in the present study. This will improve the specification of those conditions under which self-esteem enhancement will occur. Furthermore, the length of the treatment needs to be experimentally varied so as to find the minimal time for which treatment should be continued in order to be effective. Finally, since task-oriented responses may not lie within the repertoire of the subjects, further experiments should be conducted to determine whether a combination of ego-oriented and task-oriented feedback will be more effective than ego-oriented feedback alone in enhancing self-esteem, reducing anxiety and improving academic performance.

CHAPTER V

SUMMARY

Several studies have demonstrated a correlational relationship between self concepts and academic performance. The present study was designed first to ascertain the existence of a theorized causal relationship by seeing if self-esteem could be improved by experimental manipulation and whether such enhancement, if it occurs, would generate a concomitant improvement in academic performance. Another intent was to examine the role of anxiety in the above process by seeing if self-esteem enhancement resulted in anxiety decrement. A further concern was with whether a combination of self-esteem and anxiety on the one hand, and of general and test anxiety on the other, would improve the prediction of academic performance.

Using the random blocks procedure, 130 first year student nurses from three nursing schools were divided into two groups matched for nursing aptitude. One group was then randomly assigned to the experimental condition and the other placed in the control condition. During three experimental sessions extending over one week in two schools and over three weeks in the third, subjects completed four nursing tasks, the first part of which was designated "simple" and the second, "complex." Subjects in the experimental condition were given ego-involving instructions before each task and a success feedback after each experimental session. Subjects in the control condition had neither the ego-involving

instructions nor the success feedback. So as to provide indices of change in self-esteem and anxiety, all subjects completed, pre- and post-experimentally, two measures of self-esteem and four measures of anxiety. The two groups were then compared for self-esteem improvement and for anxiety decrement by a two-way analysis of covariance with treatment and schools as main effects, using pretest scores as covariate and posttest scores as criterion. The groups were also compared on academic performance using scores on the nursing tasks as indices of such performance. Stepwise multiple regression analyses were made to determine whether the addition of anxiety to self-esteem and of general to test anxiety would improve the prediction of either GPA or performance on the nursing tasks.

Results showed that success-conditioning did not significantly improve self-esteem, except where there was little examination stress among subjects and where treatment was continued for long enough. Even where self-esteem was improved, there was no corresponding improvement in academic performance. It was speculated that to ensure the latter, in addition to an ego-oriented feedback, it might be necessary to give as well, a task-oriented feedback by which subjects are directly trained for improved academic performance. The experimental treatment, however, significantly lowered general anxiety, but not test anxiety, possibly due to concern about impending school examinations among subjects and to the composition of the measuring instruments. Neither the addition of anxiety to self-esteem, nor of general anxiety to test anxiety, improved the prediction of academic performance. This was believed to be due to considerable overlap between these constructs, in conception and measurement.

On the whole, it does not appear that the enhancement of self-esteem by itself is a sufficient condition for academic performance improvement. It does not appear, either, that anxiety plays a role independent of self-esteem, nor test anxiety a role independent of general anxiety, in the determination of academic performance. The present study indicates the need in future investigations to add task-oriented feedback to the experimental treatment and to systematically vary the degree of external stress and the length of treatment so as to be able to specify more precisely, the parameters for the improvement of self-esteem and academic performance.

REFERENCES

Adler, A. The neurotic constitution. New York: Dodd, Mead, 1926.

American Psychiatric Association. A psychiatric glossary. Washington, D.C.: American Psychiatric Association, 1957.

Backman, C. W., Secord, P. F., and Pierce, J. R. Resistance to change in self concept as a function of consensus among significant others. Sociometry, 1963, 26, 102-111.

Bendig, A. W. The development of a short form of the manifest anxiety scale. Journal of Consulting Psychology, 1956, 20, 384 on.

Berger, E. M. The relationship between expressed acceptance of self and expressed acceptance of others. Journal of Abnormal and Social Psychology, 1952, 47, 778-782.

Bledsor, J. C. and Garrison, K. C. The self concepts of elementary school children in relation to their academic achievement, intelligence, interests, and manifest anxiety. Cooperative Research Project No. 1008. Georgia: University of Georgia, Athens, 1962.

Bloom, B. S. (Ed.). Taxonomy of educational objectives: The classification of educational goals. Handbook I. Cognitive Domaine. New York and London: Longmans, Green and Co., 1956.

Bodwin, R. I. The relationship between immature self concept and certain educational disabilities. Dissertation Abstracts, 1959, 19, 1945-1946.

Borislow, B. Self-evaluation and academic achievement. Journal of Counseling Psychology, 1962, 9, 246-254.

Brookover, W. B., Patterson, A., and Thomas, S. Self concept of ability and school achievement. U.S. Office of Education, Cooperative Research Project No. 845. East Lansing: Bureau of Research and Publications, Michigan State University, 1962.

Brookover, W. B. et al. Self concept of ability and school achievement. Sociology of Education, 1964, 37, 271-281.

Brookover, W. B. et al. Self Concept of ability and school achievement II. U.S. Office of Education Cooperative Research Project No. 1636. East Lansing: Bureau of Educational Research Services, Michigan State University, 1965.

Campbell, D. T. and Stanley, J. C. Experimental and quasi-experimental designs for research. Chicago: Rand McNally, 1963.

Chambers, A. C. and Hopkins, K. D. Anxiety, physiologically and psychologically measured, and its consequence on mental test performance. U. S. Office of Education, Cooperative Research Project No. S.227. Los Angeles: University of Southern California, 1966.

Chodorkoff, B. Adjustment and the discrepancy between the perceived and ideal self. Journal of Clinical Psychology, 1954, 10, 266-268.

Clark, C. T. Changes in self concept as a function of dissonant role playing. Dissertation Abstracts, 1965, 25, 1771.

Combs, A. W. and Snygg, D. Individual behavior: A perceptual approach to behavior. New York: Harper and Brothers, 1959

Coopersmith, A. A method of determining types of self esteem. Journal of Abnormal and Social Psychology, 1959, 59, 87-94.

Crowne, D. P. and Stephens, M. W. Self acceptance and self-evaluative behavior. Psychological Bulletin, 1961, 58, 104-121.

Diggory, James C. Self-evaluation: concepts and studies. New York: John Wiley and Sons, Inc., 1966.

Dittes, J. E. Effect of changes in self-esteem upon impulsiveness and deliberation in making judgments. Journal of Abnormal and Social Psychology, 1959, 58, 348-356.

Dollard, J. and Miller, N. E. Personality and Psychotherapy. New York: McGraw-Hill, 1950.

Endler, N. S., Hunt, J. M. and Rosenstein, A. J. An S-R inventory of anxiousness. Psychological Monographs, 1962, 76, whole no. 536.

Gollob, H. F. and Dittes, J. E. Effects of manipulated self-esteem on persuasibility depending on threat and complexity of communication. Journal of Personality and Social Psychology, 1965, 2, 195-201.

Hamacheck, D. E. (Ed.). The self in growth, teaching and learning. New Jersey: Prentice-Hall, Inc., 1965.

Hamburger, M. Realism and consistency in early adolescent aspirations and expectations. Unpublished doctoral dissertation. Teachers College, Columbia University, 1958.

Hull, C. L. Principles of behavior. New York: Appleton-Century Crofts, 1943.

Jones, E. E., et al. Some determinants of reaction to being approved or disapproved as a person. Psychological Monographs, 1962, 76, 17.

Lavin, David E. The prediction of academic performance. New York: John Wiley and Sons, Inc., 1965

Lecky, P. Self-consistency: A theory of personality. New York: Island Press, 1945.

Lowe, C. M. The self concept: Fact or artifact? Psychological Bulletin, 1961, 58, 325,336.

Maehr, M. L., Mensing, J. and Nafzger, S. Concept of self and the reaction of others. Sociometry, 1962, 25, 353-357.

Mandler, G. and Sarason, S. B. A study of anxiety and learning. Journal of Abnormal and Social Psychology, 1952, 47, 166-173.

Miner, W. R. The measurement of self concept metadimensions: An exploratory study. Unpublished doctoral dissertation, Columbia University, 1966.

Montague, E. K. The role of anxiety in serial rote learning. Journal of Experimental Psychology, 1953, 43, 91-95.

Nemeroff, D. The relationship between self attitudes, academic achievement, socio-economic status and intelligence. Dissertation Abstracts, 1955, 15, 6395.

Nicholson, L. O. The relationship between self concept and reaching achievement. Dissertation Abstracts, 1955, 15, 6063.

O'Hara, R. P. and Tiedeman, D. V. Vocational self concept in adolescence. Journal of Counseling Psychology, 1959, 6, 292-301.

Payne, D. A. and Farquhar, W. W. The dimensions of an objective measure of academic self concept. Journal of Educational Psychology, 1962, 53, 187-192.

Raimy, V. C. The self concept as a factor in counseling and personality organization. Unpublished doctoral dissertation, Ohio State University, 1943.

Ramond, C. Anxiety and the task as determiners of verbal performance. Journal of Experimental Psychology, 1953, 46, 120-124.

Rogers, C. R. Client-centered therapy: Its current practice, implications and theory. Boston: Houghton Mifflin, 1951.

Rogers, C. R. and Dymond, R. F. (Eds.). Psychotherapy and personality change. Chicago: University of Chicago Press, 1954.

Sarason, I. G. Effects on verbal learning of anxiety, reassurance and meaningfulness of material. Journal of Experimental Psychology, 1958, 56, 472-477.

Sassenrath, J. M. Manifest anxiety and transfer of complex learning. Psychological Reports, 1963, 12, 913-914.

Sassenrath, J. M. Test anxiety, manifest anxiety and concept learning without awareness. Psychological Reports, 1963, 12, 71-78.

Sassenrath, J. M., Howard, K. R., and Athey K. Verbal learning and anxiety. Psychological Reports, 1964, 15, 379-386.

Seedor, M. M. Introduction to Asepsis: A programmed unit in fundamentals of nursing. New York: Bureau of Publications, Teachers College, Columbia University, 1963.

Smith, M. B. The phenomenological approach in personality theory: some critical remarks. Journal of Abnormal and Social Psychology, 1958, 45, 516-522.

Snygg, D. and Combs, A. W. Individual behavior: a new frame of reference for psychology. New York: Harper, 1949.

Spence, K. W. Behavior theory and conditioning. New Haven, Conn.: Yale University Press, 1956.

Spence, K. W., Taylor, J., and Ketchel, R. Anxiety (drive) level and degree of competition on paired associates of learning. Journal of Experimental Psychology, 1956, 52, 306-310.

Sullivan, H. S. Conceptions of modern psychiatry. Washington, D.C.: White Psychiatric Foundation, 1947.

Super, D. E. Toward making self concept theory operational. In D. E. Super et al., Career development: Self concept theory. Essays in vocational development. New York: College Entrance Examination Board, 1963. Pp. 17-32.

Super, D. E. Self concept and vocational development theories applied to college choice and planning. Paper read at Chicago Invitational Conference on Counselor Education, College Entrance Examination Board, Chicago, February 23-26, 1966.

Taylor, D. M. Changes in self concept without psychotherapy. Journal of Consulting Psychology, 1955, 19, 205-209.

Taylor, J. A. A personality scale of manifest anxiety. Journal of Abnormal and Social Psychology, 1953, 48, 285-290.

Taylor, C. and Combs, A. W. Self acceptance and adjustment. Journal of Consulting Psychology, 1952, 16, 89-91.

Underwood, B. J. Psychological research. New York: Appleton-Century-Crofts, 1957.

Vernon, P. E. Personality assessment: A critical survey. New York: John Wiley and Sons, 1964.

Wattenberg, W. W. and Clifford, C. Relationships of self concepts to beginning achievement in reading. Child Development, 1964, 35, 461-467.

Yerkes, R. M. and Dodson, J. D. The relation of strength of stimulus to rapidity of habit-formation. Journal of Comparative Neurology and Psychology, 1908, 18, 459-482.

Zimmer, H. Self acceptance and its relation to conflict. Journal of Consulting Psychology, 1954, 18, 447-449.

Zuckerman, M. The development of an affect adjective check list for the measurement of anxiety. Journal of Consulting Psychology, 1960, 24, 457-462.

Appendix A

STUDENT NURSE ACADEMIC SURVEY

Your Number . . . . . .

DO NOT OPEN UNTIL TOLD TO DO SO

STUDENT NURSE ACADEMIC SURVEY

This is a study of your feelings about yourself as a student. Of course, there is no correct answer for any statement because this is not a test. The best answer is what you feel is true of yourself. Your answers will be treated as confidential, so try to be very frank when responding to each statement.

Part I Part II Total

Student Nurse Academic Survey

Part I

Circle the letter in front of the statement which best answers each question.

1. How do you rate yourself in school ability compared with your close friends?
   a. I am the best
   b. I am above average
   c. I am average
   d. I am below average
   e. I am the poorest

2. How do you rate yourself in school ability compared with those in your class at school?
   a. I am among the best
   b. I am above average
   c. I am average
   d. I am below average
   e. I am among the poorest

3. Where do you think you would rank in your class during the final year in nursing school?
   a. among the best
   b. above average
   c. average
   d. below average
   e. among the poorest

4. Do you think you have the ability to complete a B.S. degree course in nursing?
   a. yes, definitely
   b. yes, probably
   c. not sure either way
   d. probably not
   e. no

5. Suppose you went to college to obtain a Master's degree in nursing, where do you think you would rank in your class in college?
   a. among the best
   b. above average
   c. average
   d. below average
   e. among the poorest

6. In order to obtain a doctorate degree in nursing, work beyond four years of college is necessary. How likely do you think it is that you could complete such advanced work?
   a. very likely
   b. somewhat likely
   c. not sure either way
   d. unlikely
   e. most unlikely

7. Forget for a moment how others grade your work. In your own opinion how good do you think your work is?
   a. my work is excellent
   b. my work is good
   c. my work is average
   d. my work is below average
   e. my work is much below average

8. What kind of grades do you think you are capable of getting?
   a. mostly A's
   b. mostly B's
   c. mostly C's
   d. mostly D's
   e. mostly E's

Student Nurse Academic Survey

Part II

Following is a list of words and phrases which may be used to describe students. You are to rate yourself on each word as you see yourself as a student, especially, as you see yourself in situations closely connected with your academic work.

Be sure to describe yourself as you feel you are as a student. Read each word carefully, then decide which of the following ratings you would choose to describe yourself.

Rating Alternative	Meaning
Never	This word would never describe me.
Sometimes	This word sometimes describes me.
Usually	This word usually describes me.
Always	This word always describes me.

After you decide which alternative best describes you, circle the letter in front of that alternative.

Do not skip any words. Work as rapidly as you can and do not spend too much time on any one word.

Remember, your answers will be treated as confidential so try to be very frank when rating these words.

Remember to read each statement carefully before answering.

As a student, I feel that I am

9.	a person who postpones	a. Never	b. Sometimes	c. Usually	d. Always
10.	impatient	a. Never	b. Sometimes	c. Usually	d. Always
11.	discontented	a. Always	b. Usually	c. Sometimes	d. Never
12.	a procrastinator	a. Never	b. Sometimes	c. Usually	d. Always
13.	friendly	a. Always	b. Usually	c. Sometimes	d. Never

As a student, I feel that I am

14.	flighty	a. Always	b. Usually	c. Sometimes	d. Never
15.	distractable	a. Never	b. Sometimes	c. Usually	d. Always
16.	stubborn	a. Always	b. Usually	c. Sometimes	d. Never
17.	nervous	a. Never	b. Sometimes	c. Usually	d. Always
18.	reasonable	a. Never	b. Sometimes	c. Usually	d. Always

As a student, I feel that I am

19.	reliable	a. Always	b. Usually	c. Sometimes	d. Never
20.	responsible	a. Never	b. Sometimes	c. Usually	d. Always
21.	orderly	a. Never	b. Sometimes	c. Usually	d. Always
22.	alert	a. Always	b. Usually	c. Sometimes	d. Never
23.	teachable	a. Never	b. Sometimes	c. Usually	d. Always

As a student, I feel that I am

24.	efficient	a. Never	b. Sometimes	c. Usually	d. Always
25.	intelligent	a. Always	b. Usually	c. Sometimes	d. Never
26.	smart	a. Always	b. Usually	c. Sometimes	d. Never
27.	above average	a. Never	b. Sometimes	c. Usually	d. Always
28.	productive	a. Always	b. Usually	c. Sometimes	d. Never

As a student, I feel that I am

29.	intellectual	a. Never	b. Sometimes	c. Usually	d. Always
30.	exacting	a. Never	b. Sometimes	c. Usually	d. Always
31.	perfectionistic	a. Always	b. Usually	c. Sometimes	d. Never
32.	talented	a. Always	b. Usually	c. Sometimes	d. Never
33.	different	a. Never	b. Sometimes	c. Usually	d. Always

As a student, I feel that I am

34. daring	a. Always	b. Usually	c. Sometimes	d. Never
35. carefree	a. Always	b. Usually	c. Sometimes	d. Never
36. easily distracted	a. Never	b. Sometimes	c. Usually	d. Always
37. practical	a. Never	b. Sometimes	c. Usually	d. Always
38. concerned	a. Always	b. Usually	c. Sometimes	d. Never

As a student, I feel that I am

39. accepting	a. Never	b. Sometimes	c. Usually	d. Always
40. thorough	a. Never	b. Sometimes	c. Usually	d. Always
41. purposeful	a. Always	b. Usually	c. Sometimes	d. Never
42. an achiever	a. Never	b. Sometimes	c. Usually	d. Always
43. a planner	a. Always	b. Usually	c. Sometimes	d. Never

As a student, I feel that I am

44. competitive	a. Never	b. Sometimes	c. Usually	d. Always
45. competent	a. Always	b. Usually	c. Sometimes	d. Never
46. systematic	a. Always	b. Usually	c. Sometimes	d. Never
47. persuadeable	a. Never	b. Sometimes	c. Usually	d. Always
48. average	a. Always	b. Usually	c. Sometimes	d. Never

As a student, I feel that I am

49. contented	a. Always	b. Usually	c. Sometimes	d. Never
50. logical	a. Never	b. Sometimes	c. Usually	d. Always
51. consistent	a. Never	b. Sometimes	c. Usually	d. Always
52. studious	a. Always	b. Usually	c. Sometimes	d. Never
53. serious	a. Never	b. Sometimes	c. Usually	d. Always

As a student, I feel that I am

54. a thinker	a. Always	b. Usually	c. Sometimes	d. Never
55. successful	a. Never	b. Sometimes	c. Usually	d. Always

Appendix B

STUDENT NURSE BIOGRAPHICAL INVENTORY

Your Number . . . . . .

DO NOT OPEN UNTIL TOLD TO DO SO

STUDENT NURSE BIOGRAPHICAL INVENTORY

We are interested in knowing, first, how students feel while taking important examinations, and second, how they generally feel. The value of this survey will depend largely on how frank you are in stating your opinions, feelings and attitudes. Read each statement carefully and make your immediate response. Your responses to this survey will be held as strictly confidential.

Please do not leave any question unanswered.

Part I Part II Part III Part IV Total

PART I

"You are Taking an Important Examination"

Circle one of the five alternative degrees of reactions or attitude for each of the following fourteen items.

1. Heart beats faster — 1 2 3 4 5 (Not at all — Much faster)
2. Get an "uneasy feeling" — 1 2 3 4 5 (None — Very strongly)
3. Emotions disturb action — 1 2 3 4 5 (Not at all — Very disturbed)

4. Feel excited and thrilled	1 Very much	2	3	4	5 Not at all
5. Want to avoid situation	1 Not at all	2	3	4	5 Very much
6. Perspire	1 Not at all	2	3	4	5 Perspire much
7. Need to urinate frequently	1 Not at all	2	3	4	5 Very frequently
8. Enjoy the challenge	1 Enjoy much	2	3	4	5 Not at all
9. Mouth gets dry	1 Not at all	2	3	4	5 Very dry
10. Become unable to move	1 Not at all	2	3	4	5 Completely
11. Get full feeling in stomach	1 None	2	3	4	5 Very full
12. Seek experiences like this	1 Very much	2	3	4	5 Not at all
13. Have loose bowels	1 None	2	3	4	5 Very much
14. Experience nausea	1 Not at all	2	3	4	5 Much nausea

PART II

Below you will find words which describe different kinds of feelings. Please circle "T" for the words that describe how you feel towards general experiences in life not just on examinations alone. Circle "F" for the words that do not describe your general feelings. Some of the words sound alike, but we want your response to all the words indicating whether they do or do not describe you in general.

Remember: Circle "T" if the word is true or usually true as applied to you.
Circle "F" if the word is false or usually false as applied to you.

"Describe how you generally feel."

	True	False		True	False
15. afraid	T	F	46. lonely	T	F
16. agitated	T	F	47. loving	T	F
17. angry	T	F	48. mad	T	F
18. bitter	T	F	49. mean	T	F
19. calm	T	F	50. merry	T	F
20. charming	T	F	51. miserable	T	F
21. cheerful	T	F	52. nervous	T	F
22. complaining	T	F	53. overconcerned	T	F
23. contented	T	F	54. overwhelmed	T	F
24. contrary	T	F	55. panicky	T	F
25. cool	T	F	56. peaceful	T	F
26. cross	T	F	57. pleasant	T	F
27. desperate	T	F	58. rattled	T	F
28. easy-going	T	F	59. sad	T	F
29. fearful	T	F	60. secure	T	F
30. fearless	T	F	61. sentimental	T	F
31. fretful	T	F	62. serious	T	F
32. friendly	T	F	63. shaky	T	F
33. frightened	T	F	64. solemn	T	F
34. furious	T	F	65. steady	T	F
35. gay	T	F	66. tender	T	F
36. gloomy	T	F	67. tense	T	F
37. grim	T	F	68. terrified	T	F
38. happy	T	F	69. threatened	T	F
39. helpless	T	F	70. thoughtful	T	F
40. hopeless	T	F	71. unconcerned	T	F
41. insecure	T	F	72. uneasy	T	F
42. jealous	T	F	73. upset	T	F
43. joyful	T	F	74. warm	T	F
44. kindly	T	F	75. worrying	T	F
45. light-hearted	T	F			

PART III

Continue to answer the statements in Part III by giving your first reaction. Circle "T" for true and "F" for false as you did in Part II

	True	False
76. While taking an important examination, I perspire a great deal.	T	F
77. I get to feel very panicky when I have to take a surprise exam.	T	F
78. During tests, I find myself thinking of the consequences of failing.	T	F
79. After important tests, I am frequently so tense that my stomach gets upset.	T	F

	True	False
80. While taking an important exam, I find myself thinking of how much brighter the other students are than I am.	T	F
81. I freeze up on things like intelligence tests and final exams.	T	F
82. If I were to take an intelligence test, I would worry a great deal before taking it.	T	F
83. During course examinations, I find myself thinking of things unrelated to the actual course material.	T	F
84. During a course examination, I frequently get so nervous, that I forget facts I really know.	T	F
85. If I knew I was going to take an intelligence test, I would feel confident and relaxed before hand.	T	F
86. I usually get depressed after taking a test.	T	F
87. I have an uneasy, upset feeling before taking a final examination.	T	F
88. When taking a test, my emotional feelings do not interfere with my performance.	T	F
89. Getting a good grade on one test doesn't seem to increase my confidence on the second.	T	F
90. After taking a test, I always feel I could have done better than I actually did.	T	F
91. I sometimes feel my heart beating very fast during important tests.	T	F

PART IV

The following questions are concerned with your feelings toward general experiences in life, not just on examinations. Circle "T" for "true" and "F" for "false" as before.

92. I believe I am no more nervous than most others.	T	F
93. I work under a great deal of tension.	T	F
94. I cannot keep my mind on one thing.	T	F
95. I am more sensitive than most other people.	T	F

	True	False
96. I frequently find myself worrying about something.	T	F
97. I am usually calm and not easily upset.	T	F
98. I feel anxiety about something or someone almost all of the time.	T	F
99. I am happy most of the time.	T	F
100. I have periods of such great restlessness that I cannot sit long in a chair.	T	F
101. I have sometimes felt that difficulties were piling up so high that I could not overcome them.	T	F
102. I certainly feel useless at times.	T	F
103. I find it hard to keep my mind on a task or job.	T	F
104. I am not unusually self-conscious.	T	F
105. I am inclined to take things hard.	T	F
106. I am a high-strung person.	T	F
107. Life is a strain for me much of the time.	T	F
108. At times I think I am no good at all.	T	F
109. I am certainly lacking in self-confidence.	T	F
110. I sometimes feel that I am about to go to pieces.	T	F
111. I shrink from facing a crisis or difficulty.	T	F

Appendix C

TEST ATTITUDE SURVEY

Your Number . . . . . .

DO NOT OPEN UNTIL TOLD TO DO SO

TEST ATTITUDE SURVEY

We would like to know your reactions to both parts of the five nursing tests which you have taken during this study. The questions in this booklet refer to these nursing tests.

Open the booklet and go ahead

Part I Part II Total

Test Attitude Survey - Part I

Answer the following questions by circling which alternative best describes how you feel about all or most of the nursing tests you have taken during this study.

1. What is your feeling about the importance to your work of the tests you have taken? The tests are
   a. extremely important
   b. very important
   c. of some importance
   d. of little importance

2. How disappointed will you be if you are unsuccessful on these tests? I will be
   a. extremely disappointed
   b. very disappointed
   c. just a little disappointed
   d. neither disappointed nor delighted

3. How hard did you really try to do well on these tests? I
   a. tried extremely hard
   b. tried very hard
   c. tried hard
   d. just took it easy

4. "I believe that my performance on these tests can give an indication of how successful I will be in my job as a nurse."
   a. strongly disagree
   b. disagree
   c. agree
   d. strongly agree

5. How delighted will you be if you are successful on these tests? I will be
   a. extremely delighted
   b. very delighted
   c. moderately delighted
   d. just a little delighted

Test Attitude Survey - Part II

1. How successful do you think you have been on the tests you have taken?
   a. extremely successful
   b. successful
   c. neither successful nor unsuccessful
   d. unsuccessful
   e. extremely unsuccessful

2. How would you rate your performance on the tests you have taken?
   a. very much above average
   b. above average
   c. average
   d. below average
   e. very much below average

3. How pleased have you been with your performance on these tests?
   a. extremely pleased
   b. pleased
   c. neither pleased nor displeased
   d. displeased
   e. extremely displeased

4. As compared with your expectations, how would you rate your performance on these tests?
   a. very much higher than I expected
   b. higher than I expected
   c. just about as high as I expected
   d. lower than I expected
   e. much lower than I expected.

Appendix D

NURSING TASKS: PART I

Task I - Part I

In Column I are the names of certain drugs and directly opposite each drug, in Column II, is the effect of that drug--explained further in parenthesis. Learn by heart, all these 10 drugs and their effects. You have 60 seconds.

Column I (Drugs)	Column II (Effects)
1. Ipecac	expectorant (increases or modifies the secretion of mucus)
2. Petrolatum	emollient (soothes irritated skin)
3. Bornate	pediculicide (kills lice)
4. Resorcinol	keratolytic (softens scales on skin)
5. Theobromine	diuretic (removes excess fluid)
6. Reserpine	ataractic (tranquilizer)
7. Priscoline	adrenolytic (dilates walls of small blood vessels)
8. Epinephrine	vasoconstrictor (contracts blood vessels)
9. Coumarin	anticoagulant (prevents blood clotting)
10. Strychnine	stimulant (stimulates the nervous system)

Test 1 - Part I

In Column I are the names of ten drugs and completely mixed up in Column II are the effects of these drugs. Select from Column II the appropriate effect of the drug in Column I and print the corresponding capital letter in the space provided before each drug. You have 2 minutes.

Column I (Drugs)	Column II (Effects)
1. Ipecac.....	A. diuretic (removes excess fluid)
2. Petrolatum...	B. adrenolytic (dilates walls of small blood vessels)
3. Bornate.....	C. emollient (soothes irritated skin)
4. Resorcinol...	D. ataractic (tranquilizer)
5. Theobromine..	E. carthartic (fights constipation)
6. Reserpine....	F. analgesic (reduces pain)
7. Priscoline...	G. Keratolytic (softens scales on skin)
8. Epinephrine..	H. vasoconstrictor (contracts blood vessels)

9. Coumarin
10. Strychnine

I. soporific (induces sleep)
J. pediculicide (kills lice)
K. stimulant (stimulates the nervous system)
L. expectorant (increases or modifies the secretion of mucus)
M. anticoagulant (prevents blood clotting)

Task II - Part I

In Column I are the names of ten clinical tests and directly opposite each test, in Column II, is the disease or condition which that test is used to diagnose. Learn by heart all the ten tests and the disease or condition with which they are connected. You have 60 seconds.

Column I (Test)	Column II (Disease or Condition)
1. Dick	Scarlet Fever
2. Kline	Syphilis
3. Widal	Typhoid
4. Mantoux	Tuberculosis
5. Weil-Felix	Ricketts
6. Schilling	Anemia
7. Aschheim-Zondek	Pregnancy
8. Van den Bergh	Liver Disease
9. Schick	Diptheria
10. Papanicolaou	Cancer

Test 2 - Part 1

In Column 1 are the names of ten clinical tests and completely mixed up in Column II are the diseases or conditions these tests are used to diagnose. Select from Column II the appropriate disease or condition and print the corresponding capital letter in the space provided before each test. You have 2 minutes.

Column 1 (Test)	Column II (Disease or Condition)
1. Dick.....	A. Typhoid
2. Kline.....	B. Diptheria
3. Widal.....	C. Pregnancy
4. Mantoux.....	D. Tuberculosis
5. Weil-Felix.....	E. Malaria
6. Schilling.....	F. Anemia
7. Aschheim-Zondek.	G. Syphilis
8. Van den Bergh...	H. Diabetes
9. Schick.....	I. Hepatitis
10. Papanicolaou....	J. Liver Disease
	K. Scarlet Fever
	L. Ricketts
	M. Cancer

Task 3 - Part 1

In Column I are the names of certain diseases and directly opposite each disease, in Column II is the drug used in the treatment of that disease. Learn by heart all the ten diseases and the drugs used in their treatment. You have 60 seconds.

Column I (Disease)	Column II (Drugs)
1. Malaria	Aralen
2. Ringworm	Iodine
3. Asthma	Epinephrine
4. Peptic Ulcer	Gelusil
5. Tuberculosis	Isoniazid
6. Cirrhosis	Prednisone
7. Diabetes Mellitus	Tolbutamide
8. Myocardial Infraction	Dicumarol
9. Scabies	Benzyl Benzoate
10. Hyperthyroidism	Propylthiouracil

Test 3 - Part 1

In Column I are the names of ten diseases, and completely mixed up in Column II are the drugs used in their treatment. Select from Column II the appropriate drug for the disease in Column I and print the corresponding capital letter in the space provided before each disease. You have 2 minutes.

Column I (Disease)	Column II (Drugs)
1. Malaria.....	A. Dicumarol
2. Ringworm.....	B. Prednisone
3. Asthma.....	C. Gelusil
4. Peptic Ulcer.....	D. Probanthine
5. Tuberculosis.....	E. Aralen
6. Cirrhosis.....	F. Bynzyl Benzoate
7. Diabetes Mellitus..	G. Epinephrine
8. Myocardinal Infraction	H. Propylthiouracil
9. Scabies.....	I. Hyoscyamine
10. Hyperthyroidism....	J. Isoniazid
	K. Hexylresorcinol
	L. Iodine
	M. Tolbutamide

Task 4 - Part I

In Column I are the names of 10 poisons and directly opposite each poison, in Column II, is an antidote to that poison. Learn by heart all the ten poisons and their antidotes. You have 60 seconds.

Column I (Poisons)	Column II (Antidotes)
1. Strychnine	Tannic Acid
2. Phenobarbital	Picrotoxin
3. Arsenic	Dimercaprol
4. Mercury	Milk and egg albumin
5. Nicontine	Potassium permanganate
6. Lead acetate	Magnesium sulphate
7. Cyanide	Amyl nitrite
8. Fluoride	Gluconate
9. Creosote	Parenteral fluids
10. Carbon tetrachloride	Oxygen

Test 4 - Part I

In Column I are the names of ten poisons, and completely mixed up in Column II are the antidotes to these poisons. Select from Column II the appropriate antidote to the poison in Column I and print the corresponding capital letter in the space provided before each poison. You have 2 minutes.

Column 1 (Poison)	Column II (Antidote)
1. Strychnine.....	A. Atropine
2. Phenobarbital.....	B. Milk and egg albumin
3. Arsenic.....	C. Metrazol
4. Mercury.....	D. Oxygen
5. Nicontine.....	E. Tannic Acid
6. Lead acetate.....	F. Gluconate
7. Cyanide.....	G. Potassium permanganate
8. Fluoride.....	H. Parenteral Fluids
9. Creosote.....	I. Dimercaprol
10. Carbon tetrachloride....	J. Sodium thiosulfate
	K. Magnesium sulphate
	L. Picrotoxin
	M. Amyl nitrate

Appendix E

NURSING TASKS: PART II

N.B. Page numbers refer to the programmed text: M. M. Seedor, Asepsis.

Task 1, Part II: Reading pages 1 through 30.
2, Part II: Reading pages 162 through 184.
3, Part II: Reading pages 198 through 224.
4, Part II: Reading pages 231 through 267.

Test 1, Part II, Page 31, Questions Nos. 1, 2, 4, 5, 8, 9, 10, 13, 14 and 15.

Test 2, Part II, Page 185, Question Nos. 8, 10, 11, 12, 13, 14, 15, 16, 17 and 18.

Test 3, Part II, Page 225, Question Nos. 1, 4, 5, 6, 8, 9, 11, 12, 13 and 14.

Test 4, Part II, Page 268, Question Nos. 6, 7, 8, 9, 10, 11, 12, 13, 14 and 15.

Appendix F

EGO-INVOLVING INSTRUCTIONS

READ CAREFULLY

The tests you are about to take are Nursing School Ability Tests. These tests have been found to predict not only grades in nursing school, but also overall success or failure in nursing training, and success or failure in the nursing profession. Besides their relationship to the general nursing profession, these tests are also related to academic ability and intelligence. People who do well on these tests are generally known to be excellent students, having high memory power, high ability to concentrate, high learning capacity, and in general, well above average performance on examinations.

Of course, it is your own academic ability and intelligence that will primarily determine how well or how poorly you do on these tests. You should therefore regard them as extremely important tests and should try to do your very best because the school authorities will like to know your scores.

Wait, and then go ahead when told to do so.

Appendix G

SUCCESS FEEDBACK NOTES

1st Success Feedback Note

Dear Mrs/Miss

Your performance on the previously administered nursing tests places you high among those who have taken these tests. This means that you have done quite well and that your ability level appears to be high. Further testing will enable us to evaluate this ability more precisely and we hope that you will try to keep up this excellent level of performance on subsequent tests.

.....
Psychologist

2nd Success Feedback Note

Dear Mrs/Miss

Your answers to both parts of the 2nd and 3rd tests have been corrected and although we cannot tell you your actual scores until the whole study is completed, we are pleased to inform you that you have done very well. Your cumulative score on these tests is enough to place you very high among nurses who have been tested. Try to keep up this performance, you are doing very well.

.....
Psychologist

3rd Success Feedback Note

Dear Mrs/Miss

We have now corrected your answers to the 4th test and we are pleased to inform you that your final score places you among the very top group of nurses to whom these tests have been administered earlier. As your level of performance on these rather difficult tests indicate not only high memory power, but also great power of concentration and generally, well above average mental ability, we congratulate you on your fine achievement. This school is proud of your performance and we all hope you will maintain this high standard in all aspects of your nursing training.

.....
Director of Nursing School

.....
Psychologist

Appendix H

PERSONAL DATA SHEET AND SECRECY PLEDGE

Name..... Your Number.....

Age..... School .....
(last birthday, in years)

Father's occupation ..... Mother's occupation .....

Father's education ..... Mother's education .....

Previous nursing experience (if any)

In order to maintain the scientific integrity of this study, I agree not to discuss it with my friends and not to reveal the details to anyone connected with the school or the hospital until I am notified that the study has been completed.

.....
Your Signature

Appendix I

POST-EXPERIMENTAL QUESTIONNAIRE

Your Number _____

Post-Experimental Questions

1. In your opinion, what do you think this whole study is about?

2. What exactly do you think the psychologist is trying to find out?

3. Mention anything you liked about the study.

4. Mention anything you disliked about the study.

5. Mark on the scale below how much you enjoyed or disliked the whole study.

1	2	3	4	5	6	7	8	9
Disliked very much								Enjoyed very much

Appendix J

SEQUENCE OF EACH EXPERIMENTAL SESSION AND CORRESPONDING INSTRUCTIONS

SESSION 1

SEQUENCE OF EXPERIMENT

1. Opening Instructions
2. Distribution of Numbers
3. Personal Data Sheet
4. Completion of Students Academic Survey
5. Completion of Students Biographical Inventory
6. Pretest Test 1 Part I (2 min.)
7. Task 1 Part I (60 sec.)
8. Posttest Test 1 Part I (2 min.)
9. Pretest Test 1 Part II (3 min.)
10. Task 1 Part II (15 min.)
11. Posttest Test 1 Part II (3 min.)
12. Closing Instructions

CORRESPONDING INSTRUCTIONS

#1. OPENING INSTRUCTIONS

Good Morning. We are psychologists from Columbia University and are interested in studying certain aspects of how students learn. We cannot give the details of this experiment until it is completed, and we urge you not to discuss it between yourselves until you are informed that you are free to do so. There will be time to answer all your questions at the end of the study. It is important that each of you attend all the three sessions of this study, and we hope you will make every effort to be present at the scheduled times.

#2. The numbers you have will be your experimental numbers. Bring this label with you every time you come for this study, it is your identification that you are a participant in the project.

#3. Please complete this Personal Data Sheet.

#4. Carefully read the instructions on the cover of these booklets, then go ahead.

#5. " " " " " " " " " " " "

#6. Turn over the sheets and go ahead. You have 2 min.

#7. Turn over the sheets and go ahead. You have 60 sec.

#8. Turn over the sheets and go ahead. You have 2 min.

#9. Open page 31 of the books you have been provided and answer the questions whose numbers appear on the answer sheets. You have 3 minutes.

#10. Read pages 1 through 30 in these books. You have 15 minutes.

#11. Open on page 31, put the rubber band on pages 1 through 30, and answer the questions whose numbers appear on the answer sheets. Put your answers on the answer sheets--not in the books.

#12. CLOSING INSTRUCTIONS

Thank you. Remember to be here at .... on ..... the ..... of ..... Bring your identification label with you and a pen or pencil to write with. Thank you, you may now leave.

SESSION II

SEQUENCE OF EXPERIMENT

1. Pretest Test II Part I (2 min.)
2. Task II Part I (60 sec.)
3. Posttest Test II Part II (2 min.)
4. Pretest Test II Part II (3 min.)
5. Task II Part II (15 min.)
6. Posttest Test II Part II (3 min.)

---

7. Pretest Test III Part I (2 min.)
8. Task III Part I (60 sec.)
9. Posttest Test III Part I (2 min.)
10. Pretest Test III Part II (3 min.)
11. Task III Part II (15 min.)
12. Posttest Test III Part II (3 min.)
13. Closing Instructions

CORRESPONDING INSTRUCTIONS

#1. Turn over the sheets and go ahead. You have 2 minutes.

#2. Turn over the sheets and go ahead. You have 60 seconds.

#3. Turn over the sheets and go ahead. You have 2 minutes.

#4. Open the books you have at page 185, and answer the questions whose numbers appear on the answer sheets. You have 3 minutes.

#5. Read pages 162 through 184. You have 15 minutes.

#6. Open the book at page 185 and answer the questions whose numbers appear on the answer sheets. You have 3 minutes.

#7. Turn over the sheets and go ahead. You have 2 minutes.

#8. Turn over the sheets and go ahead. You have 60 seconds.

#9. Turn over the sheets and go ahead. You have 2 minutes.

#10. Open the book at page 225 and answer the questions whose numbers appear on the answer sheets. You have 3 minutes.

#11. Read pages 198 through 224. You have 15 minutes.

#12. Open the books at page 225 and answer the questions whose numbers appear on the answer sheets. You have 3 minutes.

#13. Thank you. Remember to bring your number tags and something to write with for the final and very important session next .... You may now leave.

SESSION III

SEQUENCE OF EXPERIMENT

1. Pretest Test IV Part I (2 mins.)
2. Task IV Part I (60. sec.)
3. Pretest Test IV Part I (2 mins.)
4. Pretest Test IV Part II (3 mins.) Book page 268
5. Task IV Part II (15 mins.) Book pages 231-267
6. Posttest Test IV Part II (3 mins.) Book page 268

= Move into corridor for 5 minutes while tests are scored =

7. Student Academic Survey
8. Student Biographical Inventory
9. Test Attitude Survey
10. Post-Experimental Questionnaire
11. Discussion: Debriefing.

CORRESPONDING INSTRUCTIONS

#1. Turn over the sheets and go ahead. You have 2 minutes.

#2. Turn over the sheets and go ahead. You have 60 seconds.

#3. Turn over the sheets and go ahead. You have 2 minutes.

#4. Open the book on page 268 and answer the questions whose number appear on the answer sheets. You have 3 minutes.

#5. Read the book from page 231 through 267. You have 15 minutes.

#6. As in 4 above.

#7. Carefully read the instructions at the cover of these booklets, then go ahead.

#8. Carefully read the instructions at the cover of these booklets, then go ahead

#9. Carefully read the instructions at the cover of these booklets, then go ahead.

#10. Carefully read the instructions at the cover of these booklets, then go ahead.