

Graduate Student Styles for Coping with Stressful Situations

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Stressful situations were elicited from graduate students and faculty members at the University of Illinois. A second set of students reacted to these situations (anxiety, anger, rejection). A three-mode factor analysis of subjects by responses by situations revealed two types of graduate students who differed in coping styles to stressful situations. One type was progressing well in graduate school and responded to all types of stressful situations with anxiety. The less competent students responded by blaming themselves for academic failure situations, while blaming others for interpersonal failure. In situations for which there was not clear source of blame, they were extremely nonanxious. The results are discussed in the context of current situational assessment techniques.

The attrition rate among graduate students in the United States is very high. Less than 50% of those who begin graduate school with the intention of earning a doctorate actually persist long enough to do so (Knox, 1970; Creager, Note 1; Sells, Note 2). Although some admissions variables predict first-year graduate grades, most do not relate well to persistence in graduate school or to other long-term criteria (Willingham, 1974). One study found that the undergraduate grade point average was consistently negatively related to a global faculty rating of graduate student success 6 years after entering graduate school (Hackman, Wiggins, & Bass, 1970). In fact, Dawes (1975) has gone so far as to argue that it is impossible to predict later success in graduate school from the standard admissions criteria.

Rather than concentrating on the characteristics of potential graduate students to predict their success, an alternative approach involves focusing on the types of situations encountered while in graduate

school which might contribute to success or failure. Although the recent controversy over the relative efficacy of personality traits versus situations is by no means settled, enough evidence has been accumulated (Mischel, 1973; Moos, 1973) to suggest the fruitfulness of studying situational variables.

The purpose of this study was to examine the types of stressful situations graduate students encounter and to delineate styles of coping with these situations. The study also explored how students with different coping styles differed on standard admissions criteria, self-confidence measures, and actual performance in graduate school. The major focus of this study was on emotional coping styles, that is, how graduate students react emotionally when they are faced with stressful situations. It was anticipated that an interaction would obtain between different types of students and types of situations.

The first step in this study was to define what was meant by a stressful situation. Since the major variables of interest in this study were factors related to poor performance and attrition from graduate school, it was decided to focus primarily on situations graduate students had experienced which had made them consider dropping out of graduate school. This is similar to the "critical incident technique" developed by Flanagan (1954). In the critical incident technique, the investigator

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searches for situations in which performance is crucially related to success or failure in a particular occupation. Individual performance is measured in these situations and related to personal characteristics.

Goldfried and D'Zurilla (1969) refined this technique for use in predicting performance in freshmen college students. However, instead of focusing on highly crucial situations, they used everyday problematic situations. They defined problematic situations as "those specific, but meaningful situations with which most individuals must cope in order to be considered 'competent'" (Goldfried & D'Zurilla, Note 2). Problematic situations were gathered from students in the target population (male college freshmen) and from counselors and professors in close touch with the target population.

This method for obtaining situations was used in the present investigation. Graduate students were given questionnaires which asked them to describe, in detail, situations they had experienced which had been stressful and related to their considering dropping out of graduate school. Some faculty members also contributed situations stressful to graduate students. This elicitation procedure had the advantage of allowing the target population to define situations which purportedly are relevant to attrition.

One method of grouping situations was developed by Magnusson and his colleague (Ekehammer & Magnusson, 1973; Magnusson, 1971; Magnusson & Ekehammer, 1973) in which subjects rate the degree of similarity between all possible pairs of situations. Mean estimates of the similarity of situations over subjects are then factor analyzed. Situation groupings are therefore made on the basis of similarity ratings made by the subjects themselves, rather than the investigators. This approach assures that the situations are being classified on the basis of parameters relevant for the subject population. The major difficulties with this approach are as follows: (a) the task of rating all possible pairs of situations is extremely time consuming for even a few situations and (b) one has no

guarantee that subjects will group situations on the basis of variables related to the response class under investigation.

Frederiksen (1972) has suggested an alternative approach:

Instead of assigning situations to clusters on the basis of their mutual possession of various attributes, it is possible to group situations on the basis of their tendency to elicit similar behaviors. Such a criterion would seem to be especially appropriate when one's ultimate purpose is the investigation of person-situation interactions in predicting behavior. (Frederiksen, 1972, p. 120).

The model suggested by Frederiksen utilizes the three-mode factor analysis technique developed by Tucker (1964, 1966) and described by Levin (1965). This technique allows the investigation of Person \times Situation \times Response Class interactions. Because this method groups situations on the basis of the response variables, the mutual relevance of response and situation are guaranteed. For the present study, this was the model chosen to investigate individual differences in coping styles to stressful situations.

In the present study, subjects were asked to role play their reactions to stressful situations. Those reactions were obtained on various rating scales which were relevant to the situations. Other studies of this type (MacDonald 1974; Goldfried & D'Zurilla, Note 3) have obtained unrestricted written responses. The present procedure may lack the realism of free-form responses, but gains in objective methods of response scoring.

Method

Identifying Stressful Situations

In the spring of 1974, a stratified random sample of 30 graduate students (20 males and 10 females) in the Department of Psychology at the University of Illinois was obtained. The subjects were stratified on the basis of sex and psychological area of specialization. They were given a questionnaire asking them to describe, in detail, stressful situations they had experienced since entering graduate school. They were asked to concentrate particularly on situations which had led them to consider dropping out of graduate school. Fifteen students responded (10 males and 5 females). These students provided 18 unambiguous situations.

A questionnaire also was given to all the graduate students in the department (50 females and 120 males) asking them to name a faculty or staff member in the department with whom they would talk about their problems if they were considering dropping out of graduate school. Eighty percent of the graduate students responded, and from these responses a group of four faculty members and one staff member was identified who seemed willing to listen sympathetically to graduate students' problems. These five people were interviewed to find out what stressful situations they thought graduate students might encounter which would adversely influence the student's probability of staying in graduate school. From these interviews, 8 more situations were gathered to provide a total of 26. To check the content validity of the situations, both the head of the Psychology Department and the first investigator generated as many types of stressful situations as possible. There were found to duplicate the other situations, giving some assurance that the situations used covered the span of the population of situations. The 26 situations were then rewritten so that they were in the present tense and the second person singular (e.g., "It is the beginning of your third year of graduate school, etc."). Interpersonal situations were rewritten so they would be applicable to both male and female graduate students. Other than these minor changes, situations were left exactly as described originally in order to preserve realism.

Situation Ratings

In the fall of 1974 a stratified random sample of 21 female and 50 male graduate students (not used in the situation elicitation task) in the Department of Psychology at the University of Illinois was given a questionnaire which asked to rate the 26 situations on 11 characteristics. Again, the strata used for sampling were sex and area of specialization. Fourteen females and 20 males responded. The first seven ratings were on 7-point scales concerning how the student would feel if he were in each of the situations. The first three scales involved whether the student would feel angry with others, angry with himself, or responsible for the situation. These were designed to measure internal versus external attribution of responsibility. The next four scales involved the degree to which the student would feel anxious, rejected, depressed, or discouraged if he were in each of the situations. These scales were designed to assess the degree to which the situations would be emotionally upsetting.

The last four scales involved the number of times the student had experienced each situation previously, the likelihood with which the student would experience it at some time during his graduate career, the realism of each situation, and the clarity of each situational description. These scales were used primarily to assess the adequacy of the situational descriptions themselves.

The questionnaire also contained six questions designed to assess the student's professional self-

confidence. The first of these asked the student what he planned to do after graduation. He was given six alternatives varying in amount of professionalism including "post-doctoral studies" to "am not sure yet." The remaining questions involved responses on 7-point Likert scales and were as follows: "To what degree would you like to become well respected in your area of psychology?" (1 = not at all); "How likely is it that you will be doing original research of major importance in your area of psychology within the next five years?" (1 = extremely likely); "How competent are you as a graduate student in comparison to other graduate students in your program?" (1 = extremely less competent); "How likely is it that you will drop out of graduate school before you receive a PhD?" (1 = extremely unlikely); "How do you like being a graduate student?" (1 = I love it).

Analysis

The basic data can be conceptualized as involving three different modes: 34 subjects by 26 situations by 11 attribute rating scales, for which the dependent variable was the various ratings given to the situations by the subjects. Tucker's (1964) three-mode factor analytic model was applied to these data. That model first obtains the dimensions underlying each of the modes. That is, the number of dimensions necessary to account for the sums of squares and cross products among situations is obtained, as well as the dimensions necessary to reproduce the sums of squares and cross products among the rating scales and the subjects. The dimensions underlying the mode of subjects, if more than one, are interpreted as representing individual differences (Wiggins, 1973; Tucker & Messick, 1963; Tucker, 1972). In addition to providing the dimensions for each of the modes, the three-mode model provides a core matrix consisting of numbers which, when interpreted with respect to their relative size, interrelate the dimensions from each of the three modes. This core matrix is analogous to an interaction among dimensions in the analysis of variance model.

For the present data, the grand mean of each of the rating scales was obtained for all subjects and situations. The data were transformed by subtracting the grand mean from each of the original rating scale scores. This had the effect of making high numbers represent a large amount of the attribute and providing an arbitrary origin. The principal components for each of the modes were obtained and the number of significant dimensions for each mode was determined on the basis of plots of the eigenvalues by their order of extraction. Large drops in the percentage of variance were noted. For the situation and rating scale modes, the dimensions were rotated by a varimax rotation (Kaiser, 1959), an orthogonal analytic solution. In the present case, the varimax rotation was applied to the eigenvector matrices corresponding to the principal component matrices for the situation and rating scale modes. The subject mode was left unrotated. The core matrix was transformed to reflect the rating scale and situation rotations.

In order to identify the subject dimensions, multiple correlations were obtained between each person's loadings on the two subject dimensions (independent variables) and other information known about the students (dependent variables) including their admissions criteria, measures of their graduate performance, and their self-confidence ratings. The background information included Astin (1965) ratings of the selectivity of the undergraduate school attended, grade point average for the last 2 years as an undergraduate, research experience as an undergraduate, sex, and number of years out of school between receipt of the bachelor of arts degree and the beginning of graduate school. The more current information was age, marital status, number of children, years in school, program in graduate school, first-year graduate grade point average, cumulative graduate grade point average, type of first-year financial appointment in graduate school, and a current rating of progress in graduate school. This last rating was made by the department's director of graduate admissions on a 7-point scale ranging from "Is doing very poorly and will probably be kicked out" to "making excellent progress toward attainment of the PhD." Because this rating was made by only one person who knew each of the graduate students, it is probably contaminated to a certain extent by personal bias. The self-confidence measures have been described previously.

Results and Discussion

The basic data consisted of 34 subjects rating 26 situations on 11 rating scales. Two discriminant analyses were performed comparing the males and females in the sample. The first analysis involved predicting sex for the six self-confidence measures. The second analysis predicted sex based on the means of the 11 rating scales computed over the 26 situations. Neither of the discriminant functions was significant so males and females were combined for all subsequent analyses.

The Situation Mode

Three significant dimensions were obtained. The loadings of the 26 situations on these three dimensions are presented in Table 1. The three dimensions can be described as follows:

Dimension 1: Academic Failure. This dimension had high positive loadings for situations which represented types of academic failure. These were situations such as failing one's qualifying exams, getting a D in a graduate course (unheard of in an

era of inflated grades), flubbing a class presentation, and taking 3 years (rather than the usual 2) to finish a master's thesis. The situational descriptions for this dimension often contained an element of self-doubt such as "you begin to wonder if you are really cut out for graduate school." Seven situations defined this dimension: Situations 1, 2, 7, 8, 9, 11, and 17.

Dimension 2: Interpersonal Problems. This dimension represented situations dealing primarily with interpersonal problems. Most of these situations concerned faculty members who were in some way being hostile toward the student or making inordinate work demands on the student. Six situations defined this dimension: Situations 4, 10, 12, 13, 22, and 24.

Dimension 3: Fate-Failure. This dimension was represented by situations that were not clearly anyone's fault. These were situations such as an unexpected pregnancy (of course, it can be argued that this was *someone's* fault), discovering that one does not really like being a graduate student, getting insignificant results on one's master's thesis study, and having one's subjects frequently fail to show up in a laboratory study. Five situations marked this dimension: Situations 6, 19, 21, 25, and 26.

The Rating Mode

Three significant rating dimensions were extracted. The projections of the 11 attribute rating scales on these three dimensions are presented in Table 2, and are described as follows:

Dimension 1: Anger at Self Versus Others. This was the only rating mode dimension which was bipolar. It contrasted high positive loadings for the scales of responsibility and anger toward oneself with a high negative loading for anger toward others.

Dimension 2: Likely to Happen. This dimension contained positive loadings for the ratings of the frequency with which the subject had experienced the situation in the past, how likely the situation would occur in the future, and how realistic the situation was. Situations which marked

Table 1
Three Rotated Dimensions for Situational Mode

Situation	I	II	III
1. You flunk qualifying exams.	.327	-.086	.048
2. You are asked to leave school because you are slow on your master's thesis.	.316	.175	-.243
3. You are not prepared to teach or take exams, you miss your boyfriend/girlfriend.	.155	-.040	.202
4. A faculty member is mad at you for not analyzing his data during finals week.	-.031	.409	-.071
5. Your mate demands that you spend more time together.	.156	.094	.068
6. You feel lost in grad school and find it a drag.	.044	-.023	.326
7. You make a "D" in a graduate course.	.352	.080	-.123
8. You're slow to think up a dissertation idea and want to stay in grad school a 5th year, but the department cannot support you.	.345	-.012	-.028
9. You flub up a class presentation in a graduate seminar.	.348	-.184	.082
10. Your faculty advisor makes arbitrary criticisms on your master's thesis.	-.007	.401	-.076
11. Your faculty advisor criticizes your in-class discussion habits.	.258	.122	-.016
12. You are in a research group with someone you dislike intensely.	-.105	.254	.224
13. You are told by your faculty advisor that you spend too much time trying to be a good teacher.	.092	.254	.016
14. Due to a personal relationship you are getting far behind in your academic work.	.199	-.076	.234
15. You have no ideas for your master's thesis and feel very removed from the faculty in your program.	.231	.028	.142
16. Your subjects are not showing up and your research assistants are not doing a good job.	.082	.194	.059
17. No one likes your idea for your dissertation and you feel hopeless.	.253	.076	.038
18. You get a "C" in a math course.	.205	-.055	.210
19. You are afraid you and your mate will not be able to get jobs near each other after graduation.	-.173	.146	.374
20. You get insignificant results on your master's thesis.	.064	.064	.243
21. Your subjects are not showing up and you feel very uninterested and unenthusiastic about your study.	.047	.031	.298
22. Your program chairman is a hostile, difficult person and you are considering leaving.	-.022	.344	.078
23. Your thesis committee is making demands you feel you cannot meet.	.150	.158	.054
24. Your research advisor is being very distant and unhelpful.	.035	.387	-.089
25. Unexpected pregnancy.	-.017	-.125	.434
26. Your mate accepts a job offer elsewhere before you are finished with graduate school.	-.153	.233	.293

this dimension were frequently experienced, realistic, and likely to happen in the future.

Dimension 3: General Anxiety. This dimension had high positive loadings for ratings representing feelings of rejection, anger toward others, discouragement, depression, anger toward self, and anxiety.

The Subject Mode

In order to interpret the two unrotated subject dimensions, correlations were obtained between the projections of the subjects on their dimensions and all other information known about the subjects (e.g.,

undergraduate grade point average, current graduate grade point average, progress toward the doctorate, etc.). Those variables have been described in the Method section. The variables with significant correlations for either dimension are presented in Table 3.

Graduate students who defined (e.g., had high projections on) either of the two subject dimensions tended to be younger and tended to enter graduate school upon receipt of the bachelor's degree. These correlations were significant although they did not discriminate between the two types of graduate students.

Subject Dimension 1: This dimension

Table 2
Three Rotated Dimensions for Rating Scale
Attribute Mode

Rating attributes	I	II	III
1. Anxiety	.194	.067	.334
2. Anger toward others	-.482	-.133	.461
3. Responsible for the situation	.615	-.033	.031
4. Angry with yourself	.540	-.026	.258
5. Feeling of rejection	-.142	-.126	.516
6. Discouraged	.053	.097	.418
7. Depressed	.140	.102	.398
8. Frequency of experience	-.025	.255	.033
9. Likely to experience	-.111	.855	.037
10. Realistic	.053	.352	-.040
11. Clear	.019	.142	.027

represented subjects who tended not to desire professional respect, who did not plan to be doing research of major importance within the next 5 years, and who considered themselves to be somewhat less competent than the other graduate students in their program. These self-ratings of competence are supported in the ratings made by the director of graduate admissions, for which these students are rated as making slower progress toward receipt of the doctoral degree.

Subject Dimension 2: This dimension represented subjects who desire professional respect, plan to be doing research of major importance within the next 5 years, and consider themselves more competent than their fellow graduate students. Again, self-rated competence is supported by the ratings made by the director of

graduate admissions. These ratings indicated that this type of student tended to be a better doctoral candidate than the first type of graduate student.

The Core Matrix

The core matrix is presented in Table 4. The numbers (weights) in the core matrix can be interpreted relative to one another. These weights interrelate each of the dimensions from the three modes. In presenting the core matrix, the interrelations among the situation and rating scale dimensions are discussed for each of the two subject dimensions.

Subject Dimension 1. When this type of person is in an academic failure type of situation, he feels angry at himself, rejected, anxious, depressed, and somewhat angry at others. When he is in an interpersonal problem situation, he feels very angry with others and somewhat anxious and depressed. When he is in a fate-failure type of situation, he feels mildly responsible but not anxious or upset at all. He considers the fate-failure situation as somewhat more likely to happen to him than the academic failure or interpersonal problem situation.

Subject Dimension 2. When this type of person is in an academic failure type of situation, he does not feel responsible or angry with himself but does feel anxious, depressed, and rejected. In fact, this type of graduate student is distinguished because he feels anxious in all three types of situations, although more so in the fate-

Table 3
Correlations of Graduate Student Characteristics with Subject Dimensions

Variable	Zero order correlation		Standardization regression coefficients		R	F
	Subject 1	Subject 2	Subject 1	Subject 2		
Age	-.446	-.666	-.141	-.594	.677	13.12***
Number of years out of school	-.394	-.462	-.214	-.352	.497	5.08*
Desire for respect	-.248	.177	-.459	.413	.433	3.57*
Plans to do major research	-.346	.181	-.596	.487	.543	6.47**
Self-rated competence	-.273	.304	-.582	.602	.584	8.04**
Ratings of progress in graduate school	-.379	.006	-.518	.272	.445	3.82*

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 4
Core Matrix Interrelating Subject, Rating Scale, and Situation Dimensions

Situation	Rating scale dimensions		
	Anger at self versus others ^a	Likely to happen	General anxiety
Subject Dimension 1			
Academic failure	26.6	1.96	31.9
Interpersonal problems	-39.7	-4.5	18.5
Fate-failure	15.0	12.6	-32.7
Subject Dimension 2			
Academic failure	5.74	7.79	29.2
Interpersonal problems	8.41	9.93	24.5
Fate-failure	3.55	12.90	37.5

^a Anger with self scored positively.

failure situations which he considers more likely to happen to him than the other two types of situations.

When the core matrix data are combined with the correlates of the two subject dimensions, one obtains a picture of two very different types of graduate students and their responses to stress. Students who tend to be less competent professionally tended to be intrapunitive for academic failure situations and extrapunitive when encountering interpersonal problems. In addition, this type of student is extremely anxious when confronted with academic problems. He is not all anxious in purportedly stressful situations for which there is no clear source of blame (e.g., losing subjects in an experiment). On the other hand, the more competent type of student is characterized primarily by transsituational anxiety. This type of student does not blame either himself or others when confronted with difficult situations. It might be that the generalized anxiety this type of student feels is in fact channeled into more constructive paths when he attempts to cope with various kinds of stress.

Although limited in scope, the present study highlights the provocative possibility of studying the Trait \times Situation interaction in a prediction paradigm. The next steps in the projected research would be to link emotional coping styles measured primarily by self-ratings to actual coping be-

havior and to calibrate the response dimensions in terms of their adaptiveness for the various situational dimensions. Presumably a situational inventory could be developed which would be predictive of adaptive emotional coping in stressful situations encountered in graduate school.

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