Investor Risk Behaviour in a Developing Country Setting

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Abstract
The study of individual risk behaviour remains an area of interest in many domains; especially in investments, where every decision bears a certain proportion of risk. Most studies on risk behaviour are based on Western contexts and studies centered around developing countries remains relatively unexploited. Therefore, the objective of this study is to assess the determinants of risk behaviour of investors in a developing country setting, where investor risk appetite is a less prominent factor and the investment markets are less informationally efficient. A modified version of the Sitkin Pablo model (1992) was integrated with the theory of perceived self-efficacy by Bandura (2010) in order to build a conceptualized model of risk behaviour. The developed model depicts two direct determinants of risk behaviour namely, risk perception and risk propensity. It further discusses about six other indirect determinants which influence the investment decisions. The model was assessed through a cross-sectional study carried out through a scenario-based questionnaire distributed among investors from six different industries. The study revealed that the risk perception of an average individual investor in a developing country setting is comparably low, making their investment decisions more prudent and cautious. The model presented in this study can be used as a tool in determining the risk appetite of investors and assist in the allocation of investment products. It could also be used in diverse applications across different domains such as human resources, insurance industry and marketing to classify risk behavior of employees and customers as well.
Keywords: Investors, Risk Behaviour, Risk Perception, Self-Efficacy Theory

1. Introduction
Risk can be defined as the possibility of losing something of value. Risk has been described as the extent of the uncertainty of a decision which realizes potentially significant or disappointing outcomes (Sitkin and Pablo, 1992). Although risk is bound with uncertainty, the two terms do not explicitly bear the same meaning. Risk only arises when the uncertainty of a situation results in significant consequences, thereby making risk a combination of both uncertainty and consequences (Hilson and Webster, 2007). "Risk is generally conceived as consisting of two components: the likelihood and the severity of negative outcomes" (Pligt, 1998). According to this, the components of risk are the likelihood of risk, which is the probability that an event could occur and the penalty/ severity, which is the impact or the consequence of the event that occurs. These components need to be separately identified in order to manage risk.

Given the same factors and conditions, the way two individuals respond to a context of risk might differ according to their inherent characteristics and personality. Although there can be a large number of numerous determinants of individual's risk behaviour, mainly they can be categorized into three domains; the risk preferences, risk perceptions and risk propensity of the individual. Risk preferences state that a person who enjoys risk situations will be more likely to be risk seeking rather than those individuals who does not have a positive risk appetite. Risk perception is defined as the method of assessment used by a decision maker in a risk related situation. This is determined by sub factors such as problem framing, social influences and problem domain familiarity. Risk propensity of the individual is determined by the person's risk preference, inertia and outcome history (Sitkin and Pablo, 1992).

Towards the end of 20th century, risk has become a dominant concern within the Western context. People have progressively become risk tolerant and have a tendency of accepting the uncertainty that is associated with it (Chown, 2014). However, it is observed that the studies of the same interest, conducted within a developing country context are comparatively less (Himasara and Peter, 2016).

An investment in the financial context can be briefly defined as the purchase of assets/ monetary instruments with the expectation of favourable returns. Studies suggest that by taking the permanently inherent investor biases, the finance service providers could get a better understanding of their financial consumers (Sahi, et. al., 2013). Therefore, a number of behavioural biases which dominate the financial behaviour of individual investors have been identified by different studies that have been carried out in the past few decades.

With the increasing volatility of the investment market, the need of assessing the risk appetite of the investors has arisen. Although there are a number of tools to analyse this, the accuracy of these methods remains contentious. In developing countries, the investment markets are less informationally efficient, markets unregulated, corporate governance is poor and investor knowledge is lacking (Peter et al., 2010). The focus on investor risk appetite is less and therefore for financial markets to flourish, the need of upgrading the investment

culture has become a vital need.

Therefore, combing two contemporary needs, the study focusses on the investor risk behaviour in a developing country setting, focusing on the psychological determinants of risk perception and risk driven behaviour of individuals. The overarching objective of the study was to analyse the risk perception of the investors, and to identify distinct characteristics that contribute to the different risk behaviour of individuals.

2. Literature Review

A systematic review of literature was conducted, to analyse previous research publications, journals, books and other materials related to the area of study. Studies that have been published within a time-horizon of 30 years, from 1987-2018 were selected initially. The articles were selected from sources such as Google Scholar and ResearchGate through a keyword search. Subsequently the articles were filtered through an abstract and conclusion-based review in order to filter down the number of relevant studies. Thereafter, a methodical, content-based review of the articles was carried out to identify the most suitable models to develop risk behaviour. The articles were sorted based on the ranking, and the citation records. Thirty-six journal articles were finally used for the study (Mendis et al., 2020). The articles of interest were divided into three major domains. They were risk behaviour, psychological modelling and investor behaviour.

The decision-making behaviour in risky contexts, which can be characterized by the degree of risk connected with the decision made can be defined as risk behaviour (Kahneman and Tversky 1987; Hogarth, 1987; Sitkin and Pablo, 1992). Different studies have been carried out over time to study the risk behaviour of entities and the factors that affect such conduct.

The theoretical model reconceptualizing the determinants of risk behaviour introduces a model which exhibits the determinants of human risk behaviour in an organizational context. Stating risk propensity and risk perception as the major determinants of risk behaviour, this study suggests that risk propensity and risk perception should be given more weightage than they were given in the studies beforehand. Risk Propensity has been introduced as the degree which an organization is willing to take risks. Although Risk Preference had already been recognized as a determinant of a person's risk propensity, with this study, two new determinants of risk propensity were introduced; inertia and outcome history. Risk Perception depends on determinants such as Top Management Homogeneity, Problem Framing, Social Influence, Domain Familiarity and Organizational Control Systems. This particular study explains that risk propensity was positively related while risk perception was negatively related to the risk behaviour. Furthermore, this study depicts the contradictory results obtained beforehand by numerous other studies, by a theory where Risk Propensity has a governing impact on the risk behaviour (Sitkin & Pablo, 1992).

Through a study carried out to determine a behavioural model to assess the risk behaviour of the young adults, a modification to the reconceptualized model of risk behaviour has been done by removing its organizational factors such as Top Management Homogeneity and Organizational Control Systems, focusing on individual behaviour in a Sri Lankan context. It is suggested that the findings can be used to develop risk portfolios through the use of a comprehensive model. Furthermore, the study has showed that factors such as problem framing, attitudes, beliefs and norms, knowledge, together with risk propensity affects individual risk behaviour (Himasara & Peter, 2016).

Another study which was conducted to review the evidences concerning the assumption that 'Perceived Risk' and 'Vulnerability' plays an important role in determining the Precautionary Behaviour of people proved that the perception people have on their relative risk is fairly accurate. Although this was conducted aiming the health-related risk behaviour of people, it was stated that the findings of this study could be generalized. This also evaluated the relationship between comparative/unrealistic optimism and the preventive behaviour of people. Although it was later concluded in the same study that there was insufficient empirical evidence to support that view (Joop, 1998). In another study which was conducted in an organizational context, discusses on managing perceived self-efficacy in order to pursue and exploit the opportunities an organization receives. It was shown that individuals with higher self-efficacy are led to believe that they are very competent at decision making are to be more risk-seeking, as they see more opportunities in risky choices. The opposite of this happens when people believe that they are less competent with low self-efficacy, leading them to be much more risk averse. (Kruger & Dickson, 1994).

The application of Perceived Self Efficacy in high risk behaviour was studied in a context subjected to prevent and control the risk behaviour which exercises AIDS infection. According to this study, four major components of self-directed behavioural change was identified. With this study, the author states that "People's beliefs about their capabilities affect what they choose to do, how much effort they mobilize, how long they will persevere in the face of difficulties, whether they engage in self-debilitating or self-encouraging thought patterns, and the amount of stress and depression they experience in taxing situations." (Bandura, 1990). As an advancement of the same study concerning Perceived Self-Efficacy theory, Bandura proposes four major motivators which dominates the confidence of the individuals in themselves. The first motivator is 'Mastery

Experiences', where a person's self-efficacy is built upon past successful attempts. The second motivator is vicarious experiences or social modelling, where people with same competencies are seen as a source of motivation, encouraging an observer in believing their own capabilities. Social persuasion is the third motivator, where people's self-efficacy is improved through advices from experts, increasing their success. The fourth influencer is the emotional and psychological state of individuals which judges their own capabilities (Bandura, 2010).

A study which was conducted to identify the psychological biases behind the trading decision of Indian Stock Market investors also sheds proof on risk perception and self-confidence of individuals being influencers in investor decision making. From the study, five psychological axes which drives the stock trading decision was identified and verified, including prudence and precautious attitude, conservatism, under confidence, asymmetry and financial addiction (Chandra & Kumar, 2011). Another study based on 30 exploratory interviews conducted to identify the behavioural biases which dominates the financial behaviour of individual investors, summarized their findings from the interview data under 19 different themes. These 19 themes were further clustered into 3 main categories as affective influence and emotions, information processing strategies and perceptual organizational principals and psychological motives. Here, safe-playing tendency, tendency to be confident on own-ability, tendency to rely on own skills, tendency to rely on family and friends, and tendency to rely on financial experts were identified as the factors under psychological motives of individual investors. The study suggests that by taking the permanently inherent investor biases, the finance service providers could get a better understanding of their financial consumers (Sahi, et. al., 2013).

3. Methodology
3.1 Conceptual Model
Upon identification of the fundamental determinants of risk behaviour, investor behaviour and psychological behavioural characteristics, a theoretical model was formed, which depicts the determinants of the risk behaviour of individuals from a psychological perspective.

Figure 1 shows a revised behavioural model conceptualized by Mendis et al. (2020), using Sitkin & Pablo's Reconceptualised Model of Risk Behaviour (1992) as the basis. It disregarded the organizational related elements, and integrated the theory of Perceived Self-Efficacy (1997). This integrated model captures the factors which dominate the confidence of individuals that also affect the risk behaviour of a person, which were unaddressed in the initial Sitkin & Pablo (1992) model.
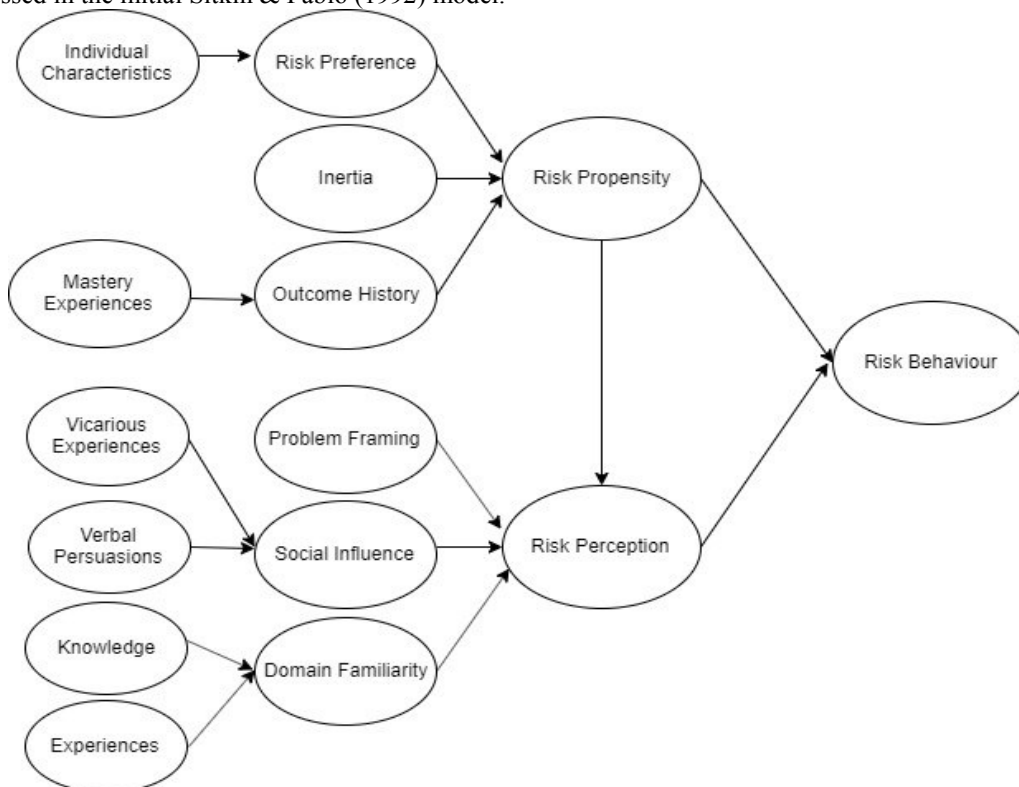

Figure 1. Integrated Risk Behaviour model

According to the conceptualized model, three clusters of elements which controls the risk decisions of an individual decision maker were identified, namely individual characteristics, societal influences and problem-

related characteristics.
- • Individual characteristics: risk preference, inertia, mastery experiences
- • Societal influences: vicarious experiences, verbal persuasions
- • Problem-related characteristics: problem framing, knowledge

Risk Preference is risk orientation an individual holds towards risk which controls their risk behaviour (Sitkin and Pablo, 1992). Inertia is the reluctance of a person to change what he has been familiar with over a period of time, thereby continuing the tendency of repeating his/her previous choices and maintaining the status quo regardless of the outcome (Alos-Ferrer et al., 2016; Gal, 2006)

"Outcome history" is identified as an individual's determination of an action related to risk based on the prior success or failure of that decision (Osborn and Jackson, 1988). "Problem framing is a factor which describes that an individual's risk perception is determined by the way he frames the problem; negatively or positively. People who are in favourable contexts believe that they have more to lose in case a risky decision brings a significant loss and thereby exhibit more risk averse behaviour, while more risk seeking behaviour is exhibited by individuals in unfavourable situations as they believe that they have little to lose (Kahneman and Tversky, 1979). Social Influence is the nature of individuals which makes them rely on the information and advices gathered from external parties, tending to exhibit more confident behaviour in decision making if they are encouraged by verbal persuasions/ social persuasions from experts (Bandura, 1990). Domain familiarity is identified as an individual's close acquaintance with the knowledge related to a specific context. Primarily, decision makers learn through their personal experience and the decisions are improved through the knowledge gathered.

Major motivators which dominates the confidence of the individuals in themselves as proposed by Bandura (2010) has been integrated to the above model, as independent factors which influences the above determinants of risk behaviour. The first motivator is 'Mastery Experiences', where a person's self-efficacy is built upon his past successful attempts. The second motivator is 'Vicarious Experiences', or social modelling, where people with same competencies are seen as a source of motivation, encouraging an observer in believing their own capabilities. The third motivator; 'Verbal Persuasions' improve people's self-efficacy through advices from experts, thereby increasing their success. (Bandura, 2010).

3.2 Testing and Validation

Previous studies had established that average individual investors tend to display 'safe-playing' behaviour when it comes to investment decisions, with the fear of losses and the dependency on the information available (Sahi, et al., 2013). In order to assess validity of this model, a cross sectional study was carried out in Sri Lanka, a developing country with at best, a weak form efficient market, history of poor corporate governance, lack of sophisticated knowledgeable investors. A structured questionnaire, with close ended, scenario-based questions was developed to operationalize the constructs. Non-probability sampling methods of convenience sampling and snowball sampling was applied to collect data from the respondents. The questionnaire was distributed among the employed Sri Lankan individuals who were above 18 years old. In order to select an unbiased sample, the representative sample was drawn from individuals who belong to 6 major industries which contribute significantly to the Sri Lankan economy, namely, banking, IT, manufacturing, telecommunication, tourism and shipping industry.

4. Data Analysis

4.1 Model Reliability

Cronbach alpha was used to verify that the designed questionnaire provides a reliable measure for measuring internal consistency of risk behavior. The questionnaire consisted of 36 questions which measured both dependent and independent variables. The Cronbach alpha value for the particular questionnaire was 0.78, which is greater that than the 0.7 normally required to establish internal consistency.

TABLE 1. MODEL SUMMARY FOR INVESTOR RISK BEHAVIOUR

Model	R	R Square	Adjusted R Square	Std Error of the Estimate	Durbin Watson
1	0.866[a]	.750	.726	.31172	2.062

As seen in Table 1, the R value of 0.86 indicates that there is a high correlation between the predicted and observed values. The R square value (R2) represent the coefficient of determination, which explains the proportion of variance in the dependent variable explained by the independent variables. As can be seen, 75% of the variance of risk behaviour can be explained by the independent variables of interest; risk propensity, risk perception, risk preference, inertia, outcome history, problem framing, social influence and domain familiarity.

4.2 Probability Distribution Analysis

The probability distribution of the logarithmic value of risk behaviour was graphically depicted in a box- plot diagram. The graphical representation of the probability distribution of the log risk behaviour is exhibited in

Figure 2. According to the graphical visualization, it was evident that the distribution is non-symmetrical and right-skewed, thereby showcasing that an average investor behaviour tends to be more risk averse in a developing country setting.
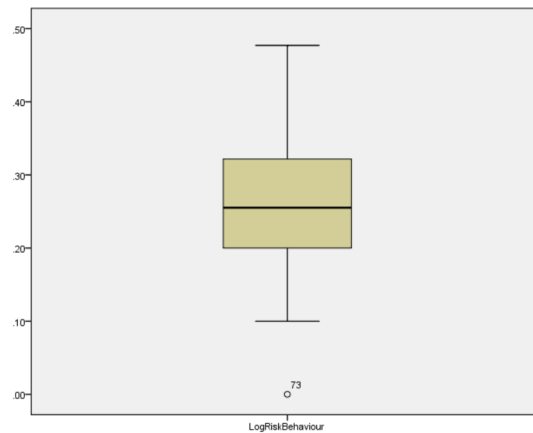

Figure 2. Risk Behaviour probability distribution boxplot

Further, Figure 3 depicts that there is a significant difference in gender when it comes to individual risk behaviour. Among the investors, males displayed a higher risk-seeking behaviour while the females tend to be more risk-averse.
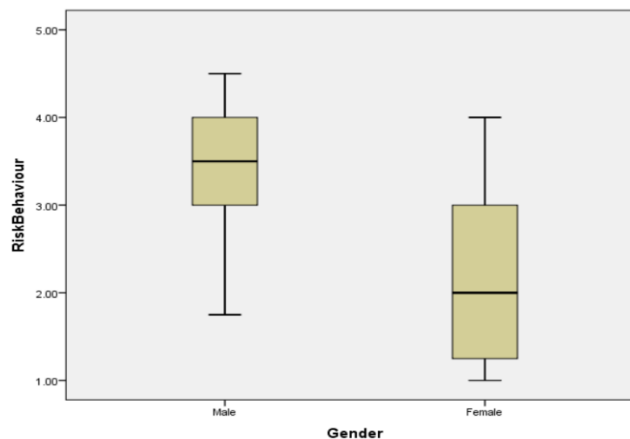

Figure 3. Difference in Risk Behaviour according to Gender

4.3 Cluster Analysis

A cluster analysis was conducted based on the two main determinants of the suggested and validated risk behaviour model; namely risk propensity and risk perception. These two main determinates, along with risk behaviour, were used to categorize the individual investors into homogenous clusters using the two-step cluster analysis. Using two-step cluster analysis, respondents were categorized into 2 clusters according to their risk behaviour, risk propensity and risk perception.

TABLE 2. MEAN BEHAVIOURAL CHARACTERISTICS OF INDIVIDUAL INVESTOR CLUSTERS

Construct	Cluster 1 - Risk Seeking	Cluster 2 - Risk Averse
Outcome History	2.68	1.60
Inertia	3.31	4.28
Social Influence	3.31	4.13
Risk Preference	2.09	1.60
Domain Familiarity	3.07	3.63
Problem Framing	2.44	2.14
Gender	Male	Female
Marital Status	Married	Unmarried
Industry	Banking, Finance, Insurance	IT

For further analysis, other behavioural characters towards risk (which affect risk behaviour and mediated by the main components) were studied in terms of their means for the 2 heterogeneous investor groups as shown in

Table 2. A Kruskal Wallis test depicted that the two groups (risk-seeking and risk-averse) are significantly different from each other, as shown in table 3.

Table 3. Test statistics for Kruskal Wallis test

	Risk Perception	Risk Propensity	Risk Preference	Inertia	Outcome History	Problem Framing	Social Influence	Domain Familiarity
Chi-Square	35.401	48.801	19.343	36.342	38.522	40.487	22.948	18.740
df	2	2	2	2	2	2	2	2
Asymp. Sig	.000	.000	.000	.000	.000	.000	.000	.000

The p –value for the risk perception, risk propensity, risk preference, inertia, outcome history, social influence and domain familiarity are less than the level of confidence (0.05). Hence it is proven that the population median of the two clusters are not equal. Therefore, it is evident that the two groups (risk-seeking and risk-averse) are significantly different from each other.

5. Results

A revised model proposed by Mendis et al., (2020), was used as a basis to discriminate risk behavior of individuals in a developing country setting. The model was tested among a sample drawn from six selected industries identified as major contributors to the country's economy. A structured questionnaire, with both close ended and scenario-based questions was used to capture the required information. Risk propensity, risk perception, risk preference, inertia, outcome history, problem framing, social influence and domain familiarity were identified as factors influencing individual risk behaviour.

Correlation analysis was used to assess the associations between the independent variables and relevant dependent variables in the developed integrated model. As seen in Table 4, Risk propensity, outcome history, social influence, and domain familiarity had strong positive influences on the risk behavior.

Table 4. Relationship between dependent and independent variables

Dependent Variable	Independent Variable	Relationship
Risk Behaviour	Risk Propensity	Strong positive
	Risk Perception	Moderate negative
Risk Propensity	Risk Preference	Moderate positive
	Inertia	Moderate negative
	Outcome History	Strong positive
Risk Perception	Risk Propensity	Weak negative
	Problem Framing	Moderate negative
	Social Influence	Strong positive
	Domain Familiarity	Strong positive

Through the probability distribution analysis, it is evident that average investors in a developing country context exhibit a risk averse behaviour in investment decisions. Also, it was identified that among the investors, males displayed a higher risk-seeking behaviour while the females tend to be more risk-averse.

Based on a two-step cluster analysis and Kruskal Wallis test interpretations, it was evident that there are two significantly different investor groups in the context of interest as risk-seeking and risk-averse.

Group 1: Risk-seeking individuals

The individual investors in group 1 are mostly males and are employed in the banking, finance or insurance sector. Their willingness to take risks is high. They have a moderate assessment level on the degree of risk inherent to a particular situation. Compared to the risk-averse category, their outcome history is higher, making them persistent towards risky decisions based on their prior success of that decisions. They are less comfortable with stable situations and tend to change their decisions.

Group 2: Risk-averse individuals

The individual investors in group 2 are mostly females and are employed in the IT sector. Their willingness to take risks is comparatively low. They have a high assessment level on the degree of risk inherent to a particular situation. They are more comfortable with stable situations and tend to change their decisions. They have a high social influence, making them refer the opinions of social groups, brokers, friends and others who have may have invested in the same investment product previously.

With a further mean value comparison, it was evident that an average Sri Lankan investor's assessment of the degree of risk inherent to a particular decision is high. It also displayed that most of the investors tend to be persistent with the investment decisions that they are familiar with and that their investment decisions depend on the influences and advices inherited from others.

6. Conclusion

Every decision taken by any human being bears a certain proportion of risk. The ambiguous nature of the future events makes it harder to settle on a single decision. Hence, they tend to prepare for the probable consequences that might arise from the decisions taken. Even within the same context, there is a high chance of the decisions taken by two people differentiating from one another. The main reason behind this can be revealed as the diverse nature of individual conduct. One's behaviour affects the perceptions he bears, the interactions he engages, as well as the decisions he make.

The overarching objective of this study is to assess how the investing decisions of the individual investors are governed by their psychological characteristics. The study was conducted in order to analyze the investor risk taking behaviour, in a developing country context and discover the determinants which govern their behaviour. A mixed research approach, with both qualitative and quantitative data analysis was chosen according to the nature of the objectives of the research. Hence this observational study analyses the data gathered from a selected sample representing a specific population at a particular point of time, it was also conducted as a cross-sectional study.

Through a thorough review of literature, a conceptual framework was developed by combining two existing models; the reconceptualized model of risk behaviour and the theory of self-efficacy. The model assesses the behaviour of its dependent variable; risk behaviour, over the impact from two moderating variables namely risk propensity and risk perception, together with six independent variables namely risk preference, inertia, outcome history, problem framing, social influence and domain familiarity.

The study revealed that 89% of the respondents invests less than 30% of their disposable income in different investment products outside the traditional savings instruments. This behaviour was further proven by the in-depth statistical analysis, which depicted that an average Sri Lankan investor tends to exhibit a risk-averse behaviour. Further, it was identified that risk propensity has a positive effect on risk behaviour while risk perception has a negative effect. The results correspond with the studies that have done before by Sitkin and Pablo (1992), and Himsara and Peter (2016) which have used the reconceptualized model of risk behaviour as the base.

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