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# Perceived uncertainty as a moderator of workrelated expectancies and goals of real estate salespersons

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14

PERCEIVED UNCERTAINTY AS A MODERATOR OF WORK-RELATED  
EXPECTANCIES AND GOALS OF REAL ESTATE SALESPERSONS

A Thesis  
Presented to the  
Department of Psychology  
and the  
Faculty of the Graduate College  
University of Nebraska

In Partial Fulfillment  
of the Requirements for the Degree  
Master of Arts  
University of Nebraska at Omaha

by  
Helen E. Largen  
December 1980

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THESIS ACCEPTANCE

Accepted for the faculty of the Graduate College, University of Nebraska, in partial fulfillment of the requirements for the degree Master of Arts, University of Nebraska at Omaha.

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*November 25, 1980*  
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## Abstract

The effect of perceived uncertainty as a moderator of work-related expectancies and goals of real-estate salespersons was examined. The effect of tenure as a moderator of these relationships was studied, as well as the effects of uncertainty and tenure on perceived differences in the amount of effort required to meet income goals under changing economic conditions. Additionally, Kopelman's (1977) return on effort construct was tested in an organizational setting. The results generally provided weak support or none at all for the hypothesized relationships between uncertainty, motivation, goals, effort and tenure. Possible explanations for these results were (a) unique characteristics of the population from which the sample was drawn, and (b) differences in measured dimensions of uncertainty from those previously reported in the literature (Ferris, 1978). A supplementary analysis and discussion of results is found in Appendix B. Post hoc analysis of the data suggested that ability and attributional strategies are moderators of the relationships between uncertainty, motivation, goals, effort and tenure.

Perceived Uncertainty as a Moderator of Work-Related  
Expectancies and Goals of Real Estate Salespersons

Vroom's (1964) expectancy-valence model is the dominant motivational theory in organizational psychology today (Campbell & Pritchard, 1976). As a cognitive theory it owes its ancestry to the work of Lewin and Tolman. Both held that individuals have cognitive expectancies concerning the outcome of their choice of action; an individual has an idea about the possible consequences of his/her acts, and choices are made according to the perceived probability and/or value of these consequences to the individual.

Vroom's model is basically ahistorical. "From an ahistorical point of view, behavior at a given time is viewed as depending only on events existing at that time . . . Past events can only have an effect on behavior in the present by modifying conditions which exist in the present" (Vroom, 1964, pp. 13-14). This model is based on the assumption that, at any given point in time, a person has preferences among outcomes resulting from alternative courses of action. Vroom uses the term valence in referring to this preference of "affective orientation" toward outcomes. Valence refers to anticipated satisfaction of the outcome as distinguished from the actual satisfaction or dissatisfaction that it may later provide. According to Vroom, the valence of a primary outcome is a function of the sum of the products of the valences of all secondary outcomes and the belief that it is instrumental for the attainment of these outcomes. He states this relationship algebraically as:

$$V_j = f_j (V_k I_{jk}) \quad (j=1 \dots n)$$

where  $V_j$  = the valence of outcome j  
 $I_{jk}$  = the cognized instrumentality of outcome j  
for the attainment of outcome k

Vroom's concept of expectancy recognizes that the outcomes attained by a person are a function not only of his choices, but also of events which are beyond his control. Whenever an individual chooses between alternative outcomes, his behavior is affected not only by his preferences (outcome valences), but by the degree to which he believes these outcomes are probable. Vroom defines expectancy as "a momentary belief concerning the likelihood that a particular act will be followed by a particular outcome" (Vroom, 1964, p. 17).

Expectancy is an action-outcome association which takes values ranging from 0 (no probability that an act will be followed by an outcome) to 1 (certainty that an outcome will follow an act). On the other hand, instrumentality is an outcome-outcome association with values ranging from -1 (attainment of a second outcome is impossible with attainment of the first outcome) to +1 (the first outcome is a necessary and sufficient condition for the attainment of the second outcome).

Behavior is assumed to be a function of a field of forces, each with its own direction and magnitude. To obtain a hypothetical force score, Vroom predicted that the force strength would be a monotonically increasing function of the product of valences and expectancies, where:

$$F_i = f_i \sum (E_{ij} V_j)$$

$F_i$  = the force to perform act i

$E_{ij}$  = the strength of the expectancy that act i will be followed by outcome j

$V_j$  = the valence of outcome j

Since Vroom's (1964) conceptualization, the model has been elaborated and extended by several other theorists. Porter and Lawler (1968) distinguished the concept of effort-reward probability which refers to the individual's perception that differential rewards are based on differential efforts. This general expectancy was broken down into two subsidiary expectations: an effort-performance expectancy and a performance-reward expectancy, subsequently named  $E_I$  and  $E_{II}$ , respectively, by Campbell, Dunnette, Lawler and Weick (1970). This distinction is most consistently used in recent literature (House & Wahba, 1974) and will be utilized in this paper. Porter and Lawler's (1968) model also incorporated a feedback notion, hypothesizing that over time, the perceived effort-reward contingency will change as a result of the actual reward practices of the organization (extrinsic) or individual (intrinsic).

Graen (1969) proposed an extension of the model to broaden the conceptual base, incorporating ideas from attitude theory, role theory and the interpersonal influence process. This model considered the entire spectrum of job behavior; the set of roles would be different for each job. Graen was first to introduce the notion of "path-goal utility" as one of the determinants of motivation. Path-goal utility is composed of what Graen terms "goal attraction" and "path efficacy." Goal attraction is the sum of the products of the valence of outcomes multiplied by the instrumentality of a given performance level for attaining these outcomes (equivalent to Campbell et al.'s (1970)  $E_{II}$ ). Path efficacy is the perceived degree of relationship between a given effort level and the attainment of a given performance level

(equivalent to Campbell et al.'s (1970)  $E_I$ ). Path-goal utility plus intrinsic and extrinsic sources of pressure toward superior effort combine additively to predict the probability of superior effort.

Lawler (1973) hypothesized that individual characteristics and learning are important determinants of an individual's expectancies with regard to his work role. In the work situation, environmental contingencies are part of the stimuli that induce learning and therefore, expectancy formulation. Individual characteristics, particularly the perceived ability of the employee to function effectively in the work role, are also seen to be an important part of expectancy formulation. Lawler's (1973) expectancy model defined several expectancy variables, among them:

$E \rightarrow P$ , effort-performance association: A measure of Expectancy I, the belief that effort will lead to good performance.

$\Sigma(P \rightarrow O)$ , performance-outcome associations: A measure of Expectancy II, computed as the sum or average of beliefs which link performance with first-level outcomes.

$\Sigma[(P \rightarrow O)(V)]$ , performance-outcome associations weighted by valences: A measure similar to  $P \rightarrow O$  expectancies, except that each outcome is multiplied by its valence.

$(E \rightarrow P)\Sigma[(P \rightarrow O)(V)]$ , motivation: A measure of the concept of motivation, computed as the product of the  $E \rightarrow P$  and the  $\Sigma[(P \rightarrow O)(V)]$  variables.

Lawler (1973) proposed the following factors influencing expectancy: Expectancy I is influenced by (a) self esteem, or a person's belief in his ability to cope with and control his environment, and

(b) his previous experience in similar situations; Expectancy II is influenced by (a) the subject's belief in internal vs. external locus of control, (b) the strength of the relationship between performance and outcomes over past experiences, and (c) the attractiveness of those outcomes.

Drawing on similar theoretical arguments, Dachler and Mobley (1973) outlined an expectancy model which attempted to explain the process of work motivation in terms of employee cognitions. Their model was based on the view that an employee's level of performance can be thought of as a choice he makes. This choice involves selecting that level of performance which, on the basis of various beliefs and feelings, is thought to be most useful for that employee. Motivation is reflected in the effort a person exerts to reach that performance level (p. 397).

Figure 1 shows that an individual's performance-outcome probabilities (2a) are combined multiplicatively with the work outcome desirability (2b). As there is more than one outcome for each level of performance, the products are summed. This result summarizes the extent to which an employee feels he will be rewarded or punished for performing at a given level of performance. Level of performance with maximum expected utility (3) determines the individual's task goal (4) and is obtained by multiplying expectancy (1) by utility (2). This illustrates the fact that if either of these terms is zero, no effort will be expended toward performance. Thus, this model assumes that people tend to maximize returns from their job; motivation is expected to be highest for that level of performance which has the highest

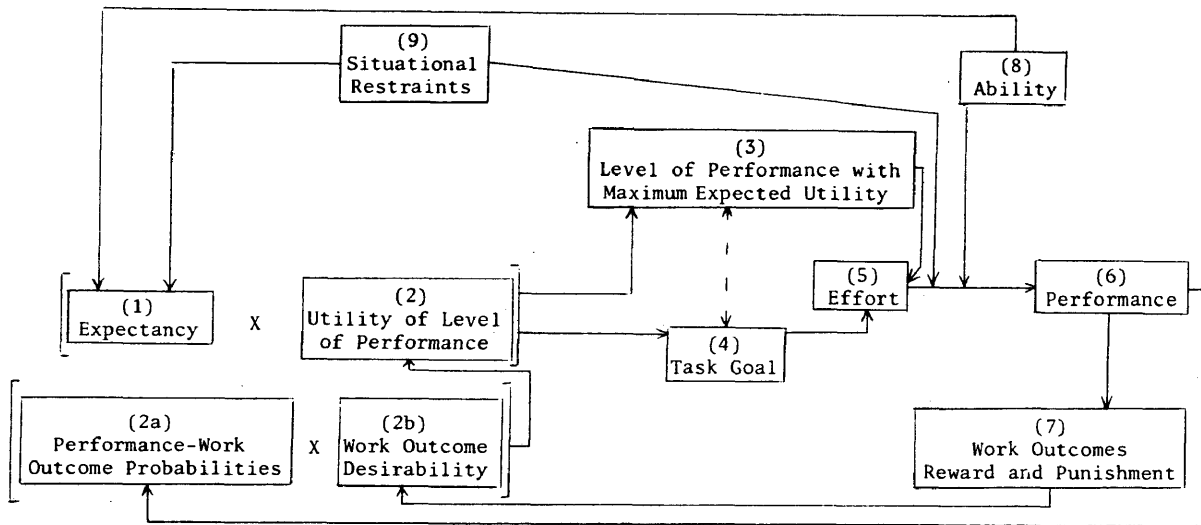


Figure 1. Dachler & Mobley's (1973) model of work motivation.

1. Expectancy--the perceived probability that an individual can perform at a given level of performance ( $E_I$ )

2. Utility--the usefulness or attraction of a particular level of performance, which is a result of the combination of

2a. Performance-outcome probabilities--the perceived certainty that a given level of performance will lead to rewarding or punishing consequences ( $E_{II}$ ), and

2b. Work outcome desirability--the relative desirability or undesirability of these consequences (valence of  $E_{II}$ ); both of these components are affected by the individual's past experiences in similar situations

3. Level of performance with maximum expected utility--the index of motivation indicating the level of probability at which an individual will choose to work

4. Task goal--the stated level of performance that an individual is trying to achieve, which reflects the same factors as (3); these factors determine

5. Effort--a direct reflection of the strength of an individual's motivation to perform at a particular level

6. Performance--a reflection of effort, which is moderated by

8. Ability and

9. Situational restraints.

expected utility in comparison to other possible levels of performance toward which a person might choose to work.

The expectancy-valence model views individuals as thinking, reasoning beings who have beliefs and anticipations concerning future events in their lives. The assumed existence of these anticipations, based on individual-environmental interaction, distinguishes expectancy-valence theory from other motivational models (Steers & Porter, 1979). While each of the models presented above is slightly different, they are but variations on a common theme. Nadler and Lawler (1979) have summarized the following assumptions of the expectancy model:

(a) behavior is determined by a combination of forces in the individual and forces in the environment, (b) people make decisions about their own behavior in organizations, (c) different people have different types of needs, desires and goals, and (d) people make decisions among alternative plans of behavior based on their perceptions (expectancies) of the degree to which a given behavior will lead to desired outcomes.

#### Expectancy-Valence Research

While a considerable body of research has generally supported the basic tenets of expectancy theory, the majority of studies dealing with work-related expectancies have utilized populations of individuals within organizations (Mitchell, 1974). The use of these subject samples tends to produce low correlations between force scores and effort criteria. In most cases this can be attributed to a conceptual mismatch between expectancy theory and experimental setting; workers cannot be expected to exert effort in proportion to their preferences regarding goal setting and reward contingencies as these factors are



not usually subject to the individual worker's influence and control.

In general, recent research efforts have been directed toward exploring the effects of these boundary conditions on expectancy theory predictions of effort expenditure of individuals in organizational settings. Several such studies are particularly relevant to the present investigation.

### Goal Setting

Goodman, Rose and Furcon (1970) found goal-related expectancies X and degree of subject's control over work to be the best predictors of productivity in a sample of highly educated scientists and engineers at a government research lab. Dachler and Mobley (1973) found stated goals and intentions to be the primary determinants of work motivation in a population where performance-reward contingencies were clearly established. In addition, Dachler and Mobley tested the inter-relationships between the key variables in their model and behavior. The results supported their expectancy model in terms of both statistical significance and the pattern of relationships. Stated goals were shown to be related to actual performance, as well as to the level of performance with maximum expected utility (i.e., motivation as defined by expectancy theory). Tenure was an important moderator variable, which demonstrated that experience enabled employees to have more accurate perceptions of their expectations and performance-outcome contingencies. However, these results were moderated by a boundary condition; support for the model was found only in the sample where perceived performance-reward contingencies were clearly established.

### Performance-Reward Contingencies

Those studies dealing with contingent reward systems found that this factor strengthened expectancy theory predictions of motivation. Graen (1969) found that his subjects perceived  $E_{II}$  as being contingent on past performance-reward contingencies, and suggested that this contingent relationship was definitely a necessary condition for the theory. Kopelman and Thompson (1976) demonstrated work motivation to be higher in organizations where effort-reward contingency was established, while Schwab and Dyer (1973) found that the valence of compensation and expectancy perceptions were significantly correlated with performance but instrumentality was not. It is probable that their subjects perceived the contingent relationship between work production and pay, thus removing all variance from the instrumentality scores. Pritchard, DeLeo and VonBergen (1976) found the addition of financially based outcomes to a contingent reward system to be a powerful enhancer of performance.

### Return on Effort

While not directly studying expectancy theory predictions of goal choice, Kopelman (1977) challenged expectancy theory's assumption that individuals choose their behaviors on the basis of total motivational force (net of cost) so as to maximize total expected benefits. Based on the idea of return on investment in finance, he hypothesized that people would choose those acts with the highest marginal return on invested effort (ROE), not necessarily those acts with the greatest net benefits. Acting on this basis, an individual might prefer to undertake several small projects with high rates of return and forego

a large project with maximum net benefits but a lower rate of return. With research examining the difference between motivational force scores for two levels of effort, he reported ROE correlations consistently superior to maximum expected benefit correlations. Kopelman's study was limited in that he operationalized the effort criterion in his student population as "intention to study hard"; all data were perceptual in nature and taken at a single point in time. To date, his hypothesis has not been tested in an organizational setting.

#### Environmental Influences

While the research discussed above has related the components of expectancy theory to the behavior of individuals in organizations, studies which examine the impact of environmental characteristics are more rare (Sims, Szilagyi, & McKemey, 1976). To a certain extent, perception of environmental characteristics is a function of individual differences; different people will perceive an identical environment in different ways due to differences in personality and differences in past experiences. Duncan (1972) defined environment as "the totality of physical and social factors that are taken directly into consideration in the decision-making behavior of individuals in the organization" (p. 314). He identified two environmental dimensions in which different levels of perceived uncertainty are expected to exist. The single-complex dimension deals with the degree to which the factors in the environment are few or large in number and are similar to one another in that they are located in a few components. The static-dynamic dimension of environment indicates the degree to which the factors of the internal or external environment remain basically the

same over time or are in a continuous process of change.

Duncan then identified three components of perceived environmental uncertainty in individuals: (a) the lack of information regarding the environmental factors associated with a given decision-making situation, (b) not knowing the outcome of a specific decision in terms of how much the organization would lose if the decision were incorrect, and (c) inability to assign probabilities with any degree of confidence with regard to how environmental factors are going to affect the success or failure of the decision unit in performing its function (p. 318). Duncan measured the first two dimensions with a five-point Likert scale, asking each subject to answer questionnaire items for each of the factors taken into consideration in decision making. He measured the third dimension by asking the subjects to indicate on a scale from 0 to 1 how sure they were that each of the factors in the first two scales would affect the success or failure of their work. Additionally, the subjects were asked to indicate a range between 0 and 1 that would indicate their confidence that the previous estimate was correct. The score for dimension 3 was computed as follows:

degree of ability to assign probabilities =

(certainty of effects of factor) x (1 - range of certainty estimates)

For example, if the subject's estimate was 0.1 - 0.4, the second term would be .7. The perceived uncertainty score was then derived by summing the three dimension scores.

#### Environmental Uncertainty Research

Duncan studied twenty-two decision units in three manufacturing

organizations and three research and development organizations. An organizational decision unit was defined as "a formally specified work group within the organization under a superior charged with a formally defined set of responsibilities toward the attainment of the goals of the organization" (p. 313).

Duncan hypothesized that (a) individuals in simple-static environments would experience the least perceived environmental uncertainty, (b) individuals in complex-dynamic environments would experience the most uncertainty, and (c) individuals in simple-dynamic environments would experience more uncertainty than individuals in complex-static environments. His data indicated that the static-dynamic dimension was a more important contributor to uncertainty than was the simple-complex dimension.

Duncan acknowledged some methodological discrepancies in that he used a normative approach (pooling of scores) in spite of the fact that his preliminary research had shown that individuals differed significantly in their perceptions of the static-dynamic dimension of the environment. He was also not able to control for the type of organization in the statistical analysis.

Duncan's perceived environmental uncertainty construct is logically sound for the environment for which it was constructed, that is, a traditionally-structured work organization. One would expect that perceived environmental uncertainty would impact on both  $E_I$  and  $E_{II}$  expectancies of individuals but, as Mitchell (1974) noted, the constraints imposed on most individuals in traditional organizations do not make them ideal subjects for the study of expectancy theory

predictions of motivation. A more appropriate group of subjects would be those who exert a greater degree of control over their work, i.e., individuals who can independently establish their own goals and exert as much effort as they think necessary to attain their desired outcomes. However, the independence of these subjects raises an important question with regard to uncertainty that was not considered by Duncan. Assuming that these individuals are working with less supervision and control than that imposed on members of traditional organizations, what does the individual's perception of his job knowledge contribute to his perception of environmental uncertainty? A useful addition to Duncan's concept would be the construction of a scale measuring individual perceptions of this knowledge.

Ferris (1978) utilized a revision of Duncan's (1972) scale to assess the effect of perceived environmental uncertainty on expectancy theory predictions of motivational force in a sample of accountants. His research demonstrated that perceived uncertainty impacted specifically on  $E_I$ ; as perceived environmental uncertainty increased, expectancy estimates decreased and the variance around the expectancy estimate increased. However, these results may represent only a partial picture of the relationship between perceived environmental uncertainty and expectancy scores. For example, Ferris found that perceived uncertainty did not correlate with  $E_{II}$  expectancies. However, this is exactly what one would predict in the absence of a contingent relationship between performance and outcome (monthly salary). Additionally, he utilized a normative design, and there was no evidence that his perceived environmental uncertainty instrument

measured environmental factors specific to the job context of the accountants. He did not attempt to assess the probabilities that various environmental factors would affect job performance. Rather, four general items, e.g., "difficult to determine if decision was correct" (p. 386) were used to tap this dimension.

#### Environmental Uncertainty and Expectancy Theory

From the preceding discussion and following Lawler's (1973) expectancy model, it is interesting to speculate on the nature of the relationship between perceived environmental uncertainty and expectancy theory predictions of motivational force. To the extent that perceived environmental uncertainty is a function of an individual's self esteem (a belief in his ability to cope with and control his environment) and his previous experience in similar situations, uncertainty should be inversely related to  $E_I$  scores. To the extent that uncertainty is related to internal locus of control, perceived environmental uncertainty scores should be inversely related to  $E_{II}$  when the past relationship between performance and outcomes has been strong.

From Dachler and Mobley (1973) one would expect that perceived environmental uncertainty would be related to performance goals in the same way it is related to motivation. That is, perceived uncertainty, to the extent that it is a function of self esteem and past performance-reward contingencies, should be inversely related to the goal that an individual establishes for himself.

The effect of perceived environmental uncertainty on performance goals should be related to perceived ROE (Kopelman, 1977). One would expect that perceived environmental uncertainty would impact on  $E_I$

expectancies for differential effort levels; individuals high in perceived environmental uncertainty should have a perception of greater difference between minimal and necessary effort needed for goal attainment. If these individuals believe that high income goals are more difficult to attain due to environmental constraints, it is probable that they will establish a lower goal, one which is more attainable with the amount of effort they wish to expend. However, if individuals low in perceived environmental uncertainty believe that their income goal is unattainable by their usual and/or preferred strategy, they will undoubtedly attempt to develop an alternative strategy for meeting that goal. All of these relationships are more likely to be true for individuals with longer tenure.

With this background in mind, this research investigated the effects of perceived environmental uncertainty on work-related expectancies and goals of real-estate salespersons. In this population, performance is normally directly related to reward. When a sale is closed or a listing sold, a fixed percentage of the price obtained is earned by the salesperson. Thus, there should be little uncertainty with regard to the probability that successful job performance will lead to specific desired outcomes. In the case of a real-estate salesperson operating in a dynamic environment, perceived uncertainty would likely be present under the following conditions:

1. The individual might be uncertain with regard to his own knowledge, and may have incomplete information regarding courses of action available to him. This should be more true in the case of individuals with less tenure.



2. The individual might be uncertain with regard to potential environmental variance and constraints, e.g., client responses and market conditions, again an inverse function of tenure.

As a result of these conditions, the individual should experience uncertainty that his efforts will result in desired performance ( $E_I$ ). If, as Lawler hypothesizes,  $E_{II}$  is a function of locus of control and the strength of the relationship between performance and outcomes over past experience, environmental uncertainty (to the extent that it is a function of these factors) will likely be related to  $E_{II}$  as well as to  $E_I$ . It is likely that perceived environmental uncertainty will be inversely related to the goals that an individual establishes for himself. It is likely that individuals with longer tenure will exhibit less perceived environmental uncertainty, and it is also likely that perceived environmental uncertainty will have a direct relationship to the estimate of the difference between minimal and necessary effort needed to attain performance goals.

Based on the above discussion, the hypotheses of this research were:

1.  $E_I$  and  $E_{II}$  expectancies and motivational force will vary inversely with the level of perceived environmental uncertainty.
2. Performance goals will be positively related to  $E_I$ ,  $E_{II}$  and motivational force, while goals will vary inversely with perceived environmental uncertainty.
3. Tenure will be positively related to  $E_I$ ,  $E_{II}$  and motivational force and will vary inversely with perceived environmental uncertainty.

4. Motivation to meet a performance goal will be a function of return on effort. Individuals who choose a lower income goal will do so because the amount of effort needed to meet this goal is proportionally less than that needed for a larger goal. The difference in motivational level should be directly related to the perceived difference in effort needed to attain the goal.

5. Differences in perceived minimal and necessary effort will be directly related to perceived environmental uncertainty, and this relationship will be moderated by tenure. Effort difference scores will be positively related to uncertainty and inversely related to tenure.

In summary, this research explored the effects of perceived environmental uncertainty on  $E_I$ ,  $E_{II}$ , motivational force and performance goals where performance-reward contingency was established. The effect of tenure as a moderator of these relationships was investigated. Additionally, this research extended Kopelman's (1977) return on effort work to an organizational setting.

### Method

#### Subjects

The sample consisted of 49 real-estate salespersons affiliated with four firms. All subjects were "conventional" agents, meaning that approximately 55% of their total commission income is retained by the company. The number of subjects from each company, total questionnaires distributed within each company and response rates, respectively were: Company 1,  $n = 13$ , population = 24, response = 54%; Company 2,  $n = 15$ , population = 45, response = 33%; Company 3,  $n = 8$ ,

population = 110, response = 7%; Company 4, n = 13, population = 71, response = 18%. Overall response rate was 19.6%.

### Procedure

The sampling procedure was slightly different for each company. At Company 1 the questionnaire was distributed at a company sales meeting where the researcher provided a brief general description of the research. Questionnaires were completed at that time. At Company 2 the questionnaire was distributed by the sales manager at a sales meeting. Subject participation was recommended by the company. The researcher contacted subjects by telephone and asked them to complete and return the questionnaire. Company 3 management sent a letter and questionnaire to salespersons, briefly describing the research and requesting participation. Subjects were personally contacted by the researcher and asked to complete and return the questionnaire. At Company 4, management gave permission for the researcher to personally contact salespersons within each branch office. The differences in response rates are likely, in part, a reflection of the differences in questionnaire administration procedure.

As part of the questionnaire administration procedure, each potential respondent was asked to sign his/her name to the consent form. This was necessary in order to match questionnaire data with the respective supervisor's rating of the respondent's effort. The cover letter/consent form emphasized the anonymity and confidentiality of all responses. This factor, as well as the length of the questionnaire and the fact that the respondents were asked to report their income for the last year, made the response rate among potential

subjects relatively low. A total of 250 questionnaires were distributed; at least 150 salespersons were personally contacted and five questionnaires were discarded for lack of signature or incomplete information. Thus, 49 questionnaires were suitable for inclusion in the study. Because of the factors mentioned above, it must be pointed out that the sample is potentially biased to the extent that the respondents (a) had spare time to complete the lengthy questionnaire, (b) were not threatened by questions related to their income, effort expenditure, expectations of success or perceived uncertainty regarding their job-related skills, or (c) were sufficiently interested in the concept of psychological research to warrant the expenditure of time and invasion of privacy.

The questionnaire contained 184 items pertaining to perceived work-related effort, expectancies of success in meeting work-related goals, expectancies of obtaining desired work-related outcomes, the relative value of these outcomes, uncertainty with regard to job knowledge, interpersonal skills and environmental volatility, and the relative importance of each uncertainty factor to the success or failure of the total work strategy. Consistent with recent expectancy research findings (Kopelman, 1977; Matsui, Kagawa, Magamatsu, & Ohtsuka, 1978), a within-persons design was developed.

### Instruments

Expectancy. Expectancy measures were generated utilizing an instrument developed for this research by the author. As suggested by Mitchell (1974), conferences were held with three real-estate agents on separate occasions to generate outcomes relevant to real-

estate salespersons.  $E_I$  expectancies were operationalized by asking, "What is the probability that you will meet your quarterly income goal?". Responses were obtained using 10 categories of equal percentage range with the end values being 0-9% and 90-99%.  $E_{II}$  expectancies were operationalized for maximizing net income (1st level extrinsic outcome) and personal growth and development (1st level intrinsic outcome) in the same manner. Valence of seven second-level intrinsic and extrinsic outcomes was obtained with a 5-point bipolar scale with end values of "very undesirable" and "very desirable." Since it is to be expected that different individuals would have different valences for outcomes, reliability coefficients for this scale are meaningless. The instrumentality of the two first-level outcomes for second-level outcomes was measured with a 5-point bipolar scale, end values being "impossible" and "certain" (Cronbach's alpha = .79 for both).

Following Campbell, Dunnette, Lawler and Weick (1970), Mitchell (1974) states that the model conceptually becomes  $E_I E_{II} (\Sigma IV)$  where:

$E_I$  = perceived probability of goal accomplishment

$E_{II}$  = perceived probability of receiving first level outcome

$I$  = perceived correlation of 1st level outcomes with 2nd level outcomes

$V$  = desirability of outcomes

Because there were two first level outcomes considered ( $E_{II}$ ), in this case the model was computed as follows:  $E_I \Sigma E_{II} (\Sigma IV)$ . Thus,  $E_I$ ,  $E_{II}$ , instrumentalities and valences were measured for the personal quarterly income goal and a \$5000 quarterly income goal for each subject.

Perceived environmental uncertainty. Perceived environmental uncertainty was measured by 18 questionnaire items generated by the author in collaboration with other graduate students and a real-estate salesperson. The concept was developed by modifying and extending Duncan's (1972) measures of perceived environmental uncertainty to deal with sources of uncertainty specific to real-estate salespersons. Three scales were developed, dealing with (a) lack of information regarding job-specific knowledge, (b) uncertainty regarding ability to deal with interpersonal responses from clients, and (c) uncertainty regarding environmental factors, e.g., volatility of interest rates.

Dimensions 1, 2 and 3 were measured by 6-item, 5-point Likert scales with end values of "strongly agree" and "strongly disagree." Each of the 18 items was followed by the question "How important is this factor to the success or failure of your work?". Responses were obtained using 10 categories of percentage range, with end values being 0-9% and 90-99%. Each item of dimensions 1, 2 and 3 was weighted by multiplying the response by its importance (percentage) weight. Scales 1, 2 and 3 were obtained by summing the weighted responses. Total environmental uncertainty was obtained by summing the three separate scales. Reliabilities (Cronbach's alpha) of the scales were: Scale 1, alpha = .70; Scale 2, alpha = .62; Scale 3, alpha = .70; Total uncertainty scale, alpha = .78.

Effort. Four methods were used to measure effort. A subjective estimate of effort was obtained by asking "How much effort do you expend on your job?". A 5-point bipolar scale was utilized with the end values labeled "minimum effort" and "maximum effort." Using the

same type of scale, an objective effort rating was obtained from sales managers (supervisors) for each subject. Additionally, the question was asked "How many hours do you work each week?". Goal-directed effort was assessed by asking subjects to rate the amount of effort expended on each of 10 activities or strategies used in selling real estate. In addition, three general effort items were included which described office-related activities routinely performed which would not lead directly to obtaining a listing or a sale. Five-point unipolar scales ranging from "low effort" to "high effort" were used for these measures. Subjects were then asked to estimate which of these activities would be necessary to obtain a listing or make a sale for residential properties valued at \$30,000, \$75,000 or \$100,000, respectively. Following this, subjects were asked how many of each category of listings and sales would be necessary to meet their personal quarterly income goal (a) under present market conditions, and (b) under market conditions a year ago. These same estimations were obtained for a quarterly income goal of \$5000. Effort for each of these market conditions was computed as follows:

1. Sum of effort ratings for each category of listing and sale.
2. Sum of listings and sales needed to meet the personal income goal this year.
3. Sum of listings and sales needed to meet the personal income goal last year.
4. Sum of listings and sales needed to meet a \$5000 quarterly income goal this year.
5. Sum of listings and sales needed to meet a \$5000 quarterly

income goal last year.

6. Sum of effort for three general effort measures added to 2, 3, 4 and 5 above.

Reliability (Cronbach's alpha) for the effort measures ranged from .54 to .78. The median of reliability coefficients was .71.

## Results

### Construct Validity

Expectancy measures. As shown in Table 1, subjective effort ratings and goal-directed effort estimations correlated significantly with  $E_I$ ,  $E_{II}$ , and total motivational force. Hours worked per week was positively but not significantly related to expectancies. Supervisor's effort ratings were positively related to  $E_I$  and total motivational force and negatively related to  $E_{II}$ , none of the correlations being significant. A further examination of the data showed supervisor's ratings to have significant positive relationships with age (.34,  $p < .01$ ), quarterly income goal (.33,  $p < .01$ ), number of houses sold (.32,  $p < .01$ ), last year's income (.36,  $p < .01$ ) and tenure (.30,  $p < .05$ ). It appears that the supervisor's effort rating likely reflects an index of perceived ability rather than perceived effort.

Perceived environmental uncertainty. At the time that this research was conducted (April 1, 1980 to May 20, 1980), market conditions for residential real-estate sales were considered to be very poor. As shown in Figure 2, contract interest rates, determined nationally by the Federal Home Loan Board, had risen from 10.08% in January of 1979 to 13.21% in April of 1980. These rates represent the federally determined minimum for a conventional home mortgage;



Table 1

## Construct Validity Coefficients for Expectancy Measures

Effort	Motivation	E <sub>I</sub>	E <sub>II</sub>
Hours Worked	.17	.27*	.18
Subjective Estimation of Effort	.42**	.44**	.45**
Supervisor's Effort Rating	.04	.15	-.14
Goal-directed Effort	.35**	.39**	.19

Note. N = 49

\* $p < .05$ , one-tailed

\*\* $p < .01$ , one-tailed

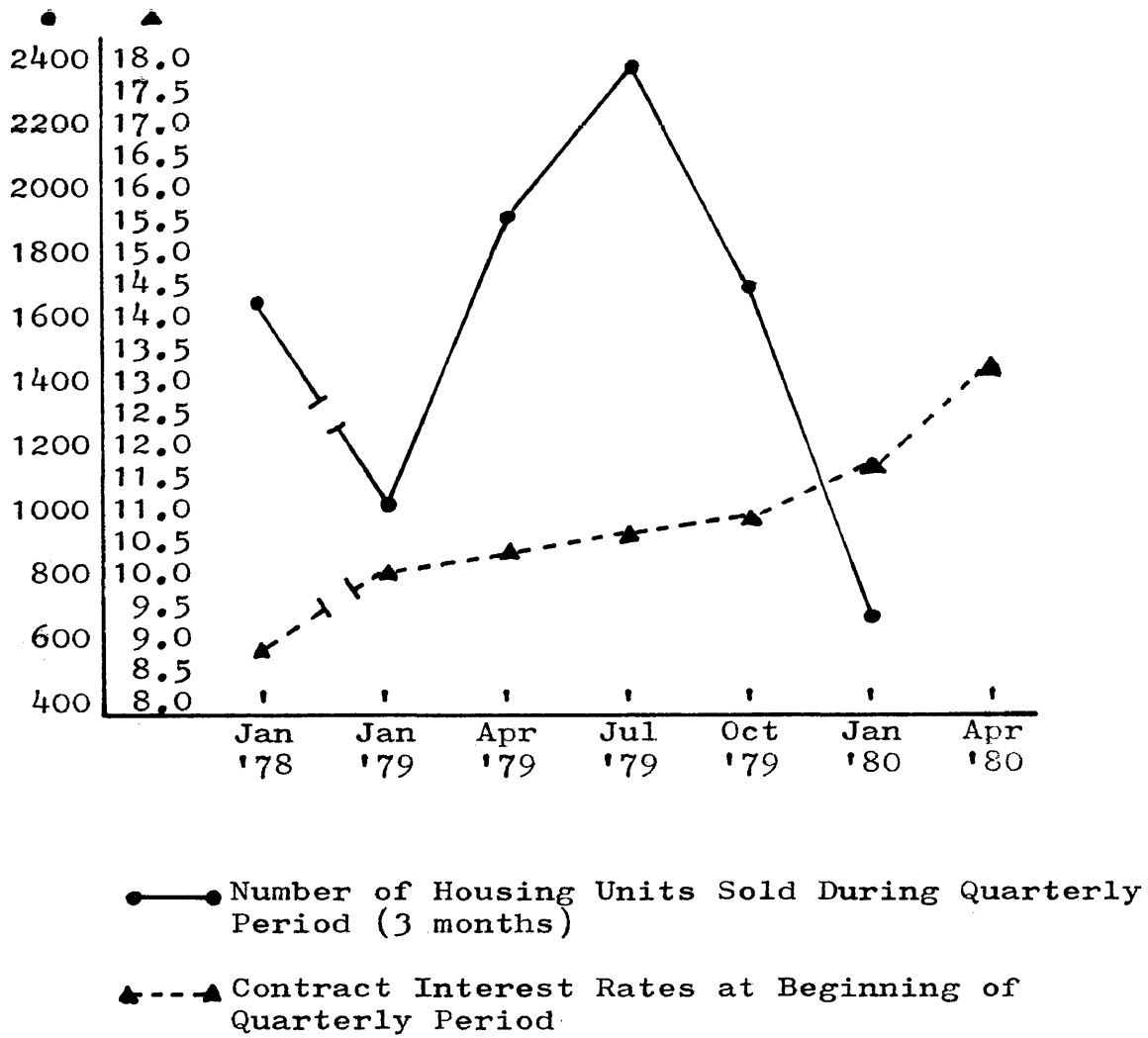


Figure 2. Number of Housing Units Sold in Omaha<sup>a</sup> and Contract Interest Rates<sup>b</sup> During Quarterly Periods from January, 1978 to April, 1980.

<sup>a</sup>Marketing Analysis and Photo Sold Books. Multiple listing Service of Metropolitan Omaha, Inc., 1-1-79 to 6-30-80

<sup>b</sup>Ward, Note 1

in April, Omaha-area savings and loan associations were asking 16% interest for these mortgages in anticipation of future interest rate increases (Ward, Note 1). Sales of residential properties had declined from 1068 in the first quarter of 1979 to 701 in the first quarter of 1980, a 35% decrease.

As shown in Figure 3, methods of financing real estate sales were changing as well. Where in the first quarter of 1979, 60% of all home sales were financed by conventional, FHA or VA loans, in the same quarter of 1980 this proportion had declined to 49% ( $z = 4.56$ ,  $p < .001$ ). Real estate sales during the later period were more likely to be contingent on the availability of assumable mortgages, land contract arrangements or cash sales.

To measure construct validity for the three perceived environmental uncertainty scales, it was reasoned that uncertainty would decrease with longer work experience and increase with the perceived difference in the amount of effort needed to meet goals under changing economic conditions. As shown in Table 2, uncertainty associated with both job-related knowledge and environmental volatility had a significant inverse relationship with tenure. These two elements of uncertainty, as well as uncertainty associated with interpersonal skills, were significantly and positively related to the perceived difference in effort required to meet income goals from last year to this year.

#### Hypothesis 1

$E_I$  and  $E_{II}$  expectancies and total motivational force will vary inversely with the level of perceived environmental uncertainty.

As shown in Table 3, initial analysis of the data did not support

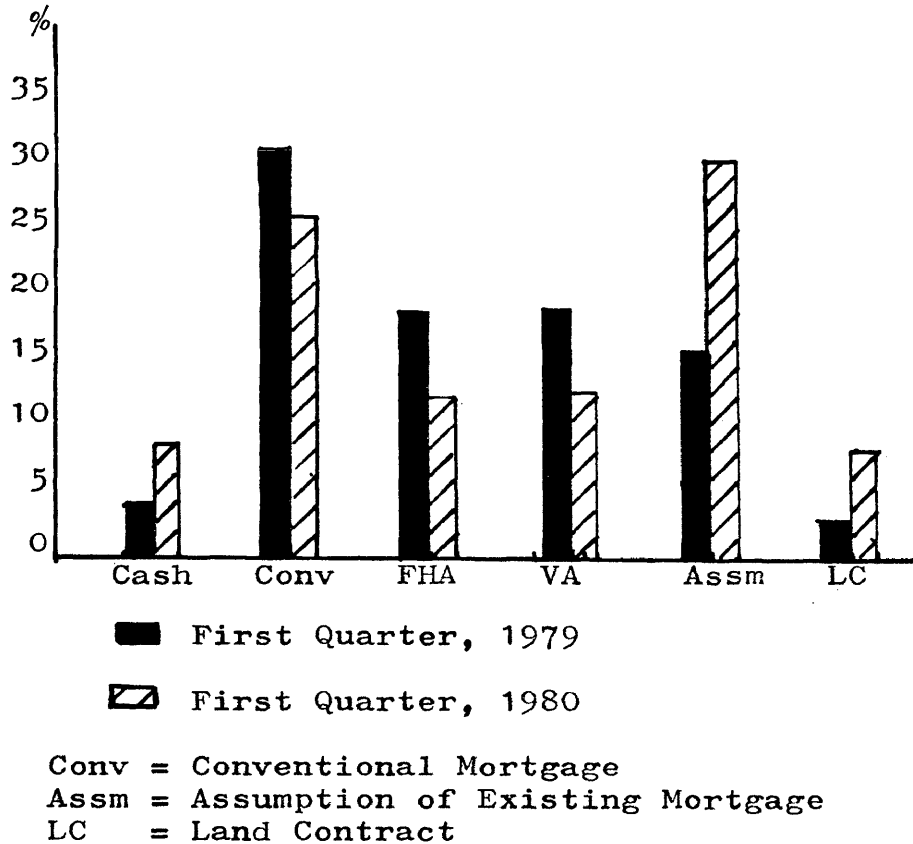


Figure 3. Methods of Financing Residential Real Estate Properties by Percentage of Total Market<sup>a</sup>

<sup>a</sup>Marketing Analysis and Photo Sold Books, Multiple Listing Service of Metropolitan Omaha, Inc., 1-1-79 to 6-30-80

Table 2

The Relationship of Perceived Environmental Uncertainty to  
Tenure and Difference in Effort Needed to Meet Quarterly  
Income Goal This Year vs. the Same Quarter Last Year

Perceived Environmental Uncertainty				
	Total Uncertainty	Job-related Knowledge	Interpersonal Skills	Environmental Volatility
Tenure	-.20	-.26*	.15	-.26*
ROEDEF <sup>a</sup>	.39**	.29*	.28*	.29*

\* $p < .05$ , one-tailed

\*\* $p < .01$ , one-tailed

<sup>a</sup>ROEDEF = difference in effort needed to meet quarterly income goal  
this year versus the same quarter last year

N = 49

Table 3

Differences Between Correlations of Weighted and Unweighted  
Perceived Uncertainty Measures With Expectancy Measures

Uncertainty	Motivation		E <sub>I</sub>		E <sub>II</sub>	
	r	<u>t</u> <sup>a</sup>	r	<u>t</u>	r	<u>t</u>
<b>Total Uncertainty</b>						
Weighted	.24*		.20		.19	
Unweighted	-.17	3.016**	-.21	3.013**	-.10	2.036*
<b>Job-related Knowledge</b>						
Weighted	.23*		.20		.19	
Unweighted	-.06	2.519*	-.13	2.914**	.03	1.332
<b>Interpersonal Skills</b>						
Weighted	.33*		.24*		.21	
Unweighted	-.16	4.056**	-.19	3.402**	-.16	2.837**
<b>Environmental Volatility</b>						
Weighted	.05		.05		.05	
Unweighted	-.14	1.496	-.13	1.496	-.11	1.331

N = 49

\*p < .05, one-tailed

\*\*p < .01, one-tailed

<sup>a</sup>t-test of difference between correlated correlations, two-tailed  
(Guilford, 1956)

this hypothesis. Examining correlations of the relationships between expectancies and weighted uncertainty measures, significant positive relationships were found between the total force scores and the total uncertainty scale, job-related knowledge and interpersonal skills scales, as well as between  $E_I$  and the interpersonal skills scale. The remaining hypothesized correlations between  $E_I$ ,  $E_{II}$  and uncertainty were positive, not reaching significance.

Remembering that the proposed hypothesis was essentially a replication of Ferris' (1978) work, it was noted that Ferris' uncertainty instrument contained a separate scale for assessing the probability that any given factor would contribute to the success or failure of job performance. This scale was summed with the two other uncertainty scales to form the total uncertainty score. The present research instrument, following more closely Duncan's (1972) concept of uncertainty, assessed the probability that uncertainty regarding various aspects of job knowledge, interpersonal skills or environmental volatility would affect job performance. This probability was conceptualized as a multiplicative relationship between uncertainty factors and probabilities, resulting in a perceptual estimate of the relative contribution of the various factors to total uncertainty.

As a test of the effect of the probability factors (weights), correlations between expectancy measures and unweighted uncertainty items were examined (see Table 3). It was found that these relationships, although not significant, were negative as were those reported by Ferris (1978). In eight of 12 cases, t-tests (two-tailed) of the difference between correlations of expectancies and weighted and unweighted uncertainty scales were significant.

### Hypothesis 2

Performance goals will be positively related to  $E_I$ ,  $E_{II}$  and motivational force, while goals will vary inversely with perceived environmental uncertainty.

This hypothesis received only partial support, as shown in Table 4. Quarterly and yearly income goals were significantly and positively related to  $E_I$ .  $E_{II}$  and total force (motivation) scores were not significantly related to goals. Examination of correlations between perceived environmental uncertainty and goals revealed a similar pattern of results as obtained for Hypothesis 2; weighted uncertainty measures did not support the hypothesis, while the unweighted measures of total uncertainty and job-related knowledge had significant inverse relationships to quarterly and yearly income goals. The difference in correlations of weighted and unweighted total uncertainty to the quarterly income goal was significant,  $t(47) = 2.075$ ,  $p < .05$ , two-tailed.

### Hypothesis 3

Tenure will be positively related to  $E_I$ ,  $E_{II}$  and motivational force and will vary inversely with perceived environmental uncertainty.

As shown in Table 5, this hypothesis was partially supported. Tenure was not related to motivation, but significant negative relationships were found between tenure, job-related knowledge and environmental volatility uncertainty. Examination of the relationship between tenure and unweighted uncertainty measures revealed a significant negative relationship between tenure, total uncertainty and job-related knowledge uncertainty. There were no significant differences between correlations of weighted and unweighted uncertainty measures with tenure.



Table 4

## Relationship of Goals to Expectancy and Uncertainty Measures

	Quarterly Income Goal	Yearly Income Goal
Motivation	.17	.22
E <sub>I</sub>	.27*	.36**
E <sub>II</sub>	.06	.11
Total Uncertainty		
Weighted	-.02	-.04
Unweighted	-.31*	-.25*
Job-related Knowledge		
Weighted	-.06	-.14
Unweighted	-.28*	-.34*
Interpersonal Skills		
Weighted	.06	.22
Unweighted	-.13	-.02
Environmental Volatility		
Weighted	-.04	-.12
Unweighted	-.22	-.13

N = 49

\*p &lt; .05, one-tailed

\*\*p &lt; .01, one-tailed

Table 5

## Relationship of Tenure to Expectancy and Uncertainty Measures

	Tenure
Motivation	.13
$E_I$	.03
$E_{II}$	.00
Total Uncertainty	
Weighted	-.20
Unweighted	-.25*
Job-related Knowledge	
Weighted	-.26*
Unweighted	-.43**
Interpersonal Skills	
Weighted	.15
Unweighted	-.01
Environmental Volatility	
Weighted	-.26*
Unweighted	-.05

N = 49

\* $p < .05$ , one-tailed\*\* $p < .01$ , one-tailed

Hypothesis 4

Motivation to meet a performance goal will be a function of return on effort. Individuals who choose a lower income goal will do so because the amount of effort needed to meet this goal is proportionally less than that needed for a larger goal. The difference in motivational level should be directly related to the perceived difference in effort needed to attain the goal.

As shown in Table 6, this hypothesis was not supported by the data. To test the hypothesis, the sample was divided into two groups:

(1) quarterly income goal above \$5000, and (2) quarterly income goal below \$5000. A score reflecting the difference in motivational force between an individual's personal quarterly income goal and a \$5000 quarterly income goal was computed: ROE differential force score (ROEDFS) = motivational force score (personal goal) - motivational force score (\$5000 goal). A score reflecting the difference between necessary effort for higher and lower income goals was also computed: ROE differential necessary effort (ROEDNES) = perceived effort level for personal goal attainment - perceived effort level for \$5000 goal attainment.

Pearson correlations were computed between ROEDFS and ROEDNES for high and low-income goal groups.

The correlations of difference scores for effort and motivation were not significantly different for the two groups.

Hypothesis 5

Perceived differences in effort needed to meet quarterly income goals this year vs. last year will be directly related to perceived

Table 6  
 Relationship of Motivation Difference Scores  
 to Effort Difference Scores for High and  
 Low-Income Goal Groups

	ROEDNES <sup>a</sup>	
	Income Goal <sup>c</sup> Greater than \$5000	Income Goal <sup>d</sup> Less than \$5000
ROEDFS <sup>b</sup>	.38*	.69*

\* $p < .05$ , one-tailed

\*\* $p < .01$ , one-tailed

<sup>a</sup>ROEDNES = difference between necessary effort for personal quarterly income goal and \$5000 quarterly income goal

<sup>b</sup>ROEDFS = motivational force difference between personal quarterly income goal and \$5000 quarterly income goal

<sup>c</sup>N = 27

<sup>d</sup>N = 22

environmental uncertainty, moderated by tenure. Return on effort differential scores will be positively related to uncertainty and inversely related to tenure.

As shown in Table 2, the differential effort score, computed by subtracting effort needed to meet the quarterly income goal last year from effort needed to meet the quarterly income goal this year, was significantly and positively related to all weighted components of uncertainty, but was not significantly related to tenure ( $r = -.12$ ). To test the moderating effect of tenure on the relationship between uncertainty and differential effort, subjects were divided at the median (four years) into groups of long and short tenure, as shown in Table 7. Total uncertainty and uncertainty regarding job-related knowledge and environmental volatility were significant and positively related to the effort difference score in the long-tenure group. This relationship was not present in the group which had less work experience. However, none of the correlations were significantly different between short- and long-tenure groups.

Unlike previously reported results, the unweighted uncertainty scores were not superior to the weighted scores in support of this hypothesis. As shown in Table 7, there were no significant relationships between unweighted uncertainty measures and differential effort scores.

### Discussion

The results reported above generally provided weak support or none at all for the hypothesized relationships between uncertainty, motivation, goals, effort and tenure. Based on obtained correlations

Table 7  
 Tenure as a Moderator of the Relationship Between  
 Perceived Uncertainty and ROEDEF<sup>a</sup>

	ROEDEF	
	Long Tenure <sup>b</sup>	Short Tenure <sup>c</sup>
Total Uncertainty		
Weighted	.52**	.25
Unweighted	.31	.01
Job-related Knowledge		
Weighted	.53**	.15
Unweighted	.18	-.19
Interpersonal Skills		
Weighted	.30	.23
Unweighted	.23	.17
Environmental Volatility		
Weighted	.37*	.22
Unweighted	.25	.09

\* $p < .05$ , one-tailed

\*\* $p < .01$ , one-tailed

<sup>a</sup>ROEDEF = difference between effort necessary to meet quarterly income goal this year versus the same quarter last year

<sup>b</sup>Tenure = 4 to 28 years, N = 25

<sup>c</sup>Tenure = 0 to 3 years, N = 24

between these variables, the following conclusions were drawn from the data:

1. Weighted items dealing with personal elements of uncertainty (job-related knowledge and interpersonal skills) were positively related to motivation and  $E_I$ . This suggests that personal uncertainty is related to increased motivation with this sample of real-estate salespersons, i.e., "rising to the challenge of the work." The removal of the "importance" weights from the personal uncertainty items eliminated this effect. Environmental volatility uncertainty had no relationship to motivation.

2. Quarterly and yearly income goals were positively related to  $E_I$ , the effort-performance expectancy. Weighted uncertainty measures were not directly related to goals. By eliminating the "importance" weights, increased total uncertainty and uncertainty regarding job-related knowledge were significantly related to a decrease in goals.

3. Longer tenure was associated with a decrease in weighted job-related knowledge and environmental volatility uncertainty, as anticipated. Removal of the "importance" weights strengthened the relationship between tenure and job-related knowledge uncertainty and eliminated the relationship between environmental volatility and tenure, while increasing the negative relationship between tenure and total uncertainty to a small but significant level.

4. There was no significant difference between high- and low-income goal groups with respect to the relationship between motivation difference scores and effort difference scores. Thus, no support was found for Kopelman's (1977) return on effort construct.

5. With respect to the difference in effort needed from last year to this year to meet the same income goal, individuals with longer tenure associated this effort difference with increased total uncertainty, job-related knowledge and environmental volatility uncertainty. This relationship was not observed in those salespersons with shorter tenure. X

The inconsistency of these results with those previously reported in the literature (Ferris, 1978), as well as the logical difficulty in accepting the apparent finding that environmental volatility uncertainty was not related to motivation (in direct contradiction to verbalized claims on the part of the subjects), are cause for reevaluation of two components of this study, namely the population from which the sample was drawn and the perceived environmental uncertainty instrument.

The uncertainty construct was originally conceptualized as a means of measuring the impact of perceived environmental uncertainty on employees of formal organizations. In adapting the concept for use in a sales population where reward is contingent on performance and goals are self-determined, it was reasoned that uncertainty with regard to job-related knowledge and interpersonal skills should be measured because these people work with minimal supervision or support from the organization.

As noted earlier, the uncertainty instrument constructed for this research differed in several respects from those constructed by Duncan (1972) and by Ferris (1978). The instrument developed for this study dealt with sources of personal and environmental uncertainty.



These may be seen as lying on a dimension of locus of causality. The locus of causality for job-related knowledge is personal (internal); for interpersonal skills the locus of causality can be construed as either personal (internal) or environmental (external). The environmental volatility scale measures uncertainty from an external locus of causality. Therefore, it can be seen that the instrument constructed for this research measures uncertainty from both personal and environmental sources, rather than from environmental sources only, as was the case in the previous studies. It is probable that this instrument taps elements of perceived self-confidence (the ability to cope with or control one's environment) as well as perceptions of the impact of environmental factors. Given the immediacy of real-estate salespersons' contact with their environment and feedback relative to the success or failure of their sales strategies, it is probable that uncertainty touches a "closer nerve" with this population than it does with members of an organization who are not subjected to the same degree of volatility in their work routine.

In addition to differences in the measured dimensions of uncertainty and the population sample, another major departure from Ferris' (1978) work was the method used to assess the probability that elements of uncertainty would affect the success or failure of the total work strategy. The direct item-by-item assessment of importance (weighting, described previously as a multiplicative relationship) resulted in the creation of a second, perceptually-altered measure of uncertainty. The contrast between the relationships of weighted and unweighted uncertainty measures to motivational components, effort

measures, goals and tenure is apparent from the data presented in Tables 3, 4, 5 and 7. It appears that the examination of these relationships as originally conceptualized in the introduction of this paper would be better served by utilizing the unweighted items to explore the relationship of perceived uncertainty to the other components mentioned above.

To interpret the relationship of the weighted uncertainty measures to motivation, goals, tenure and effort, as well as to explain the apparent lack of relationship between environmental volatility uncertainty and the above mentioned components, it is necessary to look to the affect of ability and to the relationship of attribution to expectancy theory. As both of these factors are beyond the scope of the present paper, a more complete discussion of these relationships is presented in Appendix B.

Another aspect of this research worthy of discussion at this time is the construction of the "goal-directed effort" measure. As described earlier, the elaborate construction of this measure was designed to circumvent the usual inadequacy of self-report effort measures, namely, the highly subjective nature of reported estimations of effort.

As noted earlier, goal-directed effort was significantly and positively correlated with  $E_I$  ( $r = .39$ ,  $p < .01$ ) and motivation ( $r = .34$ ,  $p < .01$ ) but not with  $E_{II}$ , thus providing only partial validity for the expectancy construct. In assessing the relationship of goal-directed effort with other effort measures, namely subjective effort ( $r = .24$ ,  $p = .052$ ), hours worked ( $r = .28$ ,  $p = .025$ ),

supervisor's effort rating ( $\underline{r} = .14$ , n.s.) or number of houses shown ( $\underline{r} = .10$ , n.s.), it is apparent that this measure is probably tapping a component of effort somewhat unique from the other elements of what is generally regarded as "effort." Goal-directed effort was more strongly related to the quarterly income goal ( $\underline{r} = .43$ ,  $\underline{p} = .001$ ) and the yearly income goal ( $\underline{r} = .36$ ,  $\underline{p} = .006$ ) than it was to the other effort measures.

The similarity of the size of the correlations between goal-directed effort and motivation and goal-directed effort and goals raises some interesting questions for future research. Do these data suggest support for Dachler and Mobley's (1973) model of motivation, which posits that motivation and goals have equal input into the amount of effort exerted? The lack of relationship between goal-directed effort and  $E_{II}$  would appear to be consistent with Locke's (1968) finding that goals mediate the effect of incentives on behavior. In either event, path analysis, a method for studying the direct and indirect effects of variables taken as causes of variables taken as effects (Kerlinger & Pedhazur, 1973) would be a useful tool to determine the causal relationships between goals, motivation and effort.

As noted earlier in the results, the hypothesis that motivation to meet a performance goal would be a function of return on effort was not supported by the data of this research. Further consideration of the concept of return on effort as proposed by Kopelman (1977) indicated that this concept was not adequately tested in the present study. The present research contains several conceptual and methodological flaws. First, it should be noted that the research design for

this hypothesis reverted to a between-persons design (comparison of high- and low-income goal groups). Although the information obtained is of some interest, the methodology is not appropriate for a test of expectancy theory predictions of motivational force.

Kopelman (1977) conceptualized return on effort as being a within-persons behavioral choice model. To adequately test this notion, it would have been necessary to ask the subjects to estimate the minimal and necessary effort levels needed to attain their quarterly income goal, as well as the motivational force scores for working a minimal amount or the amount thought necessary to meet the goal. Correlations of these difference scores would have resulted in a within-persons estimation of the return on effort model. However, there is some question as to the appropriateness of drawing conclusions from correlations of difference scores, due to the potential violation of assumptions necessary for employing the product-moment coefficient (correlating two distributions which have been artificially created). For example, the effort difference scores may well violate the assumption of normality. (For a more complete discussion of these issues, see Nunnally, 1978.)

Although data were not available to test the return on effort construct as a choice situation, the available data were examined in an effort to obtain a maximal amount of information relevant to the merit of return on effort as a construct. It was reasoned that if effort ~~X~~ is a linear function of goal difficulty (Locke, 1968) rather than return on effort, the correlation of goal-directed effort for the personal quarterly income goal, should be 1.00. Predicted effort was

obtained by the following method:

$$\frac{\text{quarterly income goal}}{\text{Predicted effort}} = \frac{\$5,000 \text{ income goal}}{\text{effort for } \$5,000 \text{ goal}} \quad \text{thus,}$$

$$\text{Predicted effort} = \frac{(\text{quarterly income goal} \times \text{effort for } \$5,000 \text{ goal})}{\$5,000}$$

The correlation between predicted goal-directed effort and obtained goal-directed effort was .77 ( $p < .01$ ). Correlations between predicted effort and quarterly income goal and between obtained effort and quarterly income goal were .62 ( $p < .01$ ) and .43 ( $p < .01$ ), respectively. If return on effort has merit as a construct, the variance accounted for by the predicted effort-goal correlation should be significantly greater than that represented in the correlation between obtained or necessary effort and quarterly income goal. As a test of this notion, the effect of predicted goal-directed effort was partialled out of the goal-necessary effort correlation. The variance remaining was .01. From this result, it was concluded that the return on effort construct does not contribute additional information to pre-existing notions of the relationship between expectancies, goals and efforts.

As a final note, it should be reiterated that the extremely poor response rate (19.6%) among the subjects suggests that the sample is probably biased. Thus, results of this study should be interpreted as exploratory and heuristic, rather than definitive.

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APPENDIX A  
EXPECTANCY AND UNCERTAINTY INSTRUMENTS

Identification Code # \_\_\_\_\_

You are invited to participate in a study of work-related perceptions of real estate salespersons. The study is being conducted by Betty Largen in order to fulfill research requirements toward a Master's Degree in Industrial Psychology at UNO. (Supervisor's Name) has given me permission to ask you to volunteer to help me. This in no way obligates you to do so.

If you decide to participate, you will be asked to complete a questionnaire composed of items relating to your profession. In order to do a statistical analysis of the items, your answers are needed to all the questions. You will notice a code number at the beginning of the questionnaire. Your identity will be known only to me, and your answers will be held in strictest confidence. If you desire a copy of the completed statistical analysis and/or your own scores, please indicate this to me.

By signing this document, you will be giving me permission to disclose the aggregate findings of the research to my Master's Thesis Committee. (Individual data will not be disclosed.) If you decide to participate, you are free to withdraw your consent and to discontinue participation at any time without prejudice.

If you have any questions, please ask. If you have additional questions later, call me at 551-0914 and I will be happy to answer them.

You are making a decision whether or not to participate. Your signature indicates that you have decided to participate, having read the information provided above.

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Investigator

\_\_\_\_\_ check here if you want a copy of the statistical analysis

\_\_\_\_\_ check here if you want a copy of your scores

Identification Code # \_\_\_\_\_ Age \_\_\_\_\_ Sex \_\_\_\_\_

Years employed in real estate sales \_\_\_\_\_

Type of Office: Conventional \_\_\_\_\_ OR 100% \_\_\_\_\_

Rate the following activities with regard to the amount of effort required by each one:

1                      2                      3                      4                      5  
 Minimum Effort    Low Effort    Moderate Effort    High Effort    Maximum Effort

- | <u>Rating</u> | <u>Activity</u>  |
|---------------|--|
| _____         | 1. Hosting open houses                                       |
| _____         | 2. Appraising property of prospective clients                |
| _____         | 3. Belonging to clubs and service organizations              |
| _____         | 4. Relocation assistance for newcomers                       |
| _____         | 5. Continuing contact with clients to ensure repeat business |
| _____         | 6. Participation in nation-wide referral service             |
| _____         | 7. Writing letters or phoning prospective clients            |
| _____         | 8. Door-to-door canvassing ("farming" an area)               |
| _____         | 9. Attending community or social functions                   |
| _____         | 10. Working "on call," evenings and weekends                 |

Indicate by a check in the appropriate box which of the above activities are normally necessary in order to attain a listing or sale of residential properties in the following price ranges:

Activity	LISTINGS			SALES		
	\$30,000	\$75,000	\$100,000	\$30,000	\$75,000	\$100,000
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

What was your income for each of the four quarters in 1979?

1st quarter \_\_\_\_\_ 2nd quarter \_\_\_\_\_

3rd quarter \_\_\_\_\_ 4th quarter \_\_\_\_\_

What was your income last quarter? \_\_\_\_\_

What is your income goal for this quarter? \_\_\_\_\_ For 1980? \_\_\_\_\_

Given market conditions a year ago, how many of the following "mix" of sales and listings would you have had to attain in order to meet your quarterly income goal?

(Example: List 3 \$30,000 properties Sell 2 \$100,000 properties)

List \_\_\_\_\_ \$30,000 properties Sell \_\_\_\_\_ \$30,000 properties

List \_\_\_\_\_ \$75,000 properties Sell \_\_\_\_\_ \$75,000 properties

List \_\_\_\_\_ \$100,000 properties Sell \_\_\_\_\_ \$100,000 properties

Given current market conditions, how many of the following "mix" of sales and listings will it be necessary for you to attain to meet your quarterly income goal?

List \_\_\_\_\_ \$30,000 properties Sell \_\_\_\_\_ \$30,000 properties

List \_\_\_\_\_ \$75,000 properties Sell \_\_\_\_\_ \$75,000 properties

List \_\_\_\_\_ \$100,000 properties Sell \_\_\_\_\_ \$100,000 properties

Given market conditions a year ago, how many of the following "mix" of sales and listings would you have had to attain in order to meet a quarterly income goal of \$5,000?

List \_\_\_\_\_ \$30,000 properties Sell \_\_\_\_\_ \$30,000 properties

List \_\_\_\_\_ \$75,000 properties Sell \_\_\_\_\_ \$75,000 properties

List \_\_\_\_\_ \$100,000 properties Sell \_\_\_\_\_ \$100,000 properties

Given current market conditions, how many of the following "mix" of sales and listings will it be necessary for you to attain to meet a quarterly income goal of \$5,000?

List \_\_\_\_\_ \$30,000 properties Sell \_\_\_\_\_ \$30,000 properties

List \_\_\_\_\_ \$75,000 properties Sell \_\_\_\_\_ \$75,000 properties

List \_\_\_\_\_ \$100,000 properties Sell \_\_\_\_\_ \$100,000 properties

Rate the following activities with regard to the amount of effort required by each one:

	1	2	3	4	5
	Minimum Effort	Low Effort	Moderate Effort	High Effort	Maximum Effort
_____ 11.	Attending sales-oriented or motivational seminars				
_____ 12.	Office Duty				
_____ 13.	Attending sales meetings				

Do you participate in any of these activities routinely, even though they may not directly lead to a listing or a sale?

11 12 13

How many hours do you work in an average week? \_\_\_\_\_

How much effort do you expend at your job? \_\_\_\_\_

	1	2	3	4	5
	Minimum Effort	Low Effort	Moderate Effort	High Effort	Maximum Effort

In the past month how many houses have you shown to prospective clients? (Include repeat showings)

\_\_\_\_\_

How many have you sold? \_\_\_\_\_

What is the probability that you will meet your quarterly income goal?

% 0-9 10-19 20-29 30-39 40-49 50-59 60-69 70-79 80-89 90-99

What is the probability that you would meet a quarterly income goal of \$5,000?

% 0-9 10-19 20-29 30-39 40-49 50-59 60-69 70-79 80-89 90-99

What is the probability that meeting your quarterly income goal will result in maximizing your net income?

% 0-9 10-19 20-29 30-39 40-49 50-59 60-69 70-79 80-89 90-99

What is the probability that meeting your quarterly income goal will result in your personal growth and development?

% 0-9 10-19 20-29 30-39 40-49 50-59 60-69 70-79 80-89 90-99

What is the probability that meeting a quarterly income goal of \$5,000 would result in maximizing your net income?

% 0-9 10-19 20-29 30-39 40-49 50-59 60-69 70-79 80-89 90-99

What is the probability that meeting a quarterly income goal of \$5,000 would result in your personal growth and development?

% 0-9 10-19 20-29 30-39 40-49 50-59 60-69 70-79 80-89 90-99

The work outcomes noted above will have an affect on other aspects of your life. Indicate the extent to which these outcomes will result in other consequences. The scale ranges from 1 (attainment of the work outcome will make the secondary outcome impossible) to 5 (attainment of the work outcome will certainty result in attainment of the secondary outcome).

1	2	3	4	5
Impossible	Not Likely	50-50 chance	Likely	Certain

Maximizing your net income will result in:

<u>Probability</u>	<u>Secondary Outcome</u>
_____	1. Recognition (million dollar club, etc.)
_____	2. Personal satisfaction
_____	3. Widening circle of acquaintances
_____	4. Feelings of security
_____	5. Offering good service
_____	6. Leisure time with family and friends
_____	7. Other _____

Personal growth and development will result in:

<u>Probability</u>	<u>Secondary Outcome</u>
_____	1. Recognition (million dollar club, etc.)
_____	2. Personal satisfaction
_____	3. Widening circle of acquaintances
_____	4. Feelings of security
_____	5. Offering good service
_____	6. Leisure time with family and friends
_____	7. Other _____





\_\_\_\_\_ 4. I feel confident that, based upon my present knowledge, I can answer all questions asked by a potential seller.

How much does this factor affect the success or failure of your work?

% 0-9 10-19 20-29 30-39 40-49 50-59 60-69 70-79 80-89 90-99

\_\_\_\_\_ 5. I am eager to confront a buyer's objections to a particular property because I can usually convert an objection into another reason to purchase the property.

How much does this factor affect the success or failure of your work?

% 0-9 10-19 20-29 30-39 40-49 50-59 60-69 70-79 80-89 90-99

\_\_\_\_\_ 6. My volume of performance in selling properties varies directly with market conditions.

How much does this factor affect the success or failure of your work?

% 0-9 10-19 20-29 30-39 40-49 50-59 60-69 70-79 80-89 90-99

\_\_\_\_\_ 7. I have adequate information about the availability of mortgage money to help a client make a practical decision.

How much does this factor affect the success or failure of your work?

% 0-9 10-19 20-29 30-39 40-49 50-59 60-69 70-79 80-89 90-99

\_\_\_\_\_ 8. I sometimes find myself lacking in information necessary to close a sale.

How much does this factor affect the success or failure of your work?

% 0-9 10-19 20-29 30-39 40-49 50-59 60-69 70-79 80-89 90-99

\_\_\_\_\_ 9. I am able to generate buyers from my own contacts.

How much does this factor affect the success or failure of your work?

% 0-9 10-19 20-29 30-39 40-49 50-59 60-69 70-79 80-89 90-99

\_\_\_\_\_ 10. Buyer resistance can be overcome by my personal ability.

How much does this factor affect the success or failure of your work?

% 0-9 10-19 20-29 30-39 40-49 50-59 60-69 70-79 80-89 90-99

\_\_\_\_\_ 11. I have a working knowledge of current market property values.

How much does this factor affect the success or failure of your work?

% 0-9 10-19 20-29 30-39 40-49 50-59 60-69 70-79 80-89 90-99

\_\_\_\_\_ 12. Unpredictable responses from buyers disrupt my usual sales strategy.

How much does this factor affect the success or failure of your work?

% 0-9 10-19 20-29 30-39 40-49 50-59 60-69 70-79 80-89 90-99

\_\_\_\_\_ 13. I find it necessary to resort to creative types of financing to achieve a sale.

How much does this factor affect the success or failure of your work?

% 0-9 10-19 20-29 30-39 40-49 50-59 60-69 70-79 80-89 90-99

\_\_\_\_\_ 14. I sometimes find myself in a situation which could have been avoided if I had been better informed.

How much does this factor affect the success or failure of your work?

% 0-9 10-19 20-29 30-39 40-49 50-59 60-69 70-79 80-89 90-99

\_\_\_\_\_ 15. My ability to obtain listings relies solely upon the amount of effort I put forth.

How much does this factor affect the success or failure of your work?

% 0-9 10-19 20-29 30-39 40-49 50-59 60-69 70-79 80-89 90-99

\_\_\_\_\_ 16. I feel confident in my ability to answer accurately my client's questions regarding a potential purchase.

How much does this factor affect the success or failure of your work?

% 0-9 10-19 20-29 30-39 40-49 50-59 60-69 70-79 80-89 90-99

\_\_\_\_\_ 17. I feel confident in my ability to relate to my client's personality, so as to maximize the probability of making a sale.

How much does this factor affect the success or failure of your work?

% 0-9 10-19 20-29 30-39 40-49 50-59 60-69 70-79 80-89 90-99

\_\_\_\_\_ 18. I know how to obtain necessary financial information from a prospective buyer in order to qualify his ability to purchase a given property.

How much does this factor affect the success or failure of your work?

% 0-9 10-19 20-29 30-39 40-49 50-59 60-69 70-79 80-89 90-99

APPENDIX B

SUPPLEMENTARY ANALYSIS AND DISCUSSION OF RESULTS

As noted in the discussion of this research, the subject's perceptions that various aspects of perceived uncertainty would affect the success or failure of their work (uncertainty weights) had a significant effect on the relationship between motivation and uncertainty. In attempting to understand the complex relationships between motivation and perceived uncertainty suggested by the data, it may be useful to examine several non-motivational factors which may contribute to the outcome of a given course of action.

#### Ability

The rationale for the hypothesized inverse relationship between perceived uncertainty and motivation was that as uncertainty increases, the relationship between motivation and performance is weakened since effort becomes a lesser determinant of outcome, and ability becomes a more important determinant (Ferris, 1978).

Kopelman and Thompson (1976) examined the joint moderating effects of ability and task difficulty (the meshing of internal and external forces) on expectancy predictions of performance. They found expectancy theory predictions to be strongest under conditions of high ability-low task difficulty and weakest under conditions of low ability-high task difficulty. In their viewpoint, "the fundamental point with respect to task-specific ability is that the accuracy of motivational predictions of performance depends on the degree to which individuals can translate their efforts into job results" (p. 252).

As noted earlier, supervisor's effort ratings were significantly and positively related to quarterly income goal, number of houses sold, last year's income, tenure and age, rather than the motivational



components of the expectancy model (see Table 1 in main text, p. 24). Thus, it appears that supervisors tend to associate effort with work results and experience more than with their perception of the subject's motivation. This is likely due in part to the work-role relationship between supervisors and real-estate salespersons; the supervisor is not in a position to observe work behavior much of the time, therefore basing his evaluation of effort on work results and other indices of perceived ability.

This observation was the basis for the rationale used in constructing an "ability" scale consisting of supervisor's effort rating, last year's income and number of houses sold in the past year (standardized item alpha = .71). In order to examine the effect of ability as a moderator of the relationship between motivation and perceived environmental uncertainty, the subjects were divided into high and low-ability groups based on the median of the ability scores. Pearson correlations were performed to determine whether "ability" moderates the relationships observed in this study. Results obtained revealed differences between groups with regard to nearly every relationship studied.

As shown in Table I, examination of the relationship of  $E_I$ ,  $E_{II}$  and motivational force to perceived environmental uncertainty, moderated by ability, revealed positive, significant relationships between weighted total uncertainty, job-related knowledge and interpersonal skills uncertainty and motivational force and  $E_I$  for the high-ability group. Unweighted uncertainty scores were related to expectancy scores for this group. In contrast, the low-ability group

Table I  
 Relationship of Weighted and Unweighted Uncertainty Measures  
 to Expectancy Measures for High- and Low-Ability Groups

	Motivation		E <sub>I</sub>		E <sub>II</sub>	
	Ability					
	High <sup>a</sup>	Low <sup>b</sup>	High	Low	High	Low
Total Uncertainty						
Weighted	.31	.25	.40*	.16	-.14	.44*
Unweighted	.19	-.42*	.12	-.36	.00	-.16
Job-related Knowledge						
Weighted	.35	.23	.40*	.18	-.10	.38*
Unweighted	.00	-.16	-.11	.03	-.04	.11
Interpersonal Skills						
Weighted	.56**	.17	.47*	.08	.21	.22
Unweighted	.32	-.47*	.29	-.45*	.14	-.40*
Environmental Volatility						
Weighted	-.06	.18	.09	.09	-.29	.39*
Unweighted	.15	-.35	.12	-.26	-.06	-.13

\*p < .05, two-tailed

\*\*p < .01, two-tailed

<sup>a</sup>N = 24

<sup>b</sup>N = 25

had significant positive correlations between weighted total uncertainty, job-related knowledge, environmental volatility uncertainty and  $E_{II}$ . This group displayed significant negative correlations between unweighted total uncertainty and motivation, as well as between unweighted interpersonal skills uncertainty, motivation and  $E_I$ .

There were significant differences between correlations (two-tailed tests) for high and low-ability groups in the relationships between unweighted total uncertainty and motivation ( $z = -2.01$ ,  $p < .05$ ), unweighted interpersonal skills and motivation ( $z = 2.76$ ,  $p < .01$ ), unweighted interpersonal skills and  $E_I$  ( $z = 2.57$ ,  $p < .01$ ) and weighted environmental volatility and  $E_{II}$  ( $z = -2.33$ ,  $p < .05$ ).

It is apparent from these data that the uncertainty weights ("How much does this factor affect the success or failure of your work?") make different contributions to perceived uncertainty in the high- and low-ability groups. If these weights may be construed as attributions of personal and environmental causality with regard to work outcome, it may be useful to consider the utility of attribution models in explaining the results of the present study.

#### Attribution

According to Heider (1958), the attributional outcome of a course of action is a judgment of the extent to which the actor is personally responsible for the occurrence of an event. This attribution of responsibility varies with the relative contribution of environmental and personal force to the action outcome; the greater the environmental contribution, the less the attributed personal responsibility. Kelley (1974) proposed a general attributional principle called

"discounting" which states that "the role of a given cause in producing a given effect is discounted if other plausible causes are also present" (p. 8). Kelley (1974) maintained that discounting is essentially equivalent to Bem's (1972) account of self-perception in situations where compliance is forced; that is, the greater the external justification for an individual's behavior, the less the behavior is attributed to internal causes. Conversely, in situations where external justification of behavior is not apparent, the individual assumes that his behavior was caused by internal forces.

The tendency of people to see themselves as responsible for good outcomes, while attributing bad outcomes to external factors, known as "defensive attribution," is largely a function of discounting. In attributing bad outcomes to environmental factors, the actor discounts his personal contribution to the outcome; in the case of a good outcome, the actor will discount environmental factors which might be present. Worchel and Cooper (1979) reported strong support for defensive attribution in the literature, especially when (a) the actor is highly involved in the activity, (b) when the actor has a choice of engaging in the activity, and (c) when the actor's performance in the activity is public (p. 212). All three of these conditions are met in the case of real-estate salespersons.

Weiner (1974) utilized causal attributions as a basis for broadening the cognitive framework of expectancy theory to develop an attributional model of motivation. Weiner hypothesized that individuals utilize four elements of perceived causes of success and failure, both to postdict (interpret) and to predict the outcome of an



achievement-related event. The four causal elements are ability, effort, task difficulty and luck.

Weiner (1974) proposed a two dimensional model for attributing the causes of success and failure. Ability and effort are internal properties, while task difficulty and luck are external factors. This is equivalent to the internal-external dimension first proposed by Rotter (1966). The second dimension is stability; ability and task difficulty are relatively stable, while luck and effort are variable.

In describing the antecedents that influence causal judgments, Weiner (1974) stated that specific cues such as performance history, social norms, pattern of performance and personal control over outcomes are synthesized by individuals to reach reliable causal judgments. Additionally, causal schemata are known to influence the judgment process. A causal schema refers to a relatively permanent belief held by a person about the relationship between an event and the perceived causes of that event. There are individual differences in causal preferences. According to Weiner (1972) individuals classified as high or low in "need for achievement" have different attributional biases. Persons high in "need for achievement" attribute success to high ability and high effort, while ascribing failure to lack of effort. Individuals low in "need for achievement" have no clear attributional preferences for success, while they attribute failure to lack of ability. (As his criterion for "need for achievement," Weiner (1974) used Intellectual Achievement Responsibility (IAR) questionnaire scores. The IAR measures locus of control in intellectual achievement situations which involve

personal interaction with significant others. Factors such as luck or fate are ignored. High IAR scores are indicative of internal locus of control; low IAR scores indicate external locus of control (Phares, 1976).)

Weiner (1974) proposed that individuals high in achievement motivation are "realistic"--they weigh environmental information and future probabilities of success more heavily than the prior affective consequences of their actions. His research demonstrated that high achievement-oriented (internal locus of control) persons do better given their own attributional interpretations of success (effort), while low achievement-oriented persons (external locus of control) performed with more success under conditions where performance could be attributed to some external factor rather than ability.

Remembering that analysis of the data in the present study revealed not only differences in magnitude but of sign in the relationships of weighted and unweighted perceived uncertainty to expectancy measures between high- and low-ability groups, it is plausible to suggest that the weights are an indicator of differences in attributional strategy between the two groups.

As a test of this notion, the correlations between perceived uncertainty scales and weights for high- and low-ability groups were examined, with z-tests of the differences between correlations for the groups (see Table II).

As seen in Table II, there are clear differences in the relationship of uncertainty items to their attributed importance (weights) between the high- and low-ability groups. A negative correlation is

Table II  
 Relationship of Uncertainty Measures to Weights for  
 High- and Low-Ability Groups

Uncertainty Measures	Weights			
	Total <sup>a</sup>	Scale 1 <sup>b</sup>	Scale 2 <sup>c</sup>	Scale 3 <sup>d</sup>
Total				
High Ability <sup>e</sup>	.11			
Low Ability <sup>f</sup>	-.27			
Scale 1				
High Ability		-.40*		
Low Ability		-.21		
Scale 2				
High Ability			.06	
Low Ability			-.49*	
Scale 3				
High Ability				.34
Low Ability				-.04

\* $p < .05$ , two-tailed

<sup>a</sup>Total = Total Uncertainty

<sup>b</sup>Scale 1 = Job-related Knowledge

<sup>c</sup>Scale 2 = Interpersonal Skills

<sup>d</sup>Scale 3 = Environmental Volatility

<sup>e</sup> $N = 24$

<sup>f</sup> $N = 25$

interpreted as an indication of defensive attribution or discounting, i.e., if uncertainty regarding a given item is high, the subject states that this item is not important to the total success picture; conversely, if uncertainty is low, the subject indicates that this factor is an important contributor to successful work outcomes. A positive correlation can be interpreted as either a realistic assessment of weaknesses or a defensive attributional strategy, i.e., if uncertainty regarding an item is high, it is seen as being a potentially important contributor to failure. Whether the attribution is realistic or defensive depends on the locus of causality of the uncertainty item. For example, the locus of causality for job-related knowledge is personal (internal), the locus of causality for environmental volatility is environmental (external), and uncertainty regarding interpersonal skills could be construed as personal ("My ability plus effort in dealing with people makes success likely") or environmental ("Regardless of how hard I try, the final outcome is still contingent on the response of the client"). Low or zero correlations between uncertainty and weights are indicative of a realistic viewpoint--in other words, no strategy of defensive attribution (distortion) is likely.

The data presented in Table II suggest that the two groups differed in their attributional strategies in assessing the impact of personal and environmental uncertainty on their work. As seen by the negative correlation between uncertainty and weights for job-related knowledge, the high-ability group apparently discounted (distorted) the importance of deficiencies in job-related knowledge, probably due to their increased sophistication in the development of alternative work

strategies--knowing what works best for them and being able to "work around" areas of deficient knowledge. It is likely that these individuals attribute success to internal factors such as ability or effort and attribute failure to lack of effort. The correlation for the low-ability group was not significant.

The most dramatic difference was found in the area of interpersonal skills. While the high-ability group engaged in very little distortion of the favorable or adverse impact of uncertainty on their work, the significant negative correlation for the low-ability group indicates that these people discounted the effect of deficiencies in interpersonal skills. Weiner's (1974) results suggest that the low-ability group would be most likely to discount this factor, as success or failure with interpersonal relations can easily be attributed to causes other than ability, e.g., effort of the responses of other people (luck). The difference in correlations of interpersonal skills uncertainty and weights between the high- and low-ability groups was significant ( $z = 1.96, p = .05$ ).

The two groups also demonstrated differences in attributional strategies with regard to environmental volatility. Even though the correlation is not significant, it appears that the high-ability group tended to maximize the impact of environmental volatility (an external factor) on the success or failure of their work. However, the low-ability group apparently was not as cognizant of the potential impact of this factor on the success or failure of their work, as they did not distort this element of uncertainty.

In summary, these data suggest that salespersons rated high in

ability tend to discount the effects of uncertainty regarding job-related knowledge and maximize the effects of environmental volatility relative to the ultimate success or failure of their work. With regard to uncertainty regarding interpersonal skills, high-ability salespersons would seem to be realistically aware of the importance of their strengths and weaknesses in this area, regarding effort as being the necessary element for success. In contrast, the salespersons rated low in ability appeared to discount the effects of uncertainty with regard to interpersonal skills, and to a lesser extent, the effects of uncertainty regarding job-related knowledge. At the same time, this group did not distort the impact of environmental volatility on their work-related outcomes, perhaps underestimating the importance of this factor.

#### Attribution Theory and Expectancy Theory

What then is the effect of these attributional differences on the relationship between motivation and perceived uncertainty? In relating causal attributions to expectancy theory, Weiner (1974) found that expectancy of future success ( $E_I$ ) is directly related to the stability of the perceived cause of prior outcomes. Individuals classified as high in their attributions of success to stable factors had more positive expectancies ( $E_I$ ) than individuals medium or low in their attribution of success to stable factors. Perceptions of locus of control were not significantly related to expectancies of success. In Weiner's (1974) words, "I find it unfortunate that psychologists continue to discuss locus of control in relation to expectancy of success ( $E_I$ ) and continue to confound the internal aspects of perceived

control with the volitional and stable dimensions of causality" (p. 61).

Weiner (1974) also examined the relationship between causal attributions and the incentive value or affective consequences of goal attainment ( $E_{II}$ ). He found that success attributed to hard work or high ability produced more pride than that ascribed to an easy task or luck. Similarly, failure perceived as due to low ability or lack of effort produced more shame than that attributed to a hard task or bad luck. In other words, locus of causality influences the affective consequences ( $E_{II}$ ) of achievement behaviors.

The data from this research do not reveal a relationship between unweighted uncertainty and motivation in the high-ability group (see Table I). However, when this group's attributional strategy is taken into consideration (weighted uncertainty), high total uncertainty as well as uncertainty regarding job-related knowledge and interpersonal skills is positively related to the expectation that effort will lead to goal accomplishment. Additionally, high uncertainty with regard to interpersonal skills is related to higher total motivational force. These data are consistent with Weiner's (1974) findings with regard to those individuals rated high in achievement needs (internal locus of control). High-ability salespersons experience increased motivation in the face of increased uncertainty, as this makes it possible to attribute success to their own effort. Moreover, these individuals relate expectancy of future success ( $E_I$ ) to uncertainty elements which deal with personal causality (job-related knowledge and interpersonal skills). Thus, this group is confident that their ability, coupled

with necessary effort, will overcome most uncertainty factors operating in a given situation. The significant positive correlation between interpersonal skills uncertainty and motivation suggests that these people attain a high degree of satisfaction (pride) as well as financial reward from the results of their effort.

In contrast, the low-ability group displayed a different pattern of relationships. Unweighted uncertainty regarding interpersonal skills appears to weaken the expectation that effort will lead to performance ( $E_I$ ), as well as the expectation that performance will lead to desired outcomes ( $E_{II}$ ) and total motivational force. Aggregate uncertainty scores had this same negative relationship with motivational force. These data are consistent with Kopelman and Thompson's (1976) finding that increased uncertainty weakens expectancy predictions of motivation, since ability (can) becomes a more important determinant than motivation (try) in determining outcome. When the attributional contribution of the uncertainty weights is considered, however, higher total uncertainty and uncertainty regarding job-related knowledge and environmental volatility are associated with increased expectations that performance will lead to desired outcome ( $E_{II}$ ). Relating these data to Weiner's (1974) finding that  $E_{II}$  expectancies are influenced by locus of causality, it seems apparent that this group minimizes shame associated with failure by attributing failure to external factors, i.e., environmental volatility and task difficulty. Their area of expressed self confidence (interpersonal skills) is not related to the affective consequences of goal attainment, as failure in this area would have to be attributed to lack of ability.



Continuing with the reevaluation of the hypotheses of this research, other interesting differences between groups were noted. In some cases, Pearson correlations, while not reaching levels of significance due to smaller group size and more stringent significance requirements (two-tailed as opposed to one-tailed tests), revealed relational patterns between variables which should be of interest to future researchers.

As shown in Table III, the high- and low-ability groups differed in their perceived relationships between goals and motivation. The high-ability group did not relate goals to total motivational force, but only to  $E_I$ , the perception that effort will lead to goal attainment. Specifically, this group, being more aware of the current effects of environmental volatility, did not express much hope that their efforts would lead to meeting their quarterly income goal. However, this group seemed optimistic that market conditions would improve, as their  $E_I$  expectancies were significantly and positively related to yearly income goals. This "wait and see," long-term perspective was an interesting contrast to the "here and now" approach of the low-ability group. This group displayed a stronger positive relationship between quarterly income goal and total motivational force and  $E_I$  and  $E_{II}$  expectancies, but was apparently unable or unwilling to look beyond the immediate situation to relate their expectancies or motivation to yearly income goals. The difference in correlations of yearly income goal to  $E_I$  between high- and low-ability groups was marginally significant ( $z = 1.88$ ,  $p = .057$ ). These data are consistent with Weiner's (1974) finding that individuals high in achievement

Table III  
 Relationship of Goals to Expectancy and Uncertainty Measures  
 for High- and Low-Ability Groups

	Quarterly Income Goal		Yearly Income Goal	
	Ability			
	<u>High</u> <sup>a</sup>	<u>Low</u> <sup>b</sup>	<u>High</u> <sup>a</sup>	<u>Low</u> <sup>b</sup>
Motivation	.09	.33	.30	-.12
E <sub>I</sub>	.06	.30	.44*	-.10
E <sub>II</sub>	-.19	.26	.12	-.07
Total Uncertainty				
Weighted	-.06	.22	.00	.25
Unweighted	-.12	-.25	-.03	-.06
Job-related Knowledge				
Weighted	-.14	.23	-.18	.24
Unweighted	-.29	-.08	-.40*	-.03
Interpersonal Skills				
Weighted	.11	.11	.46*	.07
Unweighted	.16	-.18	.40*	-.03
Environmental Volatility				
Weighted	-.07	.16	-.19	.26
Unweighted	-.10	-.23	-.02	-.01

\* $p < .05$ , two-tailed

<sup>a</sup> $N = 24$

<sup>b</sup> $N = 25$

motivation (internal locus of control or high ability) are "realistic," weighting environmental information and future probability of success more heavily than prior affective consequences of their actions.

With regard to the impact of uncertainty on goals, the only significant relationships were between uncertainty and yearly income goals in the high-ability group. Unweighted job-related knowledge uncertainty had a significant inverse relationship to yearly goals, but this effect was reduced by the attributional weights. Uncertainty with regard to interpersonal skills was significantly and positively related to yearly goals, this effect being strengthened by the perceived importance of these items. Recalling that this group did not distort the effects of interpersonal skills on the success or failure of their work, it would appear that individuals with relatively higher ability see effort as the primary determinant of goal attainment, and high perceived uncertainty apparently enables them to attribute success to their own efforts.

The low-ability group displayed no significant relationship between unweighted uncertainty items and goals. The attributional weights changed the direction of these relationships from negative to positive, but none of these relationships were significant. The two groups were not significantly different from each other in any of the correlations between uncertainty and goals.

The relationships between tenure, motivation and uncertainty follow the same pattern of results. As shown in Table IV, the high-ability group showed significant negative relationships between tenure and uncertainty regarding job-related knowledge and environmental

Table IV  
 Relationship of Tenure to Expectancy and Uncertainty Measures  
 for High- and Low-Ability Groups

	Tenure	
	Ability	
	High <sup>a</sup>	Low <sup>b</sup>
Motivation	.28	-.03
E <sub>I</sub>	.12	-.13
E <sub>II</sub>	.29	-.31
Total Uncertainty		
Weighted	-.32	-.05
Unweighted	-.19	-.27
Job-related Knowledge		
Weighted	-.40*	-.12
Unweighted	-.51**	-.33
Interpersonal Skills		
Weighted	.35	-.06
Unweighted	.24	-.20
Environmental Volatility		
Weighted	-.48*	.04
Unweighted	-.11	.08

\* $p < .05$ , two-tailed

\*\* $p < .01$ , two-tailed

<sup>a</sup>N = 24

<sup>b</sup>N = 25

volatility. Conversely, longer tenure was accompanied by increased uncertainty regarding interpersonal skills, reflecting a stronger conviction that effort is the most important determinant of goal attainment. The stronger positive relationship between tenure and  $E_{II}$  for this group reflects the influence of past success history and outcome patterns.

The low-ability group, however, showed a negative relationship between tenure and  $E_{II}$ , perhaps an indication of past disappointments. The difference between tenure and  $E_{II}$  correlations for the two groups was significant ( $z = 2.029$ ,  $p < .05$ ). There were no significant relationships between uncertainty and tenure for the low-ability group.

With regard to differences in effort required to meet the same quarterly income goal this year vs. the same quarter last year, the high-ability group showed significant positive relationships between total uncertainty, uncertainty regarding interpersonal relationships and the difference scores. This is consistent with previously noted attributional patterns for this group. That is, personal effort is the main determining factor in meeting the income goal, despite dramatic differences in environmental volatility from last year to this year, regarding job-related knowledge as a stable factor. As shown in Table V, this is exactly the opposite of the perception of the low-ability group, which apparently saw environmental variance and job-related knowledge to be more important determinants of the difference in required effort between last year and this year.

The effect of tenure as a moderator of the relationship between the differential effort and uncertainty measures was diminished when

Table V  
 Tenure as a Moderator of the Relationship Between ROEDEF<sup>a</sup> and  
 Uncertainty in High- and Low-Ability Groups

	ROEDEF			
	High Ability <sup>b</sup>		Low Ability <sup>c</sup>	
	<u>r</u> <sup>d</sup>	<u>r</u> <sup>e</sup>	<u>r</u> <sup>d</sup>	<u>r</u> <sup>e</sup>
Total Uncertainty				
Weighted	.56**	.63**	.21	-.12
Unweighted	.25	.27	.20	-.22
Job-related Knowledge				
Weighted	.37	.44*	.19	.16
Unweighted	-.20	-.18	.00	-.12
Interpersonal Skills				
Weighted	.53**	.53**	.04	-.17
Unweighted	.49*	.48*	.02	-.25
Environmental Volatility				
Weighted	.32	.41*	.22	-.06
Unweighted	.30	.31	.25	-.04

\* $p < .05$ , two-tailed

\*\* $p < .01$ , two-tailed

<sup>a</sup>ROEDEF = difference in effort needed to meet quarterly income goal this year versus the same quarter last year

<sup>b</sup> $N = 24$

<sup>c</sup> $N = 25$

<sup>d</sup>Zero-order correlations between uncertainty and ROEDEF

<sup>e</sup>Correlations between uncertainty and ROEDEF, partialing out the effects of tenure

the high- and low-ability groups were considered separately. As shown in Table V, the correlations obtained between ROEDEF and uncertainty, partialing out the effect of tenure, were not significantly different from zero-order correlations for either group.

The high- and low-ability groups differed in their perceptions of differential effort. The mean differential effort scores were  $M = 9.0884$  ( $SD = 22.730$ ,  $N = 24$ ) and  $M = -3.6475$  ( $SD = 22.525$ ,  $N = 25$ ) in the low- and high-ability groups, respectively. This difference was marginally significant,  $t(47) = -1.97$ ,  $p = .055$ , with the main difference lying in their perceptions of the amount of effort required last year.

As shown in Table VI, the high-ability group rated the effort required last year significantly higher than did the low-ability group. Although the high-ability group saw less effort being expended this year, the low-ability individuals increased their estimate of the effort needed for goal attainment this year. Given the environmental conditions during the quarter in which this questionnaire was administered, these data appear to support Weiner's (1974) assessment that high achievers are more "realistic," evidenced by the fact that goal attainment in the current quarter was not as likely as it would have been in the same quarter a year ago, thereby reducing their effort.

From the preceding discussion, it can be seen that the relationship between uncertainty, motivation and effort is infinitely more complex than was suggested by the introduction and hypotheses of this study. The analysis presented in Appendix B is admittedly of a post hoc nature; however, its value lies in the interesting possibilities

Table VI  
Differences Between High- and Low-Ability Groups in Perceived  
Effort Required for Goal Attainment in the  
Second Quarter of 1979 and 1980

Effort Required to Attain Income Goal	High Ability <sup>a</sup>	Low Ability <sup>b</sup>	<u>t</u>
2nd Quarter, 1979	42.17	24.21	2.95**
2nd Quarter, 1980	38.53	33.30	n.s.

\*\*p < .01, two-tailed

<sup>a</sup>N = 24

<sup>b</sup>N = 25



that are suggested for future study.

It is apparent that future research should initially control for the effect of ability, and that the role of attribution as an integral part of uncertainty and motivation should be explored. The effect of locus of control as a causal factor in attribution should also be studied. The inclusion of these variables should help not only to improve the precision of the expectancy model in predicting effort, but to increase our general understanding of human motivation as well.

Hopefully, extended field research in these areas would be of benefit to real-estate salespeople and the firms that employ them, in that such information might lead to the development of aptitude tests as part of a selection procedure for entry into this profession.

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## Appendix B

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