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# Effects of Fear of Success on Intrinsic Motivation, Causal Attribution, and Choice Behavior

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This study examined the extent to which fear of success moderates effects of choice and task outcomes on intrinsic motivation, causal attribution, and subsequent choice behavior. Subjects worked either on puzzles of their choice or puzzles that were assigned to them and were then informed that they had performed either better or worse than the majority of other subjects. Measures of intrinsic motivation (task engagement during a free-choice period) and of attribution for performance were obtained. Subjects then indicated how much choice they wanted to have over similar tasks that they were going to perform. Finally, subjects completed a fear-of-success and a resultant achievement motivation measure. Results showed that following success, low fear-of-success subjects (in comparison to high fear-of-success subjects), showed higher intrinsic motivation, made more internal attributions, and wanted to have more choice if initially they had been given choice and less choice if initially they had been given no choice. There were no significant differences between low and high fear-of-success subjects following failure. These results were obtained for both males and females and could not be accounted for by resultant achievement motivation that was unrelated to fear of success. Implications of the construct of fear of success are discussed.

The motive to avoid success was originally conceptualized by Horner (1968, 1972) as a disposition to fear success outcomes because of their negative consequences, particularly for women in western culture. Women with high fear of success were thought to be inhibited in achievement-related situations and/or defensive and anxious about success. In her study, Horner measured fear of success by means of projective (Thematic Apperception Test) protocols written in response to a verbal cue. Male subjects responded to a description of a successful male medical student, and female subjects responded to a description of a successful female medical student. Horner found that female subjects showed higher incidence of fear-of-success imagery than did male subjects. In addition, performance of high fear-of-success females was lower under competitive than noncompetitive conditions, whereas low fear-of-success females showed the opposite pattern.

However, recent reviews (Tresemer, 1976a; Zuckerman & Wheeler, 1975) of Horner's (1968) study suggested that her data did not provide clear support for her fear-of-success model. Furthermore, the fear-of-success research that followed Horner's study yielded disappointing results (for reviews, see Tresemer, 1976b, 1977; Zuckerman & Wheeler, 1975). No reliable sex differences in fear of success were found, and the concept was not consistently related to any behavioral

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measure. Zuckerman and Wheeler (1975) attributed this state of affairs to the inadequacy of Horner's (1968) original projective measure. Specifically, the "successful medical student" cue that was used to elicit the projective stories may tap attitudes toward medical school rather than a general personality trait, and since males and females responded to different cues, their fear-of-success scores are not strictly comparable. More recent research has shown that the extent of fear-of-success imagery depends on the sex-typed appropriateness of the projective cue (Cherry & Deaux, 1978; Janda, O'Grady, & Capps, 1978).

To remedy the problems inherent in a projective measure, Zuckerman and Allison (1976) developed and tested a 27-item objective Fear of Success Scale (FOSS). Internal reliability (alpha) of the FOSS was .69 among males and .73 among females. Most important, Zuckerman and Allison found that females had higher FOSS scores than did males and that subjects—both males and females—with high FOSS scores performed worse on an anagram task and attributed success more to external factors and failure more to internal factors than did subjects with low FOSS scores. These results support Horner's (1972) suggestion that the motive to avoid success may interfere with achievement-related performance and give rise to defensive responses (e.g., denial of responsibility) to success. However, the fact that both males and females manifested these behaviors implies that fear of success is not a sex-linked concept. More recently, Sadd, Lenauer, Shaver, and Dunivant (1978) obtained positive and significant correlations between the FOSS and other recently developed measures of fear of success. In accordance with the view that fear of success is not specific to females, Sadd et al. reported that neither the FOSS nor any other fear-of-success measure yielded higher scores for females than for males. Finally, their factor analysis of the FOSS indicated that some FOSS items tap the negative consequences of success, whereas others focus on the motivation to excel. Sadd et al. proposed that the motivation to excel taps an independent dimension rather than the absence of fear of success but provided no behavioral data in support of this claim.

What is needed at this point are further tests of the FOSS's utility in predicting and explaining behavioral patterns. Given that the FOSS has at least some degree of construct validity, such future tests will also examine the basic tenets of Horner's (1968) model, namely, that because high fear-of-success individuals find success aversive, they are less likely to approach it and more likely to deny it. At present, rejection of the projective measure of fear of success and lack of support for the sex linkage of the construct may lead to rejection of the basic model before a full examination of its key construct has been conducted. Using the FOSS measure of fear of success, the present study examined the extent to which this construct moderates the effects of task outcomes on three dependent variables: intrinsic motivation, causal attribution, and choice behavior. Each variable is discussed in more detail later.

Intrinsic motivation is operationalized as the tendency to engage in some activity for no apparent reward except the activity itself. Deci and his colleagues (Deci, 1972; Deci, Cascio, & Krusell, 1975; Deci & Cascio, Note 1) found that relative to no feedback, failure on a puzzle-solving task or negative feedback (e.g., "although you did solve it, your time was below average") resulted in lower intrinsic motivation, whereas positive reinforcement resulted in higher intrinsic motivation. Two mechanisms were proposed to account for the association between success and higher intrinsic motivation. First, the feedback becomes associated with the activity, causing an increment in task attractiveness when the feedback is positive and a decrement in task attractiveness when the feedback is negative. Second, positive feedback increases (whereas negative feedback decreases) perceived competence, which, in turn, determines one's tendency to engage in the activity—the higher the perceived competence, the higher the intrinsic motivation for the activity. It may be argued, however, that effects of task outcomes should be moderated by level of fear of success. First, for the high fear-of-success person, success has aversive implications and therefore should not increase the attractiveness of

the task. Second, since high fear-of-success persons do not attribute success outcomes to themselves (Zuckerman & Allison, 1976), their sense of competence, and consequently their intrinsic motivation, should not increase under a success condition. Either of these arguments leads to the prediction that success increases intrinsic motivation among low but not among high fear-of-success subjects.

Although Zuckerman and Allison (1976) have already documented that people with high fear of success deny responsibility for success by attributing it to external causes, there is a need to replicate their results. Success and failure in the Zuckerman and Allison study were self-determined, thus obscuring the exact cause–effect relationships among task outcomes, fear of success, and attribution. In the present study, task outcomes were experimentally determined, providing a better test of their effects, and those of fear of success, on causal attribution.

Choice behavior in the present study was defined as the extent to which subjects preferred to have a choice over the tasks that they were going to perform. In the past, the variable of perceived or actual choice was used to manipulate the experience of control and freedom in a wide variety of experiments, including those on reactance (e.g., Brehm & Sensenig, 1966), control over aversive stimuli (e.g., Corah & Boffa, 1970), and the illusion of control (e.g. Langer, 1975). A general assumption in many of these experiments is that people are motivated to control their environment and that lack of choice is maladaptive for the individual. Conversely, it has also been noted (cf. Averill, 1973) that at times, people may be willing to relinquish control and to subject themselves to external authority. However, relatively little research has been devoted to the question of conditions under which people will prefer to have more or less choice (cf. Feldman-Summers, 1977).

In the present experiment we examined the hypothesis that success on a task will increase the need to have choice over other similar tasks. The rationale for this hypothesis was that task outcomes affect the person's perceived competence, which then generalizes to the motivation to have or relinquish control. However, since high fear-of-success subjects were not expected to feel more competent under the success condition, their need for choice was not expected to vary as a function of the success/failure manipulation.

In summary, we predicted that under success, low fear-of-success subjects would show more intrinsic motivation, make more internal attributions, and prefer more choice than would high fear-of-success subjects. Failure was expected to cancel or reverse these differences. Most important, the inclusion of both success and failure conditions in the study allowed us to examine Horner's (1972) suggestion that the motive to avoid success is not identical to a wish to fail. Critiques of the fear-of-success literature (e.g., Shaver, 1976) countered Horner's suggestion with the proposition that the motive to avoid success is simply another label for fear of failure. However, to the extent that high and low fear-of-success subjects differ primarily under success (rather than under failure), it would be possible to conclude that the FOSS taps approach/avoidance reactions to success rather than to failure.

The study's three hypotheses required that we manipulate level of performance at some task and measure subjects' level of fear of success. In addition, we also manipulated the range of choice subjects had over the tasks at which they were to succeed or fail and measured the subjects' level of resultant achievement motivation.

Choice was manipulated primarily for exploratory purposes. Since individuals take more responsibility for what they choose to do, we did entertain the possibility that task outcomes might have stronger effects on the dependent variables under the choice than the no-choice condition. We also wanted to replicate the findings, reported by Zuckerman, Porac, Lathin, Smith, and Deci (1978), that subjects who worked on tasks of their choice showed higher intrinsic motivation for these tasks than subjects who worked on tasks that were assigned to them by the experimenter.

Resultant achievement motivation (the motive to approach success minus the motive to avoid failure; Mehrabian, 1968) was measured to rule out the possibility that it accounts for effects of fear of success and to check for possible interactions between it and

fear of success. This strategy seemed advisable in view of the fact that fear of success is but one member of a family of achievement-related constructs.

## Method

The study consisted of two sections that were presented to the subject as two independent experiments. During the first section, the subject worked on three puzzles that were either chosen by (choice condition) or assigned to (no-choice condition) him/her. Each subject in the no-choice condition was assigned the puzzles that were previously selected by a yoked counterpart in the choice condition. Each yoked pair of subjects was assigned randomly to a high- or low-performance condition. Under high performance (success), subjects were told that their performance was better than that of most other subjects. Low-performance subjects (failure) were given the opposite information. Following the performance feedback, subjects were left alone for a 5-minute free-choice period during which they were unobtrusively observed through a one-way mirror. The amount of free-choice time subjects spent working on the puzzles served as the measure of intrinsic motivation. On completion of the free-choice period, subjects filled out a questionnaire that included attributional measures and manipulation checks. They were then led down the hall to the "second experiment" and were told that their task would be to work on 8 out of 20 puzzles, similar to those used in the first study. Subjects indicated how many of the 8 puzzles they wanted to choose themselves and how many puzzles they wanted assigned by the experimenter. They were then administered the fear-of-success and achievement-motivation measures, debriefed, and excused.

### *Materials, Subjects, and Experimenters*

The task that was employed in the present experiment was the Soma—a spatial relations puzzle that has been used extensively in research on intrinsic motivation (Deci, 1975). The puzzle is composed of seven rectangularlike pieces that must be fitted together to form specific configurations. To make both the success and failure feedbacks credible, we used only configurations of medium difficulty and ran only those subjects who solved at least two out of three configurations. Pretesting established that most subjects would be able to achieve the two-solutions criterion.

The subjects were 139 undergraduates who participated in fulfillment of an introductory course requirement. Of this number, 19 (13.7%) were excluded—14 because they completed less than two configurations, 4 because they owned Soma puzzles and were familiar with the solutions to the configurations given to them, and 1 because of suspicion. The remaining 120 subjects, 60 males and 60 females, were equally distributed among the cells of the 2 (choice/no choice) × 2 (success/failure) factorial, with 15 males and 15 females in each cell. Because of experimenter error, 1 female in the choice/success cell was not administered the two personality measures and another in the no-choice/failure cell was not administered the fear-of-success measure. Consequently, effects of fear of success were examined for only 118 subjects.

Two persons, one male and one female, alternately served as experimenters in the first section of the study; four persons, two males and two females, alternately served as experimenters in the second section.

### *Procedure*

On arrival to the laboratory, the subjects were greeted by an experimenter, who explained that they would be involved in two different problem-solving experiments conducted by two different experimenters in two different locations. The experimenter mentioned that this was simply a matter of convenience—"Since each experiment is not very long, it's a bit easier for both us and you to hold them consecutively."

Subjects were seated at a table in front of the Soma puzzle pieces, were told that their task would be to reproduce various Soma configurations, and then practiced on a sample configuration.

*Choice manipulation.* After the sample configuration was completed, subjects were asked to reconstruct three of six configurations that were stacked on the table and were told they would be allowed 10 minutes per configuration. Subjects in the choice condition were asked to select from the six configurations three they would like to work on. Subjects in the no-choice condition were assigned three out of the six available configurations, with each subject given the three puzzles selected by his or her yoked counterpart in the choice condition.

*Outcome manipulation.* Before subjects started working, they were told that their performance would be timed and subsequently compared to performance scores of 500 previous subjects. The experimenter also added that in case of failure to complete a puzzle within the 10-minute period, subjects would be stopped and shown the actual solution. When the subjects completed their task, the experimenter averaged the times of the two or three puzzles that were solved successfully and then administered the performance manipulation. In the high-performance condition, subjects were told that their performance time ranked in the upper 94th percentile; if they completed only two configurations, they were also informed that hardly anyone had ever completed the unsolved puzzle. In the low-performance condition, subjects were told that their performance time ranked in the lower 32nd percentile; if they completed only two configurations,

Table 1
*Means and Standard Deviations of Personality Measures*

| Personality measure | Males | | Females | | Total | |
|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| Fear of success | 109.3 | 11.6 | 109.4 | 12.9 | 109.4 | 12.2 |
| Resultant achievement motivation | 111.6 | 12.7 | 111.9 | 14.2 | 111.8 | 13.4 |

*Note.* Fifty-eight females and 60 males completed the fear-of-success measure; 59 females and 60 males completed the resultant achievement motivation measure.

they were also informed that almost everyone had completed the unsolved puzzle.[1]

*Free-choice period.* After administering the performance feedback, the experimenter excused himself or herself under the pretense of looking for the second experimenter. The experimenter then left the room only to return shortly and announce that the second experimenter did not seem to be around, and he/she would have to go find him/her. The experimenter then left, taking all six configurations but leaving behind two other configurations as well as several popular magazines permanently stored in the room. The subjects were alone in the laboratory for a 5-minute period during which they were observed by a second experimenter through a one-way mirror. Curtains were drawn across the mirror, with the exception of a small crack where the curtains met, giving the impression that the subjects could not be observed. The second experimenter was blind to the subjects' experimental condition. A stopwatch was used to determine the amount of time the subjects spent working on the puzzles, indicating their level of intrinsic motivation.

*Attribution measures and manipulation checks.* The first experimenter returned to the lab accompanied by the second experimenter, who, after ensuring that the subjects noticed him/her, proceeded to the second lab. The first experimenter then asked the subjects to complete a questionnaire that included the attribution measures and manipulation checks. Specifically, the subjects rated on four 17-point scales the extent to which they felt their performance was due to task difficulty, luck, skill, and effort. High scores indicated that the specific attributional factor was a cause for the subjects' performance. In addition, subjects also rated how well they did on the puzzle-solving task (−8 = very poorly; +8 = very well) and the extent to which they were able to choose which puzzles to work on (−8 = no choice at all; +8 = a great deal of choice).[2]

*Choice behavior.* On completion of the questionnaire, subjects were ushered to a second laboratory, greeted by the second experimenter, and seated at a table. On the table in front of the subjects were the pieces of a second Soma puzzle and a manila envelope. Subjects were told that the manila envelope contained 20 configuration drawings and that their task would be to work on 8 of the 20. The experimenter then said that the subjects would be allowed to decide how many puzzles they would like to choose themselves and how many they would like to be assigned by the experimenter (total number should be 8). The only stipulation was that subjects could not look at any of the puzzles before making a decision about the number of puzzles they wanted to choose.

*Fear of success and resultant achievement motivation.* The experimenter then asked the subjects to complete one additional questionnaire before starting the actual task. The questionnaire included two scales, the FOSS and Mehrabian's (1968) scale of resultant achievement motivation (RAM). The FOSS included 27 7-point items with high scores indicating high fear of success. Mehrabian's RAM scale, having separate but equivalent forms for males and females, included 26 7-point items, with high scores indicating a high level of resultant achievement motivation. After subjects completed the two scales, they were debriefed and excused.

## Results

Table 1 presents the means and standard deviations for the FOSS and RAM. To examine whether either measure was influenced by the experimental manipulation, both the FOSS and the RAM were treated in analyses of variance (ANOVAS) with sex (male/female), choice (choice/no choice), and task outcomes (success/failure) as between-subjects factors. No significant effects were obtained either for the FOSS (all $ps > .32$) or for the RAM (all

[1] Differences between feedback given to subjects solving two puzzles and three puzzles did not have any effects on the study's findings.

[2] The questionnaire also included several other items regarding enjoyment of the task, perceived skill, and so forth. Since the analyses of these items did not yield information that was not covered by the main dependent variables, they will not be discussed further.

$ps > .17$). In addition, the two measures were unrelated ($r = -.04$). In view of these results, it was decided to use median splits to divide all subjects into high/low FOSS groups (FOSS $Mdn = 108.5$) and high/low RAM groups (RAM $Mdn = 110.5$). The manipulation checks and dependent variables (intrinsic motivation, causal attribution, and choice behavior) were first examined in unweighted means ANOVAs with sex, choice, task outcome, and FOSS (high/low) as between-subjects factors.[3] Subsequent analyses incorporated the RAM, either as a covariate or as another between-subjects factor, and are reported at a later point.

*Manipulation Checks*

Performance ratings were greater under the high- ($M = 4.26$) than the low-performance condition ($M = -1.93$), $F(1, 102) = 171.43$, $p < .001$ (effect size = 2.59 $\sigma$).[4] Ratings of choice were higher under the choice ($M = 4.9$) than the no-choice condition ($M = -6.85$), $F(1, 102) = 348.79$, $p < .001$ (effect size = 3.70 $\sigma$). Clearly, both manipulations were effective.

The analysis of performance ratings produced two more significant effects. The first was a Choice × Outcome interaction indicating that the difference in performance ratings between high and low performance was greater under the choice ($M$ success = 5.10, $M$ failure = −2.51) than under the no-choice condition ($M$ success = 3.42, $M$ failure = −1.35), $F(1, 102) = 9.01$, $p = .003$ (effect size = .59 $\sigma$). It appears that the manipulation of task outcomes produced a stronger effect on perceived performance under the choice condition. This result was particularly interesting because ANOVAs of actual performance measures—number of puzzles solved (two or three) and the time required to solve all three puzzles—did not produce significant Choice × Outcome interactions ($F < 1$ in both cases). Evidently, choice influenced perceived performance regardless of what the performance actually was.

A second significant effect was that low FOSS subjects rated their performance ($M = 1.80$) higher than did high FOSS subjects ($M = .54$), $F(1, 102) = 7.03$, $p = .009$ (effect size = .53 $\sigma$). FOSS scores were not correlated with either the number of puzzles solved ($r = .05$) or with the time required to solve the puzzles ($r = -.12$). Thus, the results indicate that fear of success affected perceived performance independently of what the actual performance was.

There were no other significant effects in the analyses of either perceived performance or perceived choice.

*Intrinsic Motivation*

The study's first hypothesis was that intrinsic motivation will be higher under high performance, particularly for low fear-of-success subjects. As can be seen in Table 2, subjects spent more time on the puzzles under success than under failure, $F(1, 102) = 6.75$, $p = .011$ (effect size = .51 $\sigma$), and the difference between success and failure was more emphasized among low than among high FOSS subjects, $F(1, 102) = 6.43$, $p = .013$ (effect size = .50 $\sigma$). There were no other significant main effects or interactions. Additional analyses showed that the difference in intrinsic motivation between high and low

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[3] Since choice and no-choice subjects were matched on the puzzles they worked on, the choice variable could have been treated as a within-subjects (repeated measures) factor. However, a correlational analysis indicated that matching on puzzles did not increase the similarity between members of the matched (yoked) pairs. Specifically, within each experimental condition and for each dependent variable, we computed the correlations between scores of the choice and no-choice yoked subjects. Mean correlations (averaged across experimental conditions) were −.11 for intrinsic motivation, from −.22 to .12 for the four attribution measures, and −.00 for the choice behavior. None of the correlations was significant. Since matching did not increase intrapair similarity, there was no need to use choice as a within-subjects factor. Thus, individual subjects rather than yoked pairs were the units of analysis, allowing us to separate, if necessary, members of a pair into low and high levels of fear of success (this would be, of course, impossible if yoked pairs served as units of analysis).

[4] The effect size expressed in $\sigma$ units is based on Cohen's (1977) $d$ defined conceptually as $(M_1 - M_2)/\sigma$ (where $M_1$ and $M_2$ represent the means of Group 1 and Group 2, respectively) and computed as $2\sqrt{F}/\sqrt{df}$ in this article.

FOSS levels was significant under success, $F(1, 51) = 4.72$, $p = .034$ (effect size = .61 $\sigma$), but only approached significance under failure, $F(1, 51) = 2.16$, $p = .15$ (effect size = .41 $\sigma$).

### *Causal Attribution*

The study's second hypothesis concerned effects of task outcomes and fear of success on internal–external attribution. Following the model suggested by Weiner et al. (1971), we constructed an internal–external index by combining the attributions to skill and effort and subtracting from their sum the attributions to chance and task difficulty. The ANOVA of the internal–external index produced two significant main effects. Subjects in the choice condition made more internal attributions than subjects in the no-choice condition, $F(1, 102) = 5.14$, $p = .025$ (effect size = .45 $\sigma$), indicating that they felt more responsible for their performance on tasks they chose to do than on tasks that were assigned to them by the experimenter. More important, it was found that low FOSS subjects were more likely to make internal attributions than high FOSS subjects, $F(1, 102) = 5.98$, $p = .016$ (effect size = .48 $\sigma$). Table 3 indicates that the difference in internal attributions between low and high FOSS subjects was greater under success than under failure, but the Outcome × FOSS interaction only approached significance, $F(1, 102) = 2.04$, $p = .16$ (effect size = .28 $\sigma$). Separate comparisons did indicate that relative to high FOSS subjects, low FOSS subjects made more internal attributions under success, $F(1, 51) = 7.78$, $p = .007$ (effect size = .78 $\sigma$), but not under failure ($F < 1$).

Table 2
*Mean Number of Seconds Spent Working on the Puzzles During the 5-Minute Free-Choice Period*

| Fear of success | Success | Failure | *M* |
|---|---|---|---|
| Low | 234.6 (27) | 115.6 (32) | 175.1 |
| High | 168.2 (32) | 166.8 (27) | 167.5 |
| *M* | 201.4 | 141.2 | 171.3 |

*Note.* The figures in parentheses indicate the number of subjects in each cell.

Table 3
*Mean Internal–External Attributions for High and Low Fear-of-Success Subjects*

| Fear of success | Success | Failure | *M* |
|---|---|---|---|
| Low | 6.41 (27) | 3.56 (32) | 4.98 |
| High | 2.05 (32) | 2.41 (27) | 2.23 |
| *M* | 4.23 | 2.98 | 3.60 |

*Note.* Higher scores indicate more internal attributions; figures in parentheses indicate the number of subjects in each cell.

The ANOVA for the internal–external index was repeated for each of the four attributional measures. Several of the effects approached but did not reach significance, indicating that the effects obtained using the internal–external index were not accounted for by a single attribution factor but rather by the combination of all four. To ascertain that it is the internal–external index alone that is affected by fear of success, we also examined the relationship of the FOSS with a stability attributional index. This index is the sum of task difficulty and ability attributions from which luck and effort attributions are subtracted (Weiner et al., 1971). There were no effects on the stability index involving fear of success. The only significant effect was a Sex × Outcome interaction, indicating that males made more stable attributions under success than under failure, whereas females showed the opposite pattern, $F(1, 102) = 4.86$, $p = .03$ (effect size = .44 $\sigma$).

To further explore the implications of the internal–external index, we examined its relationship with the free-choice measure of intrinsic motivation under the success and failure conditions. Internal attribution of success was correlated with intrinsic motivation ($r = .36$, $p = .006$), but internal attribution of failure was not ($r = -.02$). The difference between the two correlations approached significance ($Z = 1.91$, $p < .06$). Correlations of the stability index with the same free-choice measure of intrinsic motivation were $-.03$ (*ns*) under success and .20 (*ns*) under failure. Correlations of the sepa-

Table 4
*Mean Number of Puzzles Subjects Wanted to Choose for Themselves*

| | Success | | Failure | | |
|---|---|---|---|---|---|
| Fear of success | Choice | No choice | Choice | No choice | *M* |
| Low | 5.07 (13) | 3.10 (14) | 4.09 (19) | 4.50 (13) | 4.19 |
| High | 4.12 (16) | 4.42 (16) | 4.85 (11) | 4.06 (16) | 4.36 |
| *M* | 4.59 | 3.76 | 4.47 | 4.28 | 4.27 |

*Note.* Figures in parentheses indicate the number of subjects in each cell.

rate attributional factors with intrinsic motivation were in the expected direction (i.e., according to whether they were internal or external), but none reached significance.

Interestingly, the relationship between internal attribution of success and intrinsic motivation was stronger under the choice ($r = .47$, $p = .009$) than under the no-choice ($r = .29$, $p = .13$) condition; in addition, the relationship of internal attribution of failure with intrinsic motivation was more negative under choice ($r = -.10$) than under the no-choice ($r = .07$) condition. Perhaps choice increased the subjects' involvement in the task and, consequently, the salience and meaningfulness of the attribution measure. This may explain why attributions under choice appeared more consistent with behavior (intrinsic motivation) than attributions under no choice.

### *Choice Behavior*

The hypothesis of greater preference for choice under success, particularly for low FOSS subjects, was not confirmed. Instead, the ANOVA of choice behavior produced a single significant effect—a Choice × Outcome × FOSS interaction, $F(1, 102) = 4.91$, $p = .029$ (effect size = .44 $\sigma$). As can be seen in Table 4, low FOSS subjects, as compared to high FOSS subjects, were more likely to maintain the conditions under which they had succeeded and to change the conditions under which they had failed. Specifically, relative to high FOSS subjects, low FOSS subjects wanted more choice if they were either in the choice condition and succeeded or in the no-choice condition and failed; conversely, low FOSS subjects wanted less choice if they were either in the no-choice condition and succeeded or in the choice condition and failed. When choice behavior was examined separately under success and failure, the Choice × FOSS interaction was significant under success but not under failure, $F(1, 51) = 4.52$, $p = .038$ (effect size = .60 $\sigma$); $F(1, 51) = 1.09$, *ns* (effect size = .29 $\sigma$).

### *Resultant Achievement Motivation*

As previously reported, FOSS and RAM were not correlated, indicating that the latter could not account for effects of fear of success on the dependent variables. This conclusion was supported by analyses of covariance, which showed that effects of fear of success on all three dependent variables—intrinsic motivation, causal attribution, and choice behavior—were maintained even when RAM was held constant.

We also examined the three dependent variables in ANOVAs with sex, task outcomes, choice, and RAM (high/low as determined by median split) as between-subjects factors. The only results of interest were obtained in the ANOVA of the internal–external attributional index. In accordance with the attribution reformulation of achievement motivation (Weiner et al., 1971), high RAM subjects made more internal attributions for success and more external attributions for failure than did low RAM subjects (see Table 5a), $F(1, 103) = 4.35$, $p = .04$ (effect size = .41 $\sigma$). These findings replicate results of previous studies of the relationship between achievement motivation and attribution (cf. Zuckerman, 1979) and thus increase our confidence in the validity of Mehrabian's (1968) scale as a measure of resultant achievement moti-

vation. It was also found that high RAM subjects made more internal attributions under choice and more external attributions under no choice than did low RAM subjects (see Table 5b), $F(1, 103) = 3.73$, $p = .056$ (effect size = .38 $\sigma$). It appears, then, that choice increases a sense of personal responsibility only among people high in resultant achievement motivation.

The last series of analyses included both the FOSS and the RAM as independent variables to examine any possible interactions between them. None were found.

## Discussion

The discussion focuses first on the effects of fear of success, then touches briefly on the issues of resultant achievement motivation and the relationship of attribution with intrinsic motivation, and, finally, examines the implications of choice and choice behavior that emerged from the present experiment.

Perhaps the most striking effect of the present study is that under the high-performance condition, all of the behaviors that were measured were affected by fear of success. Specifically, following success, low FOSS subjects showed more intrinsic motivation for the task, made more internal attributions for the task outcomes, and were more likely to maintain the condition under which they had previously succeeded. In addition, low FOSS subjects also perceived their performance as greater under both success and failure, although, if anything, their performance was somewhat lower. This pattern of results was not sex linked; there were no sex differences in level of fear of success and no interaction between sex and fear of success on any of the dependent measures. Equally important, there were no significant differences between low and high fear-of-success subjects under failure, indicating that high and low FOSS subjects differ more on fear of success than on fear of failure. Finally, the findings were not accounted for by resultant achievement motivation, indicating that effects of fear of success are unique to this construct.

These results suggest that in an achievement-oriented world, the person with high fear of success maintains a self-defeating strategy. Such a person is less likely to strive for success (as indicated by the choice behavior of our subjects) and less likely to benefit from the achievement of success (as indicated by the attributions and intrinsic motivation of the same subjects). It is important to note, however, that our results were obtained in the laboratory rather than in the real world and are thus limited to the experimental procedures that were used. Evidence concerning the utility of the FOSS in predicting achievement-related behavior in real life is still needed.

Except for causal attribution, the resultant achievement motivation did not have much of an impact on any of the dependent variables. Under the success condition, high RAM and low FOSS scores were related independently to more internal attributions (accounting together for 17.7% of the variance, $R = .42$, $p < .01$). However, the RAM, unlike the FOSS, also led to higher internal attributions within the choice condition. In view of these results, it appears fruitful to employ both measures in future research to determine their common as well as their separate contribu-

Table 5
*Mean Internal–External Attributions for High and Low Resultant Achievement Motivation Subjects*

| Resultant achievement motivation | *5a. Success versus failure* | | | *5b. Choice versus no choice* | | |
|---|---|---|---|---|---|---|
| | Success | Failure | *M* | Choice | No choice | *M* |
| Low | 1.60 (30) | 3.19 (26) | 2.39 | 2.26 (28) | 2.54 (28) | 2.40 |
| High | 6.00 (30) | 2.90 (33) | 4.45 | 6.48 (32) | 2.42 (31) | 4.45 |
| *M* | 3.80 | 3.05 | 3.42 | 4.37 | 2.48 | 3.42 |

*Note.* Higher scores indicate more internal attributions; figures in parentheses indicate the number of subjects in each cell.

tions for the explanation of achievement-related behavior.

Internal attribution of success and intrinsic motivation have often been linked conceptually but not empirically. Thus, the detrimental effects of rewards on intrinsic motivation have been frequently explained as an overjustification effect (e.g., Lepper, Greene, & Nisbett, 1973), namely, the attribution of performance to the reward and the resultant decrease in intrinsic motivation. As Ross (1977) stated, however, whereas "the theory focuses solely on cognitive processes, . . . the research almost always assesses only overt behavior" (p. 135). In the present study, cognitive processes (causal attribution) and overt behavior (the free-choice measure of intrinsic motivation) were positively related in the success condition, particularly if subjects had chosen their own tasks. However, this relationship does not necessarily imply causality and also cannot answer the question of whether effects of success on intrinsic motivation are due to an increase in attraction of the task or in perceived competence of the subject. Direct manipulation of attribution is needed to establish its causal relationship with intrinsic motivation; including success in skill- versus chance-related tasks may clarify the role of perceived competence in accounting for intrinsic motivation.

Choice increased the difference between success and failure in perceived performance and also led to more internal attributions. However, choice did not increase the effects of task outcomes on any of the dependent variables and, contrary to the findings by Zuckerman et al. (1978), did not increase intrinsic motivation for the task. Perhaps in the context of the present study, choice may have been less important and/or real than choice in real life; less important, because subjects could not familiarize themselves with the puzzles, and their choice was consequently an uneducated guess; less real, because subjects could choose among only six puzzles that had been selected by the experimenter in the first place. Indeed, as Table 4 indicates, when later given an opportunity to choose all eight of the puzzles to work on, subjects decided to choose about 50% of the puzzles ($M = 4.27$) and have the rest assigned to them by the experimenter. Clearly, choice was not sought after for its own sake but rather as a means to an end. Specifically, the decision of how many puzzles subjects wanted to choose was apparently based on the likelihood that the choice would lead to success (as determined by the subjects' previous experience with choice and task outcome) and on the desirability of success (as determined by the subject's level of fear of success). In view of the positive effects that are attributed to choice (e.g., Langer & Rodin, 1976; Rodin & Langer, 1977; Schultz, 1976), the relatively low desirability of choice in the present study is intriguing. The investigation of the determinants of desire for choice and the effects of choice, given to a person either in spite of or in accordance with the person's wish, remains a challenge for future research.

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