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Evaluation of Entrepreneurial Risk-Taking using Magnitude of Loss Scale

**T.J. KAMALANABHAN, D.L. SUNDER
AND AMAT TAAP MANSHOR**

The importance of risk-taking in business ventures has been emphasised by many. Attempts to distinguish entrepreneurs on their risk-taking propensity have produced conflicting results. Data on two measures of risk-taking propensity were collected from entrepreneurs, prospective entrepreneurs and non-entrepreneur others. While the groups did not differ significantly on risk-taking propensity as measured by the Choice Dilemma Questionnaire, entrepreneurs and prospective entrepreneurs differed significantly from others on the Magnitude of Loss Questionnaire. Similarly, entrepreneurial aspirants differed significantly from the non-entrepreneur group. These results highlight the significance of loss, an important aspect in risk-taking, which is often ignored in entrepreneurial and managerial studies. The riskiness in business ventures which has been the main stumbling block for many is not the low probability of success but the high stakes involved in entrepreneurship.

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Increasing interest in entrepreneurship is evident from the number of courses on entrepreneurship offered by the universities and other non-government organisations (Vesper, 1986). This is primarily due to a belief that entrepreneurship contributes to economic development (Miner & John, 1995; Stevenson & Sahlman, 1986). Entrepreneurship is considered desirable because it can contribute to the generation of employment, distribution of wealth and introduction of new products (Drucker, 1984; Hisrich, 1986). Governments are adopting measures in the form of subsidies of duty and infrastructural facilities to promote entrepreneurship

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(Ramu, 1993). Researchers are also now more vocal about the need to assign a central role to entrepreneurs in economic development (Kirchhoff, 1991) and academic research on entrepreneurship is gaining impetus.

India is in the forefront of developing countries committing enormous resources to small business enterprises. Similar commitment is also seen among South East Asian countries like Malaysia and Singapore. While some researchers have found that macro-level interventions had a positive impact on industrialisation, others (Singh, 1989) have found that most of the efforts made by the government were futile. Even micro-level initiatives like Entrepreneurship Development Programmes (EDPs) have not resulted in the desired success rate. Considering the large amount of resources committed to entrepreneurship development, it would be gratifying if the success rates were higher than what have been achieved so far. Considering the large number of applicants to EDP programmes, there would be optimal utilisation of resources if potential entrepreneurs are well identified. Hornaday and Aboud (1971) claim that identifying entrepreneurs by traits would be of much interest to lending organisations such as banks and enfranchising organisations and governments. They also feel that this would help in designing courses on entrepreneurship.

Research on the personality of the entrepreneur received a fillip with the seminal work of McClelland (1961) on Achievement Motivation. A number of studies (see Shapero & Borland, 1975) adopting the trait approach have been reported but the results have not been conclusive. One aspect of entrepreneurship which is widely acknowledged and is intuitively appealing is risk-taking (Knight, 1971). As early as 1848, J.S. Mill stressed that risk-taking is inherent to entrepreneurial activities. Palmer (1971) has also emphasised the need to explore the risk-taking behaviour of entrepreneurs.

Ever since scholars questioned the assumption that managers make decisions by using normative decision-making models (March & Shapira, 1987), investigators have proposed and tested various theories that incorporate a decision-maker's beliefs or perceptions. Because most managerial decisions involve some degree of risk, scholars have become interested in examining how determinants of risk-taking influence such decisions. Sitkin and Pablo (1992) described a variety of organisational, contextual and individual characteristics that might be associated with risk-taking behaviours. Perhaps the most frequently examined phenomenon is a collection of processes and conditions referred to as framing (see meta-analyses by Kuhberger, 1998; Kuhberger et al., 1999). The classical framing

paradigm first reported by Tversky and Kahneman (1981) presented decision-makers with a set of choices that were invariant with respect to expected values of their outcomes but differed in their degree of risk.

Past decades have witnessed many explorations of this phenomenon using a variety of experimental paradigms. In a recent meta-analysis, Kuhberger (1998) analysed 230 effect sizes involving nearly 30,000 subjects. He found that the framing effect was moderate in size but varied significantly across studies. He analysed a number of moderator variables and found that several could account for some of this variation in effect sizes. For instance, when study characteristics were all entered in a stepwise regression predicting effect size only two were significant. For instance, when study characteristics were all entered in a stepwise regression predicting effect size, only two were significant. The two which produced the largest effect size were: (i) risk manipulation by referring to an actual risky event and (ii) requiring subjects to make a choice between options rather than merely rate alternatives.

Research on the risk-taking propensity of entrepreneurs has also produced conflicting results. Hull, Bosley and Udell (1980) in their study of university alumni, found risk-taking to be an important factor influencing an individual's likelihood of starting a business. Brockhaus (1980) in his study of managers-turned entrepreneurs and managers who had recently changed organisations or positions however found that the entrepreneurs did not significantly differ from the managers on their risk-taking propensity. He also reported that the scores of entrepreneurs did not significantly differ from that of the normative population of Kogan and Wallach (1964). Sexton and Bowman (1983), using the Jackson Personality Inventory, found that risk-taking significantly differentiated students majoring in entrepreneurship from other students. But they found that the risk-taking propensity did not significantly differentiate between students majoring in entrepreneurship and other areas when risk-taking was measured using the Choice Dilemma Questionnaire. Shaver and Scott (1991) are of the opinion that one reason for the conflicting results on the risk-taking propensity of entrepreneurs is the use of tests whose psychometric properties have not been established. This criticism is aimed at one of the most widely used questionnaires on risk-taking propensity, the Choice Dilemma Questionnaire (CDQ). Many researchers have also commented on its poor logical consistency (Cartwright, 1971; Hoyt & Stoner, 1968) and the reliability of the questionnaire (Brockhaus, 1980). Despite the criticisms, CDQ is popular and widely used.

A study by Slattery and Ganster (2002) tested the effects of positive and negative framing on risky decision-making in a simulated managerial judgement task. This study simulated a more realistic decision-making environment in which individuals chose more or less risky goals in a complex dynamic task that featured uncertain outcomes and meaningful consequences. Decision-makers chose a series of performance goals under conditions of either potential losses or gains and also received feedback about their goal attainment. The results failed to replicate the Prospect Theory Predictions about initial gain versus loss framing typically found in static decision-making contexts. In addition, the researchers tested competing hypothesis derived from Prospect Theory and Quasi-Hedonic Editing (QHE) Theory about the effects of performance outcome feedback on subsequent decisions. Consistent with the QHE theory, decision-makers who had failed to reach their goals set lower, less risky goals in subsequent decisions. The findings illustrate a need for further research on risk-taking in environments that resemble managerial decision-making more closely.

Craid (1988) and Kogan and Wallach (1964) emphasise the possible multi-dimensional aspect of risk-taking. Whereas it is widely accepted that the locus of control and achievement motivation are multi-dimensional concepts, researchers have treated risk-taking as a uni-dimensional concept focusing on the probability of success or failure as a measure of risk. An important factor influencing the perception of risk is the potential magnitude of loss. Since the studies using 'probability of success' criterion have not distinguished entrepreneurs from non-entrepreneurs on risk-taking propensity, it is possible to expect that the 'magnitude of loss' criterion will distinguish between the two. The study has two parts: in Part I a Magnitude of Loss Scale was developed and its psychometric properties assessed and in Part II, the hypothesis that this scale will differentiate entrepreneurs from others was tested.

Method

Part I

An initial list of twenty-five items pertaining to Magnitude of Loss were generated by the authors. Research scholars and faculty members at the Indian Institute of Technology, Chennai, India, were asked about the suitability of these items. Twelve items were eliminated, as they did not meet the objective that increase in stakes (magnitude of loss) led to an

increase in the magnitude of returns. The remaining thirteen items focused on financial, emotional and social risks. Some of the scholars were of the opinion that the items on emotional and social risks were ambiguous. Further, since financial risk is an important aspect of entrepreneurship and most of the other risks are a sequel to this, it was decided to focus on financial risk only. On this basis, seven items were eliminated. The remaining six items were distributed among twenty engineering students to check for ease of administration and clarity. Two of the items were discarded as based on the opinion of the students they were considered unacceptable. The final list of four items rated on a 3-point scale were used in the first part of study.

Each item offered the participants two options requiring commitment of money. One of the options was risky, but if successful would result in higher returns proportional to the investment. The other option was a safe alternative with moderate returns. The items were rated on a scale of probability of success, 1 (40 per cent), 2 (50 per cent), 3 (60 per cent). Each participant was informed that he had a fixed amount of money and was asked to indicate the maximum amount that he was willing to commit to the risky option. The higher the amount, the greater the risk-taking score. Forty-five students in the final year of an engineering programme were requested to participate in the study. The average age of the participants was 21 years and there were thirty-nine men and six women. They were administered the scale with four items (Table 1).

TABLE 1
Mean and Standard Deviation of the Magnitude of Loss Scale

Rating, Probability of Success	1		2		3		4	
	M	SD	M	SD	M	SD	M	SD
40%	2.4	1.4	3.2	1.6	4.1	1.6	4.9	1.6
50%	2.5	1.4	3.4	1.5	4.4	1.5	5.1	1.5
60%	2.8	1.5	3.6	1.6	4.6	1.5	5.3	1.5

The correlation between the sub-items for each item of the scale was high. As it was difficult to get entrepreneurs to respond to lengthy questionnaires, it was decided to keep the questions to the minimum. Research on the risk-taking propensity of entrepreneurs had indicated that they are moderate risk-takers. In addition, we also find theoretical support for entrepreneurs' preference for options with a 50 per cent probability of success (Atkinson & Raynor, 1974).

The inter-item correlation for the four items using option 2 alone is given in Table 2. The reliability of this four item scale was found to be = 0.81.

TABLE 2
Inter-Item Correlation

<i>Item</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
1	.87			
2	.81	.78		
3	.57	.66	.69	
4	.44	.52	.61	.68

Part II

The final version of the Magnitude of Loss (MOL) Questionnaire¹ consisting of four items (each item with option 2 only) was administered to a group of entrepreneurs, non-entrepreneurs and entrepreneur aspirants who were attending a government sponsored programme. It was also decided to administer the Choice Dilemma Questionnaire (CDQ) to the participants to see which of the two questionnaires measured the same construct. The hypothesis tested was that entrepreneurs differ significantly from others on risk-taking propensity.

Addresses of entrepreneurs were randomly picked from the files of Small Industry Associations and organisations offering training and assistance to entrepreneurs in India. The questionnaires were mailed to 300 entrepreneurs. As the response rate was poor, some entrepreneurs were personally contacted and requested to fill in the questionnaire. A total of 108 usable responses were received. The non-entrepreneurs were a mix of students and non-managerial employees. The students were from different colleges in Chennai, India. The managers were participants in a management development programme and the non-managerial employees were participants in a computer-training programme.

All respondents in the non-entrepreneurial category were requested to provide biographical information. Only those who clearly expressed that they had no intention of starting a business were included in the study. A total of 176 usable responses were obtained. The third group consisted of participants in an entrepreneurship development programme. All the participants in the programme were requested to respond to the questionnaire. A total of ninety-six usable responses were obtained.

Results

The means and standard deviations of the scores obtained by the three groups on the Magnitude of Loss Questionnaire and Choice Dilemma Questionnaire are shown in Table 3.

TABLE 3
*Mean and Standard Deviation of the Magnitude of Loss
and Choice Dilemma Questionnaire*

<i>Group</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Entrepreneurs (<i>n</i> = 108)	75.1	14.3	18.8	6.7
Non-Entrepreneurs (<i>n</i> = 176)	77.9	13.5	16.5	5.7
Aspirants (<i>n</i> = 96)	77.6	14.4	14.9	4.8

An analysis of variance was carried out [3 (group) \times 2 (test)] showed that means groups differed significantly on each test: Magnitude of Loss, ($F = 11.60$ $p < 0.15$), Choice Dilemma Questionnaire, ($F = 1.46$, $p < 0.23$). Student *t* tests was applied, taking into consideration the multiple comparisons involved and the unequal sizes of the groups (Keppel, 1982) to find which of the three groups differ significantly by scores on the magnitude of loss. It was found that the entrepreneur group differed significantly from the non-entrepreneurial group ($t = 2.99$, $p = 0.26$) and entrepreneurial aspirants ($t = 14.77$, $p < 0.18$). Similarly entrepreneurial aspirants differed significantly from the non-entrepreneurial group ($t = 2.37$, $p < 0.019$).

Discussion

Risk-taking is inherent in entrepreneurship (Dickson & Gigilierano, 1986; Knight, 1971; Palmer, 1971). However, studies on the risk-taking propensity of entrepreneurs have indicated that entrepreneurs and managers do not differ significantly in this regard from managers (Brockhaus, 1980; Sunder & Kamalanabhan, 1996). Atkinson and Raynor (1974) and McClelland (1961) have advanced the explanation that people high on achievement motivation, prefer moderately risky ventures. Studies on the risk-taking propensity of entrepreneurs in India (Singh & Singh, 1971; Singh, 1989) found that entrepreneurs' scores on risk-taking propensity were widely distributed. One explanation is that the various inventories used do not capture the construct of risk-taking. Therefore, the conflict between studies showing entrepreneurs exhibiting a moderate risk-taking

propensity and the widely held belief that entrepreneurship involves high risk-taking can be resolved only if we jettison the uni-dimensional concept of the risk-taking propensity. The focus of most risk-taking scales and questionnaires is on the probability of success or failure. If a person is willing to accept lower probabilities of success then he is considered to be more risk-taking. Entrepreneurship involves high financial and emotional commitment.

Many studies on how entrepreneurs perceive risk in business ventures have found that entrepreneurs do not consider their decision to start a company as risky (Corman, Perles & Vancini, 1988). If many entrepreneurs feel that there is no risk in their venture, what they probably mean is that the probability of failure of their venture is low. By no means would they claim that their financial or emotional commitment is low. So the general perception that entrepreneurship involves risk must be based on the magnitude of loss involved in the venture and not on the probability of loss.

Persons who venture into business and fail not only lose money and prestige, but they also jeopardise their relationships. Their self-esteem will be lowered and they may find it difficult to convince someone to back them in a subsequent attempt or even give them a good job. The riskiness in business ventures which has been the main stumbling block for many is not the low probability of success but the high stakes involved in entrepreneurship. Entrepreneurs are those who are willing to stake higher amounts when they find that the probabilities of success are right. The results of this study using the Magnitude of Loss Scale as a measure of risk supports this.

Note

1. The Magnitude of Loss Questionnaire can be obtained on request from T.J. Kamalanabhan, Department of Management Studies, Indian Institute of Technology Madras, Chennai, India (tjk@iitm.ac.in).

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