

Risk Aversion: A Narrative Review

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ABSTRACT

Several effects have been noted for risk aversion including risk – reducing behaviors, social distancing, staying at home, distress and gambling disorder. A few predictors of risk aversion have been noted in this current literature including social activity, social standing and incentives to work. Several risk factors for risk aversion have also appeared in this literature. They include background uncertainty, induced worry, depression, less dopamine, less testosterone, schizophrenia and multiple risk factors. Methodological limitations include the almost exclusive sampling of participants with clinical conditions including anxiety, depression, schizophrenia and dementia. In addition, most of the studies are cross-sectional versus longitudinal, thus limiting any directionality conclusions.

Risk aversion has been defined as “the human tendency to prefer a sure, predictable outcome over a gamble with an uncertain result, even if the uncertain option has an equal or higher average payoff”. The literature search for this narrative review involved entering the terms risk aversion and the years 2022 to 2026 in PubMed and PsycINFO. Exclusion criteria included proposals, case studies and non-English language papers. As this is a narrative review, not a systematic review, Prisma guidelines were not followed. This review includes 16 papers on risk aversion. The papers can be categorized as effects of risk aversion (5 papers), predictors of risk aversion (3 papers), and risks of risk aversion (8 papers). These sections are followed by a discussion on methodological limitations of this current literature. Several potential interpretations are given throughout the paper.

Effects of Risk Aversion

Several effects have been noted for risk aversion (see table 1). They include risk – reducing behaviors, social distancing, staying at home, distress and gambling disorder.

Table 1: Effects of Risk Aversion (And First Authors)

Effects	First Authors
Risk-Reducing Behaviors	Collier
Social Distancing	Chang
Staying at Home	Dave
Distress	Petrocchi
Gambling Disorder	Chou

Risk – reducing behaviors followed greater levels of risk aversion in one study 20 months after the declaration of the COVID emergency [1]. These behavior changes included less socializing, less dining in restaurants and more handwashing.

Social distancing, as a form of less socializing, was prevalent during the pandemic. In a study on social distancing during the pandemic, a balance of risk aversion and peer pressure was noted [2]. Risk aversion and peer pressure led to social distancing. The peer pressure came not only from home but also from work environments.

Similar results were noted in a study during COVID-19 in Italy entitled “The interplay between risk and protective factors during the initial height of the COVID-19 crisis in Italy: the role of risk aversion and intolerance of ambiguity in distress” [3]. In this sample (N= 240 18–76 years-old), risk aversion was both a risk and a protective factor based on the type of variable that mediated the relationship between risk aversion and **distress**.

Risk aversion also occurred during the political violence at the U.S. capitol riot on January 6, 2021 [4]. A significant increase in non-residents’ smart phone pings occurred at the ellipse, the national mall and the capitol. An increase in **staying at home** was noted for DC residents. COVID-19 increased in counties that had more out-of-town protesters.

Risk aversion has also been a mediator in a relationship between the protective effects of empathy on gambling disorder [5]. In a sample of lottery gamblers (N =580), both risk aversion and

responsible gambling attitude mediated (enhanced) the negative effects of empathy on **gambling disorder**.

Predictors of Risk Aversion

A few predictors of risk aversion have been noted in this current literature (see table 2). They include social activities, social standing and incentives to work.

Table 2: Predictors of Risk Aversion (And First Authors)

Predictors	First Authors
Social Activities	Musbat
Social Standing	Weissberger
Incentives to Work	Gross

In research entitled "Exploring the relationship between **social activities** and financial risk aversion in adults age 50+ with depression cases", data were taken from the Survey of Health, Ageing and Retirement in Europe (N= 8769) [6]. In this sample from 15 European countries and Israel, involvement in social activities (education and training) led to greater risk taking regarding investments.

A similar variable called **social standing** or subjective socioeconomic status has been explored in a community-based cohort of older adults with dementia [7]. Greater social standing relative to others was associated with less risk aversion. Surprisingly, no differences were noted by gender or race.

Not surprisingly, **incentives for working** have been opposite to Incentives for risk taking [8].

Risk Factors for Risk Aversion

Several risk factors for risk aversion have appeared in this current literature (see table 3). They include background uncertainty, induced worry, depression, schizophrenia and multiple risk factors.

Table 3: Risk Factors for Risk Aversion (And First Authors)

Risk Factors	First Authors
Background Uncertainty	Leder
Induced Worry	Sporrer
Depression	Young
Less Dopamine and Serotonin	Molins
Less testosterone	Rodriguez
Infectious Disease in a Box	Hermanns
Schizophrenia	Canessa
Being Rural, Female, Older Age, Etc	Lim

In a paper entitled "Background uncertainty does not increase risk aversion in decision-making", these results were derived from four experiments (N=863) [9]. The results of these experiments suggested that **background uncertainty**, surprisingly, did not increase risk aversion in decision-making.

In contrast, **induced worry** has notably increased risk aversion [10]. In this research on patients with generalized anxiety disorder (N=16 with anxiety, 24 without anxiety and 23 healthy

controls) no group differences were noted on risk and loss aversion. The participants were asked to choose between a certain monetary payoff and an uncertain gamble. The absence of group differences on risk and loss aversion was surprising.

Greater risk aversion has been noted in **depressed individuals versus those with chronic pain and those with both depression and chronic pain** (N=61 with depression, 61 with chronic pain and 58 with both depression and pain) [11]. That depressed individuals experienced greater risk aversion and lower life satisfaction was not surprising. However, It is not clear why depressed individuals had greater risk aversion but those with chronic pain and those with both depression and chronic pain did not experience greater risk aversion and lower life satisfaction. Possibly those with chronic pain were distracted by the chronic pain which lessened their risk aversion. Unfortunately, a healthy control group was not included in this study.

Risk aversion was greater in a Bomb Risk Elicitation Task that surprisingly was approved as a research project given its risks for emotional disturbance [12]. In this study, participants reported more risk aversion for a box containing **infectious disease** than a box that contained a potentially explosive bomb. The participants were possibly not fully informed about the details of this study in the informed consent and/or likely viewed these two experimental conditions as non-credible (the reputed contents of both boxes but most especially the box with the potentially explosive bomb).

Risk aversion has also been the only predictor of group membership in a study comparing forensic **schizophrenic patients** (N=14), non-forensic schizophrenic patients (N=21) and healthy controls (N=41) [13]. Risk aversion was greater for the non-forensic patients with schizophrenia versus the healthy controls. These results are tenuous given the unequal sample sizes of the groups with the group of healthy controls being twice the size of the non-forensic schizophrenic group.

Risk aversion has also been studied in a sample of Korean adults with life insurance who filed illness claims (N=94,308) [14]. Ten of 19 predictors were significant including being **rural, female, older age with greater assets, blue-collar, less education, more often married or divorced and with a history of cancer**.

Potential Underlying Biological Mechanisms for Risk Aversion

Risk and loss aversion were important influences on decision-making in a review of 23 empirical studies that also suggested a few potential underlying biological mechanisms. These included lower dopamine and serotonin levels but no relationship with testosterone levels.

Lower dopamine and serotonin levels were associated with risk aversion, but less data was available on loss [15]. Loss aversion like risk aversion might be expected to be related to lower dopamine and serotonin levels [15]. **Testosterone**, however, was not related to risk aversion in a meta-analysis of 52 studies (N=17,340) [16]. That no relationship between testosterone and risk aversion was noted in any of the 52 studies is surprising given the more frequently noted risk taking in males, suggesting that higher testosterone levels would be related to less risk

aversion. Or the absence of risk aversion effects could relate to the large sample size.

Methodological Limitations of this Literature

Several methodological limitations can be noted for this current literature. These include sampling problems and surprising, difficult to interpret results.

The sampling problems start with different definitions that researchers have used for risk aversion. In addition, some of the samples are exclusively male or female, and in the mixed gender studies, gender comparisons are not reported.

Most of the samples have clinical conditions, for example, anxiety, depression, schizophrenia and dementia. Most of these samples do not include healthy control groups. Several of the multi – group studies have unequal group sizes.

Only a few of the studies are longitudinal. Most are cross-sectional, limiting the data analysis to correlations that cannot indicate directionality. Some of the results are surprising and difficult to interpret. For example, while risk factors like uncertainty, induced worry and depression are not surprising risk factors for risk aversion, other predictors of risk aversion like social activities, social standing and incentives to work are difficult to interpret. Occasionally, conflicting results appear within the same dataset.

Surprisingly, no overlap between this risk aversion and the loss aversion literature was noted, and the effects and risk factors for risk aversion differed from those for loss aversion. Also surprisingly, none of the authors compared risk aversion versus risk taking or risk aversion versus risk avoidance. Despite these limitations, this literature has been informative, and its limitations are suggestive of future research.

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