

## TO WHAT EXTENT DOES LOSS AVERSION BIAS, PARTICULARLY WHEN PRESENTED WITH POTENTIAL LOSSES OR GAINS, INFLUENCE THE PURCHASING DECISIONS OF HIGH SCHOOL AND UNDERGRADUATE STUDENTS?

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### ABSTRACT

*To address a key knowledge void about how this cognitive bias affects the next generation, this study examines the impact of loss aversion bias on high school and undergraduate students' purchase decisions. An important concept in behavioural economics called "loss aversion bias" argues that individuals often assess possible losses more severely than corresponding gains, which has a significant impact on how choices are made. The study utilizes a structured questionnaire to collect information on demographics, cultural backgrounds, financial circumstances, and perspectives on loss aversion. The results indicate that a substantial proportion of both male and female participants weigh possible losses higher than gains when making choices about purchases, indicating that loss aversion may have an effect on their purchasing patterns. An association was found between household income and loss aversion, highlighting the impact of socioeconomic factors in determining risk attitudes and preferences. The study found no evidence of a difference in perceived loss aversion between individualistic and collectivist cultures, refuting previous claims. In addition, participants displayed risk-averse behaviour in scenarios with gains and losses, which is consistent with the core idea of loss aversion. This research offers important new insights into the underlying causes of loss aversion bias among high school and undergraduate students, assisting marketers, educators, and legislators in developing more successful consumer engagement and financial education campaigns.*

**KEYWORDS:** Losses, Gains, Influence, Purchasing, Decisions, High School, Undergraduate, Students

### INTRODUCTION

Loss Aversion Bias, although not the most driving factor, significantly influences a large proportion of purchasing decisions [1]. The psychological phenomenon is often

used as a marketing strategy to nudge you towards specific choices, which refers to the human tendency to give more weight to potential losses compared to equal corresponding gains. Therefore, humans will go to greater lengths to avoid experiencing the negative outcomes of their possible loss. The cognitive bias suggests that the pain of losing is psychologically twice as powerful as the pleasure of gaining; succinctly put, the pleasure of obtaining \$10 is overshadowed by the disappointment caused by a \$10 loss.

We often experience it when making financial decisions. When there is a chance of losing funds, even though the potential gain is considerable, a person is less likely to purchase a stock [2]. Notably, the riskier the choice, the bigger the loss aversion. The concept plays a great part in cognitive psychology and behavioural economics because it drastically influences our decision-making, for the worse or for the better. This creates an impulse decision for individuals, firms, and countries to avoid drawbacks which can subsequently protect them from making risky decisions [3]. The idea of losing a great amount becomes unappealing leading to them going to considerable effects to avoid circumstances where they incur this risk. Financial advisors might utilize this knowledge to discourage

clients from holding on to investments that have decreased in value in order to avoid a loss in their portfolio, even if selling is the most appropriate decision [4]. The typical investor lost twice as much as the S&P 500® Index in 2018 [5], a year that saw two significant market drops. This significant inconsistency can be traced mostly to investors selling shares in anticipation of incurring additional losses and subsequently missing out on market recoveries.

Loss aversion can also be explained from biological reasoning due to how situations involving the bias cause the activation of distinct brain areas. For example, the amygdala is a region in our brain most active during childhood and teenage years, involved in processing fearful and threatening stimuli, including the detection of threats and activation of appropriate fear-related behaviours in response to threatening or dangerous stimuli [6]. Our initial reaction to the potential loss triggers a pre-conscious sense of anxiety, creating a greater aversion toward experiencing the risk associated with the drawback [1].

The extent of loss aversion experienced by economic agents can depend on socioeconomic factors. Due to their more extensive disposable income, those with high salaries could often have an easier time accepting the expenses they suffer [7]. The degree of affluence in their social surroundings may also affect how loss-averse they are because they have faith in their local economic conditions.

Individualistic cultures value independence, autonomy, uniqueness and fulfilling one's goals. It is assumed that within societies, people behave according to their best self-interest, in countries such as The United States of America, The United Kingdom, Australia etc. Conversely, collectivist cultures value interdependence, conformity, and identifying as a part of a group, and their community is assumed to be the primary importance [8]. Those from collectivist societies may be inclined to be less loss-averse due to dependence on friends and family if they do make a wrong decision. In contrast, individualistic societies may tend to avoid taking more risks due to bearing most or all of the consequences and therefore exhibit a lower likelihood of losses [9].

## REVIEW OF LITERATURE

Sendhil Mullainathan & Richard H. Thaler (2000) suggested that Behavioral economics is a combination of psychology and economics that investigates why consumers may act irrationally [10]. In traditional economic theory, we learn about the assumption in which all agents are optimizing, in which consumers aim to maximize utility and firms aim to maximize profit, even if the people under study are not experts. The roots of the field can date back to Thorstein Veblen (1899), whose work explored the influence of psychology on economic decisions. Initially, this research was deemed revolutionary because it was the first of its kind to challenge classical economic theories [11]. Veblen's work put

forward how people often purchase goods to demonstrate their social status and wealth rather than because the goods possess functional value. John Maynard Keynes (1936) analyzed the influence of Behavioral Economics on macroeconomic theory and policy. He proposed that psychological factors play an important role in economic decision-making, which can determine aggregate demand, unemployment rates, and inflation [12].

However, Behavioral Economics first accrued prominence due to the work of notable figures such as Daniel Kahneman, Amos Tversky, and Thaler. Prospect theory was considered to have established the basis of Behavioral Economics and was first proposed by Kahneman and Tversky (1979). The model explains the method by which individuals make economic decisions when under uncertainty by displaying concepts such as loss aversion, suggesting that the choices of individuals are influenced depending on losses and gains [13]. The endowment effect is a form of cognitive bias that explains a phenomenon where people frequently assign a higher value to objects simply because they own them, which was also introduced in the study. The presumption can cause people to behave in ways that appear unreasonable when making economic decisions, such as placing a greater price on something they already own than they would be prepared to pay for the same product [13].

Daniel Kahneman, Jack L. Knetsch, and Richard H. Thaler (1991) explored further the role of cognitive biases in economic

decisions. Through conducting studies and experiments where participants were presented with hypothetical scenarios with risky choices, they concluded that participants would be more averse to receiving potential losses than they were attracted to the potential gains, even though the monetary value was the same [14]. The researchers wanted to explain that individuals attribute a higher value to their possessions, causing them to go to greater lengths to avoid losses because it hurts more to lose them. Thaler and Sunstein (2008) later introduced the “nudge” theory, which outlines guiding individuals' decisions in a manner that promotes positive behaviours while also protecting their autonomy and freedom of choice; it suggests small alterations in the method of the presentation of choices can completely alter consumers' willingness to purchase a good/service [15].

Eldar Shafir and Itamar Simonson (1993) investigated the differences in culture on loss aversion tendencies [16]. The experiment mentioned in the paper concluded that participants from collectivist societies, who value interdependence, conformity, and identifying as part of a group, displayed higher loss aversion when presented with potential losses. However, participants from individualistic societies, who value independence, autonomy, uniqueness, and fulfilling one's own goals, exhibited greater loss aversion when presented with potential gains. Shafir and Simonson's research shed light on how slight differences in cultural norms and attitudes can affect how cognitive biases can shape an individual's purchasing decisions.

The findings have ramifications for an array of fields, including cross-cultural research, economics, psychology, and policy-making.

Hal R. Arkes and Catherine Blumer (1985) explored how age can affect the tendency of loss aversion in individuals [17]. In regard to sunk costs (irrecoverable past investments), the research aimed to determine how ageing affects people's decision-making processes. According to the study, older individuals tended to be less inclined to take into account their sunk costs when making decisions. They were more prone to withdraw from previous investments and concentrate on their present circumstances and possibilities for the future. Conversely, however, younger adults were bound by earlier unrecoverable investments. Therefore, the findings can suggest that older individuals may have a cognitive edge, especially when it comes to breaking free from the grip of loss aversion bias.

Deborah A. Small, George Loewenstein, and Paul Slovic (2007) examined the question of gender differences in loss aversion [18]. The purpose of the research was to determine the extent to which individuals of different genders may display diverse patterns of behaviour when presented with circumstances comprising losses and gains. The results of the investigation highlighted an unusual trend amongst women, in particular, who were more likely to donate to recognized victims rather than statistical victims. The findings indicate that women are more susceptible to the emotional aspects of losses and gains, with a greater sensitivity to scenarios containing real and

individualized tales of loss. Such disparate conduct reveals a possible gender difference in loss aversion, with women's decisions influenced by the emotional resonance that identified victims in the experiment would elicit.

Our literature review demonstrates how Kahneman, Thaler, and other researchers propagated the notion of loss aversion. The findings illustrate the manner by which cognitive biases might influence individual economic decisions. However, we noticed a research gap in addressing the impact of loss aversion on high school and undergraduate students' decision-making processes. We understood that findings from such data would enable significant strides for future policies and programs, involving high school and undergraduate students. While various research studies have looked into the intricacies of loss aversion across variables such as cultural background, age, and gender, a significant gap remains in investigating its consequences specifically for this crucial demographic segment.

## RESEARCH OBJECTIVES

Loss Aversion Bias is a well-recognised and respected cognitive bias in behavioural economics. Due to the work of renowned researchers such as Daniel Kahneman, Richard H. Thaler, and Amos Tversky from the early 1970s to the 2000s, the concept has become a fundamental constituent in the understanding of consumer purchasing decisions. However, to truly understand if the theory is as effective as thought, it is important to understand the up-and-coming

generation's views on it. While some continue to uphold views from Classical concepts that disregard loss aversion and other principles of behavioural economics, other individuals regard it as a widely acknowledged phenomenon in financial decisions and consumer behaviour. It is, therefore, significant to understand the perspective of students of the 21st century in order to assess whether the notions of classical principles still hold value and if its integration with concepts of behavioural economics, particularly loss aversion, persists among the emerging generation of students. Investigating the viewpoints of students in the twenty-first century can allow new insights into the evolution of how cognitive biases influence economic thinking.

Therefore, the main objectives of our study were (1) To investigate the credibility of loss aversion bias in its influence on purchasing decisions in undergraduate and high school students (2) To examine the effect of differences in culture on loss aversion bias (3) To analyse how gender affects the extent of loss aversion bias (4) To investigate whether there is a difference between gender and perceptions of loss aversion (5) To investigate the extent to which social and economic factors affect loss aversion bias in undergraduate and high school students.

## **RESEARCH METHODOLOGY AND PARTICIPANTS**

To examine the perception of Loss Aversion Bias from potential losses and gains by students, a quantitative study research methodology was adopted. The research

objectives were answered through a questionnaire. The first section of the questionnaire, questions 1 to 4, focused on the demographic information of participants including age, gender, years of schooling, and family background. The second section, questions 5 to 8, presented scenarios that presented Loss Aversion displaying potential losses and gains. The final section, questions 9 to 11, examined the general perceptions and knowledge of cognitive biases and consumer behaviour. The questionnaire was developed in this manner with the objective of gathering a comprehensive understanding of the responder. The primary section provided valuable insight into the student's educational and financial background, allowing us to examine aspects such as income, gender, and educational differences. The second and third sections then analysed perceptions of the cognitive bias among students and examined its influence on purchasing decisions among undergraduate and high school students.

A structured questionnaire was utilised because of its ability to provide quantitative, numerical data and analyze differences between variables in a methodical way. Associated confounding variables. The variables and responses were coded and typed in Microsoft Excel for computing various ratios, percentages, and correlations/association statistics between variables after checking, filling gaps, and verifying the accuracy of the data by re-contacting respondents as needed. The Chi-squared test is a statistical hypothesis test that aims to compare the observed frequencies with expected frequencies.

Given the nominal level of measurement and the Unrelated groups design, the test was appropriate. It was then used with contingency tables to determine how certain we can be that there is a relationship between two variables in the population. A significance level of  $p \leq 0.05$  will be used so that if the null hypothesis is rejected then we can be 95% certain our results are not due to chance and there is a difference between a chosen variable (age, gender, culture) and loss aversion.

## RESULTS AND DISCUSSIONS

The questionnaire was structured in a way to understand the respondents' cultural and financial background before completing questions to measure the extent of loss aversion. The questionnaire was completed by 111 students between the ages of 14 to 22 across the globe. The gender distribution consisted of 53.2% of the respondents being male and 46.8% female. Participants specified the region(s) they were from. It was reported that 37.8% were from Asia, 48.6% were from Europe, 14.4% from North America and the remaining comprised of other regions. 27% of respondents had a Low-Income family background, 35.1% a Medium Income background, 26.1% High Income, and the remaining participants preferred not to specify.

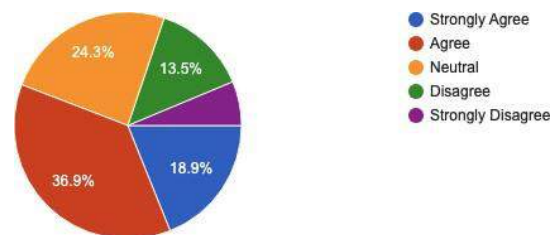
When determining whether there was a significant difference between gender and awareness of loss aversion bias (see Figure 1), we found there was no significant difference using the chi-squared statistical

test. The calculated value of 0.0003 is less than the critical value of 0.986233 for a p-value of 0.05.

	Yes (familiar)	No (not familiar)	Total
Males	26	33	59
Females	23	29	52
Total	49	62	111

**Figure 1: Awareness about Loss Aversion by gender**

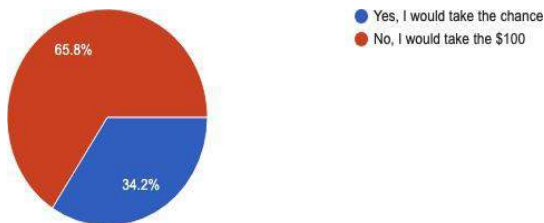
Despite only 44.1% of male and female respondents being aware of loss aversion bias and its implications, 55.8% of them reported that they either agreed or disagreed that they think about more potential losses than gains when making a purchasing decision. From Figure 2, it can be seen that participants were more inclined to say that loss aversion influenced their purchasing decisions (55.8%) than the cognitive bias having no effect (19.8%).



**Figure 2: Participants thinking about potential losses more than potential gains**

Participants were also asked questions being given scenarios. In Question 5, participants were presented with a scenario where a choice between a certain gain of \$100 or a 50% chance to gain \$200 with a 50% chance of gaining nothing. The findings showed

that 65.8% of participants chose the \$100 assurance whereas 34.2% chose the chance (See Figure 3). Participants prioritized the sure gain of \$100 rather than taking a risk for a potential \$200. Despite the expected values of both scenarios being the same, results showed a significant distinction with participants preferring to avoid risk. The pattern of decision-making highlights the psychological influence of potential losses on consumer choices of high school and undergraduate students and corresponds with respondents being risk averse.



**Figure 3: Scenario 1 Measuring Loss Aversion**

Participants were asked about their family Financial Situation and how significant the effect of loss aversion is on their purchasing decisions (See Figure 4). The extremes of both conditions (Low/High Income and significant/No Effect) were then put in a two-way table to obtain a chi-squared statistic. The chi-squared statistic obtained was 4.89. Therefore, we can infer that the result is significant at a significance level of  $p < 0.05$  as the calculated value of 4.89 is greater than the critical value of 3.84

	Significantly	Slightly	No Effect	Total
<b>Low Income</b>	14	12	4	30

<b>Medium Income</b>	8	21	10	39
<b>High Income</b>	6	14	9	29
<b>Prefer Not to Say</b>	4	6	3	13
<b>Total</b>	32	53	26	111

**Figure 4: Effect of Loss Aversion by Family Income**

To analyse effects of culture, the regions participants stated they were originally from were grouped into individualistic or collectivist cultures. For example, respondents who stated they were from South Asia (e.g., India, Pakistan, Sri Lanka) were grouped as originating from a collectivist society. Whereas respondents who indicated their place of origin as Western Europe (e.g., The UK, France, Spain) and North America were assumed to be from individualistic cultures.

	Significant /Slight Effect	No Effect	Total
<b>Collectivistic</b>	48	16	68
<b>Individualistic</b>	37	10	43
<b>Total</b>	85	26	111

**Figure 5: Effect of Loss Aversion by Culture**

When grouping up participants, it was found that 61.3% of participants originated from collectivist cultures and the remaining 48.7% of respondents from individualistic (See Figure 5). We then used a chi-squared

test to analyse the data and found there was no significant difference between collectivist and individualistic society perception of loss aversion because the calculated value of 0.89 was less than the critical value of 3.84 at a significance level of  $p < 0.05$ .

It was assumed that those from collectivist cultures would be less loss-averse due to dependence on friends and family if a wrong decision is made. But it could be interpreted that those from individualistic societies may instead take more risks due to how they promote self-confidence and self-focus, therefore resulting in more risk-taking. This could be the reason that the chi-squared calculated value showed no significance between culture and loss aversion. However, it is important to note that respondents were asked about the country/region they were originally from. Some could have moved to different cultures and thus adopted their norms and attitudes.

## CONCLUSION

Our aim was to examine the fascinating phenomena of loss aversion bias and the method in which it significantly influences high school and undergraduate students' purchasing decisions. The concept suggests that people are more sensitive to potential losses than corresponding gains, which has a significant effect on how they make choices in a wide range of areas, including financial decisions and how they behave as consumers. The objective of this research was to thoroughly examine this cognitive bias while taking into account variables including gender, culture, socioeconomic

status, and hypothetical situations that could result in gains or losses.

As demonstrated in the literature review, loss aversion bias has undergone extensive research and has been acknowledged as a fundamental cognitive bias that shapes our decision-making. The understanding of behavioural economics was pioneered by renowned researchers like Daniel Kahneman, Richard H. Thaler, and Amos Tversky, who also made a substantial contribution to the recognition of loss aversion in particular. However, our research found an absence in the literature regarding how young people, particularly high school and undergraduate students, perceive and are impacted by loss aversion. Therefore, the main goal was to ascertain their viewpoint on this cognitive bias and evaluate how it integrated with traditional economic concepts.

A structured questionnaire was employed in the method of quantitative study. With the use of this approach, information on the respondents' demographic characteristics, cultural background, financial status, and opinions regarding loss aversion could be systematically gathered. The findings provided an elaborate picture of how students' decision-making is affected by loss aversion.

Although awareness of loss aversion was similar between male and female participants, the research showed that a significant number of both genders reported considered possible losses more than gains when making purchasing decisions,



emphasizing how loss aversion may affect people's purchasing decisions, regardless of gender. Additional questions explored the differences between household income and the impact of loss aversion bias on purchasing choices. In contrast to individuals from higher-income families, respondents from families with low incomes showed a stronger influence of fear of losing on their decisions. The relationship between an individual's financial situation and the impact of loss aversion demonstrates how socioeconomic factors influence people's risk attitudes and preferences. The study also made an effort to comprehend how culture may influence people's propensities to avoid losses. It was first proposed that people from individualistic cultures would take less risks while those from collectivist societies might demonstrate reduced loss aversion owing to reliance on family and community support. The results, however, did not support this hypothesis, indicating that other variables or traits may be significant in determining risk-taking behaviours in a variety of cultural situations.

The study provided scenarios with potential benefits and losses to assess participants' preferences for risk. Results revealed that most respondents exhibited risk-averse behaviour, preferring certain gains over potential benefits that were uncertain. It highlights the aversion to possible losses even when the expected value of gains is the same, which is consistent with the fundamental notion of loss aversion.

Our study shed light on the nuanced nature and scope of loss aversion bias among high

school and undergraduate students. It is crucial to comprehend how cognitive biases like loss aversion affect this group in order to build wise public policies, well-researched educational initiatives, and successful marketing campaigns for the next generation. To improve our comprehension of the complex dynamics underlying loss aversion bias and its influence on decision-making, future research in this field may delve deeper into how these components interact and study additional facets.

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