

Believing in The Unbelievable: The Hidden Utility of Superstitious Belief in Consumer Behaviour

Yuanyuan (Gina) Cui

A thesis submitted to
Auckland University of Technology
in fulfilment of the requirements for the degree of
Doctor of Philosophy (Ph.D.)

April 2023

Department of Marketing
Faculty of Business, Economics, and Law
Auckland University of Technology
New Zealand

Thesis Abstract

Have you ever said “bless you” when someone around you sneezes – just in case the devil might steal their soul? Have you ever shied away from flying on a Friday, the 13th, or ever knocked on a piece of wood just to ward off bad luck? If your answered “yes” to any of the questions, you are at least somewhat superstitious. Superstitious beliefs, defined as an irrational belief that an object, action, or circumstance that is not logically related to a course if events influence the outcome. Although superstitious beliefs are ubiquitous in our lives, the investigation of superstitious beliefs in the marketing literature remains a largely nascent scholarly realm. Among few exceptions, researchers predominantly focus on the impact of superstition on product evaluation and purchasing, however, unfortunately overlooked its implications on normative consumer behaviours.

Responding to the call for more scholarships aiming at “addressing the general frustration with society and market limitations,” there is a considerable need to investigate normative behaviours, defined as actions that align with social norms, expectations, values, and consumer welfare. To grasp a more comprehensive understanding of the effects of salient superstitious beliefs, this thesis therefore opts for consumer sustainability and impulsivity, thereby tapping into consumers’ normative behaviour algin with social ethics and personal well-being respectively.

Through a series of experiments (conducted through an online crowdsourcing panel [Cloud Research]), complemented by online survey, meta-analysis and field experiments, this thesis aims to exploring the effects of salient superstitious beliefs. Specifically, the first investigation (Chapter 5) featured three experimental studies, with a single-paper meta-analysis cementing the robustness of the findings. The resulting findings revealed that activating

superstitious beliefs led to significantly consumers' greater preference for sustainable products. Furthermore, mediation analyses showcased that this effect occurred because when such beliefs were made more salient, consumers were more inclined to experience a stronger tendency of karmic reward seeking. Moreover, the subsequent investigation exploring the effect of superstitious beliefs on consumer impulsivity (Chapter 7). Across five studies, the findings demonstrated that superstitious beliefs significantly decreased consumer impulsivity. Through an experiment conducted online, one with enhanced incentive compatibility, and one conducted in the field setting, this research showed that the effect on impulsivity was mediated by consumers' long-term (vs. short-term) orientation induced by superstitious beliefs, which motivates consumers to prioritise future long-term gains over immediate gratifications.

Combined, the resultant findings of this thesis address the research questions, and demonstrate the previously underexamined potential of superstitious beliefs. By investigating the causal effect of superstitious beliefs and the underlying mechanisms, this research sheds light on the nuances of such beliefs and its implications for consumer behaviour, including consumer sustainability and impulsivity. To this end, this thesis adds to the emerging research paradigm of transformative consumer research (TCR) aiming at promoting more mindful and responsible consumer behaviours. Practically, the findings compel businesses, consumers, and policy makers such that more effective intervention techniques can be deployed to promote more sustainable consumer behaviours and curb consumer impulsivity.

Keywords: Superstitious beliefs, Consumer behaviour, Sustainability, Impulsivity, Choices, Karmic reward seeking, Long-term orientation.

Table of Contents

Thesis Abstract	ii
List of Tables	xi
Glossary of Terms and Definitions	xii
Attestation of Authorship	xiv
Acknowledgement	xv
Authored Works	xviii
Ethical Approval	xix
Chapter 1: Introduction	1
1.1 Research Background	2
1.2 Research Objectives and Questions	12
1.3 Synopsis of the Methodology and Method	14
1.4 Intended Research Contributions	22
1.5 Thesis Structure	23
1.6 Conclusion of Chapter 1	27
Chapter 2: Review of the Literature	28
2.1 Introduction to Chapter 2	29
2.2 Superstition, Superstitious Beliefs and Superstitious Consumption	30
2.2.2 Antecedents of Superstitions, Superstitious beliefs, and Superstitious Consumption	43
2.2.3 Consequences of Superstition, Superstitious Beliefs, and Superstitious Consumption	47
2.3 Identifying the Research Gap in Extant Literature and Research Questions	51
2.4 Normative Consumer Behaviours	53
2.4.1 Consumer Sustainability	55
2.4.2 Consumer Impulsivity	57
2.5 Conclusion of Chapter 2	61
Chapter 3: Research Methodology	62
3.1 Introduction to Chapter 3	63
3.2 Philosophical Approach and Methodological Position	63
3.2.1 Ontology and Epistemology	64
3.2.2 Research Paradigms	65

3.2.3 Methodological Position of this Thesis	70
3.3 Research Design and Justification	72
3.3.1 The Use of Self-Report and Behavioural Measures	74
3.3.2 The Sampling Strategy, Date Collection, and Participant Selection	76
3.4 Ethical Considerations	81
3.5 Conclusion of Chapter 3	82
Chapter 4: Prelude to Manuscript 1.....	84
Chapter 5: The Superstitious Road Not Taken: How Superstitious Belief Shapes Consumer Sustainability (Manuscript 1).....	86
5.1 Consumer Relevance and Contribution Statement.....	87
5.2 Abstract	88
5.3 Introduction	89
5.4 Conceptual Background	91
5.4.1 Superstitious Beliefs and Karma.....	91
5.4.2 Sustainability Consumption.....	93
5.5 Hypotheses Development	95
5.5.1 (Un)Sustainability Consumption and Karmic Causality	95
5.5.2 Karmic Reward Seeking Tendency, and Sustainability Consumption	96
5.6 Empirical Overview.....	98
5.7 Study 1	99
5.7.1 Study Design, Procedures and Measurement	100
5.7.2 Findings and Discussion	101
5.8 Study 2	103
5.8.1 Study Design, Procedures and Measurement	103
5.8.2 Findings and Discussion	104
5.9 Study 3	107
5.9.1 Study Design, Procedures and Measurement	107
5.9.2 Findings and Discussion	108
5.10 Study 4	109
5.11 General Discussion	110
5.12 Theoretical Contributions.....	112
5.13 Practical Implications	113
5.14 Avenues for Future Research	114
5.15 Conclusion	115
5.16 References	117

5.17 Web Appendices	121
5.17.1 Web Appendix A: The Operationalization of Superstitious Beliefs (Study 1)	121
5.17.2 Web Appendix B: Measurement Scales Used (Study 1)	123
5.17.3 Web Appendix C: The Operationalisation of Superstitious Beliefs (Study 2)	129
5.17.4 Web Appendix D: Measurement Scales Used (Study 2).....	131
5.17.5 Web Appendix E: The Operationalisation of Superstitious Beliefs (Study 3)	134
5.17.6 Web Appendix F: Measurement Scales Used (Study 3).....	136
5.17.7 Web Appendix G: Multiple Contrast Standardized Meta-Analysis (MCSM)	137
5.17.8 Web Appendix H: The Plot of the Multiple Contrast Standardized Meta- Analysis (MCSM).....	138
Chapter 6: Prelude to Manuscript 2.....	139
Chapter 7: It Is A Marathon Not A Sprint: Superstitious Beliefs Curb Consumer Impulsivity (Manuscript 2).....	141
7.1 Consumer Relevance and Contribution Statement.....	142
7.2 Abstract	143
7.3 Introduction	144
7.4 Theoretical Development and Hypotheses	146
7.4.1 Superstitious Beliefs and Long-Term Orientation.....	146
7.4.2 Consumer Impulsivity.....	148
7.4.3 Long-Term Orientation as An Inhibitor of Consumer Impulsivity	150
7.5 The Present Research.....	151
7.6 Study 1: Trait Superstitious Beliefs and Impulsivity: A Correlational Study 	153
7.6.1 Study Design, Procedures and Measurement	153
7.6.2 Findings and Discussion	154
7.7 Study 2: An Experiment Manipulating the Salience of Superstitious Beliefs 	159
7.7.1 Study Design, Procedures and Measurement	159
7.7.2 Findings and Discussion	160
7.8 Study 3: An Experiment To Rule Out Alternative Explanations	161
7.8.1 Study Design, Procedures and Measurement	162
7.8.2 Findings and Discussion	163

7.9 Study 4: Online Grocery Shopping: A Field Experiment	165
7.9.1 Study Design, Procedures and Measurement	166
7.9.2 Findings and Discussion	168
7.10 Study 5: A Single-Paper Meta-Analysis	172
7.11 General Discussion	173
7.12 Theoretical Contributions	174
7.13 Managerial, Consumer, and Regulatory Implications	176
7.14 Is Highlighting Superstitious Beliefs A Self-Control Strategy?	177
7.15 Avenues for Future Research	178
7.16 Concluding Remarks	180
7.17 References	181
7.18 Web Appendices	185
7.18.1 Web Appendix A: Measurement Scales Used (Study 1).....	185
7.18.2 Web Appendix B: Results without Gender and Income as Covariates (Study 1).....	187
7.18.3 Web Appendix C: The Operationalisation of Superstitious Beliefs (Study 2)	188
7.18.4 Web Appendix D: Measurement Scales Used (Study 2).....	189
7.18.5 Web Appendix E: Measurement Scales Used (Study 3)	194
7.18.6 Web Appendix F: Experimental Material (Study 3).....	198
7.18.7 Web Appendix G: Results without Gender and Income as Covariates (Study 3).....	199
7.18.8 Web Appendix H: The Operationalisation of Superstitious Beliefs (Study 4)	201
7.18.9 Web Appendix I: Measurement Scales Used (Study 4)	206
7.18.10 Web Appendix J: Experimental Materials, Procedures and Stimuli (Study 4).....	209
7.18.11 Web Appendix K: Results of Post-Hoc Analysis (Manipulation Check; Study 4).....	210
7.18.12 Web Appendix L: Results without Gender and Income as Covariates (Study 4)	212
7.18.13 Web Appendix M: Results without gender and income as covariates (Discussion; Study 4).....	214
7.18.14 Web Appendix N: Additional Results with Covariates (Discussion; Study 4).....	215
7.18.15 Web Appendix O: Additional Single-paper meta-analyses (Study 5).....	216
Chapter 8: General Discussion	218

8.1 Introduction to Chapter 8	219
8.2 Re-Visiting the Research Objectives	221
8.3 Synthesis of Findings	222
8.3.1 Impact of Superstitious Beliefs on Consumer Sustainability	222
8.3.2 Impact of Superstitious Beliefs on Consumer Impulsivity	226
8.4 Contributions and Implications	230
8.4.1 Theoretical Contributions	230
8.4.2 Managerial Implications	232
8.4.3 Policy and Consumer Implications	234
8.4.4 Methodological Contributions	236
8.5 Limitations of the Thesis & Recommendations for Future Research	240
8.5.1 Theoretical Limitations and Recommendations for Future Research	240
8.5.2 Methodological Limitations and Recommendations for Future Research	242
8.6 Conclusion of Chapter 8	245
Chapter 9: Conclusion	247
9.1 Some Personal Reflections – Looking Back on the Journey	248
9.2 Concluding Remarks	251
Chapter 10: References	253
Chapter 11: Appendices	268
11.1 Appendix A: Ethical Approval Letter	268
11.2 Appendix B: Participant Information Sheet	269
11.3 Appendix B: Sample Participant Consent Form (Qualtrics)	271
11.4 Appendix C: Example of Experimental Design and Procedure (Salient Superstitious Beliefs Condition; Study 1 – Manuscript #1)	272
11.5 Appendix D: Example of Experimental Design and Procedure (Self-Affirmation Condition; Study 3 – Manuscript #1)	282
11.6 Appendix E: Example of Experimental Design and Procedure (Salient Superstitious Beliefs Condition; Study 3 – Manuscript #2)	289
11.7 Appendix F: Message to Participants Who Gained Bonus (Study 3 - Manuscript #2)	299
11.8 Appendix G: Example of Experimental Design and Procedure (Salient Superstitious Beliefs Condition; Study 4 – Manuscript #2)	300
11.9 Appendix H: Stimuli Used in Different Experimental Conditions (Study 4 – Manuscript #2)	308
11.10 Appendix I: Message to Participants Who Gained Bonus (Study 4 - Manuscript 2)	310

11.11 Appendix J: Submission Proof of Manuscript 1.....	311
11.12 Appendix K: Submission Proof of Manuscript 2	312

List of Figures

Figure 1.1 A Pictorial Demonstration of Thesis Structure.....	26
Figure 2.1 A Visual Demonstration of Superstitious Beliefs Using the Metaphor of Type I/II Error	45
Figure 5.1 Conceptual Framework.....	98
Figure 5.2 Results of Study 1	103
Figure 5.3 Results of Study 2	106
Figure 5.4 Results of Study 3	109
Figure 5.5 Single-Paper Meta-Analysis	110
Figure 5.6 Experimental Stimuli Used in Study 1 (Dishwasher).....	123
Figure 5.7 Experimental STIMULI USED IN STUDY 1 (Cleaner)	124
Figure 5.8 Experimental Stimuli Used in Study 1 (Lamp)	124
Figure 5.9 Experimental Stimuli Used in Study 1 (Backpack).....	125
Figure 5.10 Experimental Stimuli Used in Study 1 (Batteries)	125
Figure 5.11 Experimental Stimuli Used in Study 2 (Lamp)	131
Figure 5.12 Experimental Stimuli Used in Study 3 (Cleaner)	136
Figure 5.13 Single-Paper Meta-Analysis Using multiple contrast standardized meta-analysis (MCSM) Approach (Study 4)	138
Figure 7.1 Conceptual Framework.....	151
Figure 7.2 Visual Demonstration of Studies	153
Figure 7.3 Effects of Superstitious Beliefs on Impulsive Consumption Preference (Study 2).....	161
Figure 7.4 Effects of Superstitious Beliefs on Purchasing Snacks (Study 3)	164
Figure 7.5 The Participant Interface of the Open Science Online Grocery (OSOG)	168
Figure 7.6 Plotting the Multiple Contrast Standardized Meta-Analysis (MCSM; Analysis #1)	173
Figure 7.7 Experimental Procedure in Study 3	198
Figure 7.8 Experimental Procedure in Study 4	209
Figure 7.9 The Plots of the Multiple Contrast Standardized Meta-Analysis (MCSM; Analyses #2 and #3).....	217

List of Tables

Table 1.1. A Review of Relevant Research on Superstitious Beliefs	5
Table 1.2 Summary of Research Methods in the Thesis.....	15
Table 1.3 Overview of All Studies in the Thesis	18
Table 2.1 Definitions of Superstitious Beliefs in the Literature	32
Table 2.2 Sample Measurement of Superstitious Beliefs in the Literature.....	37
Table 3.1 Summary of Research Paradigms and Underlying Assumptions	69
Table 7.1 Summary of Study Descriptives and Results	155
Table 7.2 Measurement Scales Used in Study 1	185
Table 7.3 Measurement Scales Used in Study 2	189
Table 7.4 Measurement Scales Used in Study 3	194
Table 7.5 Measurement Scales Used in Study 4	206
Table 7.6 Results of Post-Hoc Analysis of Manipulation Check in Study 4	210
Table 7.7 Additional Single-Paper Meta-Analyses in Study 5	216

Glossary of Terms and Definitions

Term (Abbreviation if applicable)	Definition	Sources or remarks
Methodological Terms		
Confidence Interval (CI)	A range of values calculated from a sample, which is used to estimate the parameter of an unknown population, with a specified level of confidence.	Hayes, 2017; Chapter 5 and 7
Sampling Units	Individuals and groups of a population that are selected as a sub-set of the entire population as research participants.	Rosenthal & Rosnow, 2008; Chapter 3
Probability Sampling	The selection of participants in such a way that every member of the population has an equal chance of being selected for the sample (e.g., through throwing a dice, and spinning a roulette wheel).	Rosenthal & Rosnow, 2008; Chapter 3
Non-Probability Sampling	Methods that allow for minimal randomness to be introduced in the selection processes, in which laws of mathematical probability do not necessarily apply.	Rosenthal & Rosnow, 2008; Chapter 3
Behavioural Research/Inquiries	Research that explains some aspects and/or relationships in relation to human behaviours.	Rosenthal & Rosnow, 2008; Chapter 3
Mediator	Also referred as the underlying mechanism, a mediator is defined as a variable that explains the relationship between the independent variable and the dependent variable.	Hayes, 2017; Chapter 5 and 7
Moderator	A variable that can affect the relationship between the independent variable and dependent variable. A moderator affects such relationships through either strengthening/attenuating the magnitude of the relationships, or altering the direction of the relationships for different levels of the moderator.	Hayes, 2017; Chapter 8
Conceptual Terms		
Superstitious Beliefs	Erroneous beliefs and associations between intertemporal events that are not supported by scientific reasoning.	Damisch, Stoberock, & Mussweiler, 2010, p.1040; Chapter 1

Normative consumer behaviours	Actions that align with social norms, expectations, values, and consumer welfare.	Fukukawa, 2003; Gruber & Schlegelmilch, 2014; White & Simpson, 2013; Chapter 2
Consumer sustainability	Actions that minimize negative environmental impact via reducing the utilization of resources across purchasing, consuming products/services as well as alternative post-consumption actions.	White et al., 2019; Chapter 2
Consumer impulsivity	Consumption episodes where consumers make unplanned purchases driven by the urge to purchase something for immediate gratification.	Amos et al., 2014; Iyer et al., 2020; Chapter 7
Karmic Reward Seeking Tendency	Individuals' inclination to engage in behaviours that are considered to accumulate good karma, in exchange for favourable outcomes in the future.	White et al., 2021; Chapter 5
Long-term orientation (LTO)	A temporal orientation in which individuals tend to assign greater weight to future, long-term gains rather than immediate, short-term returns.	Lin et al., 2015; Chapter 7
Self-efficacy	Individuals' beliefs and perceptions regarding their ability to successfully perform a task, or to achieve a goal.	White et al., 2011; Chapter 5
Affect	Individuals' emotional and psychological states of different valences, such as mood, feelings, and emotions.	Iyer, Blut, Xiao, & Grewal, 2020; Pham et al., 2001; Chapter 7
Awe	An emotional experience associated with feelings of wonder, amazement, and transcendence when encountering vastness.	Shiota, Keltner, & John, 2006; Chapter 7
Self-control	Individuals' ability to inhibit, suppress, and override undesirable thoughts, feelings, and events (e.g., temptations and impulses) in the pursuit of long-term goals.	Maloney, Grawitch, & Barber, 2012; Nepomuceno & Laroche, 2017; Chapter 7

Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements, nor material which to a substantial extent has been submitted for award of any other degree or diploma of a university or other institution of higher learning.

Name: Yuanyuan (Gina) Cui

Signed: _____

April 2023

Acknowledgement

To secure ourselves against defeat lies in our own hands, but the opportunity of defeating the enemy is provided by the enemy itself.

---- Sun Tzu, The Art of War

They say it takes a village, and it did. Without the village of tremendous love, help, support, and tolerance, I would not have walked out of this journey intact.

Sitting in front of my desk, the completion of my Ph.D. journey would not have been possible without continued trust, support, guidance, patience, and sometimes tolerance, from all the wonderful people around me! Their unwavering support, friendship, and love over the past three years is not only the reason why I can complete my Ph.D. intact, and not getting burned out from pursuing social science, but more importantly, they have shaped me into the academic I am today – and they continue to inspire, motivate, and challenge me about the academic who I want to become in the future! For all they have done, I am truly grateful!

I am grateful for the opportunity to pursue my Ph.D. research, and for all the people who made it happen! It is, without a doubt, a privilege to pursue a career that I am absolutely love, conducting research on topics I am passionate about, and receiving unfailing support during the entire journey! This is simply a dream come true! I am grateful for the financial support of the vice chancellor scholarship provided by AUT. I would also like to take this chance to say “thank you” to myself – thanks for pushing it through, thanks for hanging in there, thanks for constantly

showing up, thanks for not quitting, and thanks for the hard work. I want you to know that I am so proud of you for making it!

My sincere thanks go to my supervisory team, Associate Prof. Jungkeun Kim, and Prof. Ricky Chan. Thank you so much for all the supervisory support, and help over the past three years, for all the meetings and conversations about this thesis and beyond this thesis. A special thanks for all my colleagues at AUT. Throughout my journey completing my Ph.D., I simply cannot count how many times they came to me for mental health check-ins, inviting me to outings, dinners and lunches (because it is hard for a workaholic to have a break), sharing important “life lessons” with me, etc. It is with immense gratitude that I value all the insightful critique, dedication, feedback, and comments from people I met at conferences, and presenting my work at different universities. I’d like to also thank the participants in all my experiments, without whom my research would have been impossible.

Among all people, I must express my most sincere and deepest gratitude to my family. For believing in me, even when I lost faith in myself. For supporting me emotionally, financially, and everything. For all the sacrifices in giving birth to me, raising me, and helping me become who I am today. Thank you, dad, and mom, for planting the seed of curiosity in me when I was little – that science is absolutely the sexist thing on earth! For allowing and supporting me to chase my dreams – living and studying abroad! For being proud of me and reminding me of what I have achieved thus far! Thank you, dad, mom, grandpa, and grandma – for teaching me the value of doing things the right way – that there is no short cut in science, and above all, integrity, honesty and ethics should never be compromised.

Most importantly, to my partner, Dr Patrick van Esch. This journey would not have been possible without your love, sacrifices, understanding, sympathy, and kindness. Your presence has been the anchor of strength, a source of inspiration, and a constant reminder of the power of love! Thank you for standing by my side as my rock. Thank you so much for being my biggest fan, always. For being a constant source of strength and unfailing patience. For offering a listening ear during moments of stress. For the late hours you stayed up with me. For taking care of tedious chores so I didn't have to. For pushing me to think bigger and become a better version of myself. For constantly challenging me and questioning the status quo. For celebrating every milestone with unwavering enthusiasm. For being the pillar that have held me up during this journey, especially during the challenging times. For somehow, seeing talent and potential in me that I never knew existed. I am forever in debt, for you have always been there by my side, every step in the journey, reassuring, encouraging, and believing in me! Words cannot express how much I am grateful for everything you have done for me, and I am truly, truly, truly blessed to call you my partner, my love, my confidant, my partner in crime, and my biggest cheerleader!

To all, this thesis would not have been possible without you!

To my village, thank you!

Authored Works

The following manuscripts-under-review relate to work undertaken for this thesis:

Chapter	Manuscript Title	Publisher and DOI/ Journal Submitted	Author & Estimated Contributions	Qualitative Statement
Chapter 5	The superstitious Road Not Taken: How Superstitious Belief Shapes Consumer Sustainability	Journal of Consumer Research	Y. Cui [100%]	Study design
				Data collection & analysis
				Manuscript write-up
				Review & Proof-reading
Chapter 7	It Is A Marathon Not A Sprint: Superstitious Beliefs Curb Consumer Impulsivity	Journal of Consumer Research	Y. Cui [100%]	Study design
				Data collection & analysis
				Manuscript write-up
				Review & Proof-reading

Name: Yuanyuan (Gina) Cui

Signed: _____

April 2023

Ethical Approval

Ethics approval from Auckland University of Technology Ethics Committee (AUTEC) was granted on 17th May 2022 for a period of three years until 17th May 2025. The ethics application number is 22/56 (See Appendix A in the thesis for Approval letter).

To my family, to my love, and to Peanut and Ruby

To myself, for never giving up, even when I wanted to

To the exhilarating journey ahead

Chapter 1: Introduction

“The important thing is not to stop questioning. Curiosity has its own reason for existing. One cannot help but be in awe when one contemplates the mysteries of eternity, of life, of the marvelous structure of reality. It is enough if one tries to comprehend only a little of this mystery every day.”

---- Albert Einstein (Letter to Carl Seeling, 1951)

1.1 Research Background

Even in a modernized science-imbued world, superstitious beliefs still persist, however, “disguised to fit the dominant scientific paradigm” (Subbotsky, 2004, p.123). If you are not completely persuaded that you might be superstitious, here is a check list that might be helpful; have you ever said “bless you” when someone around you sneezes – just in case the devil might steal their soul? Have you ever avoided walking under the ladder? Have you ever shied away from flying on a Friday, the 13th? Have you ever knocked on a piece of wood just to ward off bad luck?

If you do not consider yourself a particularly superstitious individual in the past, and that you answered “yes” to any of the aforementioned questions, you might as well wish to reconsider the extent to which you subscribe to superstitious beliefs. Indeed, based on a Gallup poll result released in 1996, more than 25% of American population reported that they are at least somewhat superstitious, and this number has been growing (Vultaggio, 2020). Due to uncertainty in economics, societal structures, and political revolutions, consumers have been increasingly relying on paranormal rituals as partially compensatory measures to store control over the ever-changing environment (Vyse, 2018). Supporting this assertion, a research study conducted in 2019 in U.S. substantiated the claim by confirming a significantly higher proportion of U.S. adults are to some extent superstitious – approximately 70% of the population compared to 25% in 1996 (Vultaggio, 2020). Diving deeper into data, almost one in every 10 people indicates they are “very superstitious,” with the rest (nearly 55% of U.S. adults) feel that they are somewhat superstitious – who will occasionally fall for rituals such as “knocking on wood,” saying “bless you” after sneezing, and avoiding purchasing flight tickets that fly on Friday, 13th when possible.

Such wishful thinking as per the preceding discussion have been referred as magical thinking, paranormal/supernatural beliefs, and metaphysical forces interchangeably and Lindeman and Svedholm (2012) clarified that they, in fact, “denote the same thing” (page. 241). *Superstitious beliefs*, coined in the present thesis, refers to “an irrational belief that an object, action, or circumstance that is not logically related to a course of events influence the outcome” (Damisch, Stoberock, & Mussweiler, 2010, p.1040). As a brief etymology of superstition, the concept of superstition shares a religious historical origin, and many have argued that superstition

stems from *superstatio* semantically in religious beliefs (*Superstitio*, referring to an irrational religious owe [in the Latin lingual system]). For example, in a study differentiating *religio* from *superstitio*, Gothóni (1994) offered a compelling instance as an illustration: in the Latin context, our ancestors and philosophers alike initially defined *superstitio* as people who engage in religious efforts and activities – for example spending all day praying to God and sacrificing – in the hope of *guaranteeing* a better life for their upbrings compared to themselves *by simply possessing a religious advocacy*. It has been later introduced into our lives and used in a myriad of broader scenarios, denoting such false beliefs that are presumably held by undiscerning, ignorant, and/or less (vs. more) educated lay people (Lindeman & Svedholm, 2012).

Despite of its theoretical significance, the investigation of superstitious beliefs and consumer psychology and behaviours remains a largely nascent scholarly realm. Examining scarce studies conducted, extant research predominantly focuses on its macro-level, descriptive and/or relational, rather than causal implications (see *Table 1.1* for a comprehensive review of research on superstitious beliefs). For instance, through a review of consumer research on superstition and closely related terms (e.g., magical thinking, paranormal beliefs, jinx, supernatural beliefs, metaphysical forces) reveals that extant inquiries predominantly adopt research methods and analysis techniques where causal conclusions cannot be drawn, such as using surveys, empirical modelling, and Structural Equation Modelling (SEM) in approaching such inquiries (Beck & Forstmeier, 2007; Foster & Kokko. 2009; Roe & Bell, 2016; Sierra *et al.*, 2018; Sohrabi & Sohrabi, 2020; Torgler, 2007; Zhao, Li, & Xiong, 2021). Although these correlational findings offer undeniably valuable insights, it is unlikely to be conclusive to shed light upon the impact of superstitious beliefs, not to mention the underlying mechanisms thereof – the psychological factors and processes driving the impact of superstition. Furthermore, among prior studies adopting an experimental approach, the extant literature mainly focuses on the *positive* implications of superstitious beliefs, i.e., how such beliefs influence consumers' perceptions of lucky products, and their willingness to pay for these products. Fuelled by increasing concerns and call for more scholarships exploring how the marketing discipline can contribute to more mindful and responsible consumer behaviours (Andrews et al., 2022; Vyse,

2018), more research is therefore warranted to investigate how salient superstitious beliefs can affect consumers' normative behaviours.

TABLE 1.1. A REVIEW OF RELEVANT RESEARCH ON SUPERSTITIOUS BELIEFS

<i>Author(s)</i>	<i>Discipline</i>	<i>Setting</i>	<i>Methodology</i>	<i>Dependent Outcomes</i>	<i>Moderator(s)</i>	<i>Mediator(s)</i>	<i>Main Findings</i>	<i>Highlights</i>
Ang, Lai, & Leong (2014)	Psychology	Product preference	Experiment	Choice (between a furniture priced at \$1114 and a furniture priced at \$1118).	-	-	Individuals' exposure to <i>negative, accessible, relevant</i> superstition leads to faster choices made.	<i>Consequences</i> of superstition
Beck & Forstmeier (2007)	Bioscience and behavioural ecology	The formation of superstitious beliefs among humans and other organisms	Modelling	-	-	-	In comparison to the mainstream argument, the authors developed a verbal model, positing superstitious beliefs as an adaptive learning outcome. Compared to neutral products, consumers are more likely to purchase lucky products.	<i>Mechanisms</i> from the antecedents to superstitious behaviours
Block and Kramer (2009)	Marketing	Product consumption	Experiment	Purchase likelihood (Study 1) and product satisfaction (Study 2 and 3)	Expectation disconfirmation sensitivity (high vs. low)	Performance expectation	However, consumers also possess higher performance expectations for these products, and therefore, are more prone to be disappointed with them.	<i>Consequences</i> of superstition; <i>Mechanisms</i> from superstitious beliefs to the consequences
Damisch, Stoberock, & Mussweiler (2010)	Psychology	Performance in motor and cognitive tasks	Experiment	Number of successful putting (Study 1); Time needed for completing the task (Study 2); A combined measure of time and the number of trails needed for completing the task (Study	-	Self-efficacy	By activating good-luck-related superstitious beliefs (e.g., "break a leg"), participants manifested better performance in tasks involving motor and cognitive abilities.	<i>Consequences</i> of superstition; <i>Mechanisms</i> from superstitious beliefs to the consequences

				3); and the number of correctly identified words in an anagram task (Study 4)				
Foster and Kokko (2009)	Revolutionary biology	Natural selection in the process of revolutionary biology	Modelling	Individual fitness	-	-	Through a developed model, the authors found that natural selection favours the establishment of superstitious beliefs as long as such superstitious beliefs bear benefits in relation to individual fitness and development	<i>Antecedents of superstition</i>
Hamerman & Johar (2013)	Marketing	Brand preference	Experiment	Participants' judgement on the likelihood of winning (Study 1); the extent to which participants believe that they would perform well (Study 2)	Decision mode (choosing vs. assignment)	Preference for lucky options	The desire for control increases their preference for lucky options, which subsequently predicts their likelihood of success (e.g., winning in Study 1, and performing well in Study 2)	<i>Consequences of superstition</i>
Hamerman & Morewedge (2015)	Personality and Social Psychology	Goal pursuit and achievement orientation	Experiment	Participants' choice in lucky (vs. unlucky) items in goal pursuit (Study 1 & 5); Choice in whether to view a "lucky charm" before a task (Study 2); The likelihood of engaging in superstitious behaviours	Performance (vs. Learning) orientation; Uncertainty of goal achievement (Study 5)	-	In goal pursuit, performance (vs. learning) orientation leads to more superstitious behaviours (this effect is strengthened as the uncertainty of goal achievement increases). Accordingly, participants are more likely to prefer lucky items under performance goal and	<i>Antecedents & Consequences of superstition</i>

				(Study 3 & 4); Confidence in goal achievement (Study 6)			exhibit greater confidence when they can use lucky items.	
							Entity theorists (vs. incremental theorists) are more likely to attribute their success in performance to superstitious consumption. Accordingly, if they are able to engage in superstitious consumption before the subsequent tasks, they tend to reduce their efforts. Nevertheless, if they cannot engage in superstitious consumption, they are likely to experience a lower level of self- efficacy.	
Kang, Park, & Kim (2018)	Marketing	Performance after superstitious consumption	Experiment	The tendency to attribute success to product consumption (Study 1) and to the self (Study 2); Time spent on the task (Study 3)	Implicit self- theory (entity theorist vs. incremental theorist); difficulty of tasks (challenging vs. less challenging; Study 3)	Self-efficacy (Study 2)		<i>Consequences</i> of superstition
Keinan (2002)	Personality and Social Psychology	Superstitious behaviours in university students	Experiment	The number of superstitious behaviours (e.g., touch on wood)	The level of stress (high vs. low)	-	The desire for control positively affects the likelihood of engaging in superstitious behaviours, especially when there is a high level of stress.	<i>Antecedents</i> of superstition
Kramer & Block (2008)	Marketing	Product satisfaction and decision making under risks	Experiment	Product satisfaction (Study 1) and participants' choice between a less risky and riskier options (e.g., \$18 for sure vs. a 20% chance to win \$240 and	Cognitive load (high vs. low); Uncertainty (high vs. low)	-	Superstitious beliefs work in a non-conscious process. Participants are more likely to be disappointed following product failure when such products have a superstitious connotation. In addition, when superstitious	<i>Consequences</i> of superstition

				an 80% chance to gain nothing; Study 2).			beliefs are salient, participants are more prone to make more risk-averse decisions. When consumers believe that a product has been touched by an attractive other, they tend to have more positive greater purchase intent. In addition, using this product leads to better performance if a consumer believes that intelligence is malleable. When potential for bad luck is made salient, consumers are more likely to make risk-averse decisions, which is observed under an unconscious information processing mode.		
Kramer & Block (2009)	Marketing	Product evaluation & performance	Experiment	Performance in analytical reasoning problems	Intuitive information processing style (high vs. low); Intelligence perception (Malleable vs. not malleable)	-			<i>Consequences of superstition</i>
Kramer and Block (2007)	Marketing	Choices under risks	Experiment	Consumers' choices involving risks	Information processing style (unconscious vs. conscious)	-			<i>Consequences of superstition</i>
Kramer and Block (2014)	Organisational Behaviour	Performance in creativity tasks	Experiment	Performance in a word association task (Study 1); The number of unusual uses for a paperclip (Study 2); and performance in a creativity task (Study 3)		Confidence and Performance expectation	By touching objects used by previous high performer, participants were more likely to feel more confident in a creativity task, which mediated the effect of superstition on actual performance.		<i>Consequences of superstition</i>
Li (2021)	Psychology	Over-confidence in minority Chinese students and non-student population	Experiment	Participants' judgement on the number of peers who would get a job before than	-	Self-efficacy	Activating good-luck-related superstitious beliefs lead to greater over-confidence bias in Han, and the Qiang		<i>Consequences of superstition</i>

				them (Study 1); the over- confidence bias calculated by the difference between actual accuracy rate and estimated accuracy rate (Study 2)			ethnic minority Chinese samples.	
Lindeman & Svedholm (2012)	General psychology	Conceptual development and clarification of superstition and relevant concepts	Literature Review	-	-	-	The authors concluded that superstitious beliefs, along with paranormal, magical thinking and supernatural beliefs share the same meaning conceptually.	Conceptual development of superstition
Risen & Gilovich (2008)	Personality and Social Psychology	Acts that tempt fate	Experiment	Judgement on whether Jon (the protagonist in the study) would receive Stanford offer (Study 1); whether Jon would be called to answer a difficult question from the professor (Study 2)	The Valence of acts (positive vs. negative)	Spontaneous (retrieved_ accessibility on likelihood judgement	Exposure to actions that tempt fate makes participants more likely to believe that it will invite negative impact	<i>Consequences</i> of superstition
Roe and Bell (2016)	Psychical research	Correlations between perceived control and paranormal beliefs	Survey	Paranormal beliefs	-	-	Perceived control and paranormal beliefs are not significantly related; however, anxiety is significantly related to both perceived control, and to paranormal beliefs.	<i>Antecedents</i> of superstition

Sierra, Hyman, & Turri (2018)	Marketing	Superstitious beliefs among US university students	Survey	Horoscope importance (Study 1), and Resistance to change, Obsessiveness, buying brands due to family traditions, and intention to buy luck-laden products (Study 2)	-	-	Yearning for the past (nostalgia) leads to greater superstitious beliefs, which is associated with greater importance assigned to horoscope. In addition, superstitious beliefs lead to greater resistance to changes, obsessiveness, and greater intent to purchase products because of family traditions and lucky products.	<i>Antecedents & Consequences</i> of superstition
Sohrabi & Sohrabi (2020)	General psychology	Attitudes towards human rights	Survey	Attitudes towards human rights, including personal liberties, civilian constraints, and social security	-	-	Participants with lower superstitious beliefs manifested more positive attitudes towards human rights	<i>Consequences</i> of superstition
Torgler (2007)	Socio-Economics study	Superstition across countries	Survey	Star sign and horoscope, Fortune tellers and good luck charms	-	-	Superstitious beliefs depend on various socio-economic and socio-demographic conditions, such as religiosity, attendance of church, and communist background	<i>Antecedents</i> of superstition
Vaidyanathan, Aggarwal, & Bakpayev (2018)	Marketing	Conceptual development on the antecedents of superstitious behaviours	Literature Review	Superstitious behaviours	-	-	Three are three main functions of superstitious behaviours, including instrumental function, protective function, as well as social-adjustive function	<i>Antecedents</i> of superstitious beliefs; <i>Mechanisms</i> from the antecedents to superstitious behaviours

Wiseman & Watt (2004)	Personality	Individual difference factors and their correlations with superstitious beliefs	Survey	-	-	-	The authors found that different types of superstitious beliefs interact with individual difference variables, such as gender, neuroticism, and life satisfaction. Therefore, the authors called for more research to measure superstitious beliefs tapping into both positive and negative valences.	<i>Antecedents of superstitious beliefs; Measurement of superstition</i>
Zhao, Li, & Xiong (2021)	Social Psychology and Personality	Variety-seeking	Survey (SEM)	Variety-seeking	Optimum stimulation level	Psychological security; Self-efficacy	Belief in luck is positively related to variety-seeking behaviours, and participants' optimum stimulation level positively affect the strength of this relationship.	<i>Consequences of superstition</i>

Compared to extant literature focusing on the *positive*¹ consequences such as consumers' preferred product features/attributes and willingness to pay for lucky products, the present thesis investigates the downstream *normative*² consequences of superstitious beliefs on consumer behaviours. Specifically, the thesis is devoted to understanding both personal well-being (consumer impulsivity) and social ethics (consumption of environmentally conscious products), thereby directing the focal dependent variables in the thesis to two potent domains: 1) *consumer sustainability*, and 2) *consumer impulsivity*.

Consumers' tendency to behave in an altruistic, helping towards either other individuals or the environment and future generations – thereby speaking to sustainability – and behave with well thought-through long-term implications – hence speaking to consumer impulsivity – not only play a critical role in understanding consumer behaviour in the marketing landscape, but more importantly, in a broader realm of understanding individual psychology and decision-making. Specifically, consumer sustainability, as well as consumer impulsivity feature two seemingly irrelevant, yet closely related consumer behaviour constructs – from a social marketing and the Transformative Consumer Research (TCR; Vyse, 2018) perspectives, the investigation of both constructs is capable of engendering positive and upward changes in the realm of marketing and consumer research. Moreover, consumer sustainability, along with consumer impulsivity – signals the core value of humanity (goodness and greater mindfulness). This thesis will proceed in that Manuscript 1 (Chapter 5) attempts to investigate the impact of activating salient superstitious beliefs on consumers' pro sustainable consumption behaviours; subsequently, Manuscript 2 (Chapter 7) will further look into *if* and *how* temporarily heightening the salience of superstitious beliefs will affect consumers' tendency of behaving in a less impulsive manner.

1.2 Research Objectives and Questions

¹ Positive consumer behaviours are defined as actions concerning describing a phenomenon, i.e., “what it is.” (MacInnis & Folkes, 2010).

²² Normative consumer behaviours, on the other hand, are defined as actions that align with social norms, expectations, values, and consumer welfare (Fukukawa, 2003; Gruber & Schlegelmilch, 2014; White & Simpson, 2013), i.e., “what it should be.”

This thesis aims at a more fine-grained understanding of how salient superstitious beliefs affect consumer behaviour in a novel, yet largely underexamined domain (normative behaviour). Does simply think about superstitious beliefs alter consumer behaviour outside the scope of purchasing lucky products? If so, can the activation of salient superstitious beliefs encourage more normative consumer behaviours?

This thesis, firstly, in a departure from extant literature, aims at positing an alternative route in understanding the impact of superstitious beliefs on consumers' normative behaviour. Secondly, by funnelling down to two imperative aspects in normative consumer behaviour, this research seeks to investigate the utility of activating salient superstitious beliefs thereof. Specifically, this thesis posits that following distinct psychological processes, salient superstitious beliefs can influence the way consumers approach daily consumption scenarios in a more (or less) sustainable, and impulsive manner. The following reveals the research objectives and research questions pursued in this thesis.

In more specific and manageable terms, the overarching research objective of this thesis is to:

Explore to what extent the activation of salient superstitious beliefs can affect consumers' normative behaviours – specifically in terms of their sustainability and impulsivity, and furthermore, what psychological processes contribute to such influences.

To address the research objective, the overarching research objective was disentangled and sub-divided into three parts, each supported by research questions and aims, as formulated below³.

³ The first part (Part I; research question [RQ]1) is in relation to the broader research topic and therefore, aligns with the overarching research objective. Part II attempt to 1) harvest a more in-depth understanding of the way salient superstitious beliefs affect consumers' sustainability consumption behaviours (RQ2) and 2) explore the underlying mechanism(s) contributing to such effects (RQ3). Finally, Part III aims at investigating the impact of salient superstitious beliefs on consumer impulsivity (RQ4) and identifying the psychological underlying mechanism(s) driving this effect (RQ5).

RQ1. Does the activation of salient superstitious beliefs affect consumers' normative consumption behaviours?

Specifically, this thesis attempts to tackle consumers' normative behaviours through their sustainability and impulsivity. Part II aims to explore the impact of salient superstitious beliefs on consumers' sustainability consumption, and the structuring research questions for Part II were as follows:

RQ2. Does the activation of salient superstitious beliefs influence consumers' sustainability consumption?

RQ3. If salient superstitious beliefs influence consumers' sustainability consumption, what are the underlying mechanisms?

Furthermore, the empirical research questions for Part III were as follows:

RQ4. Does the activation of salient superstitious beliefs influence consumer impulsivity?

RQ5. If salient superstitious beliefs influence consumer impulsivity, what are the underlying mechanisms?

1.3 Synopsis of the Methodology and Method

From an ontological (e.g., what is reality?) and epistemological (e.g., how can I know reality?) perspective, this thesis deploys a post-positivistic philosophical position to achieve the research objectives and methodology. The empirical examination of the research questions and hypotheses was mostly quantitative, deductive, and experimental.

In this thesis, the following research methods were adopted:

- *Literature review.* This research conducted an iterative and semi-structured literature review, aligning with key constructs and relationships of interests in this thesis (Chapter 2);
- *Online survey.* This research conducted an online survey to obtain preliminary insights in relation to the relationships of interests in this thesis (Chapter 5);

- *Experimental studies*. This research predominantly employed an experimental approach in testing and establishing the causal relationships between key constructs of interests and their relationships thereof (Chapters 5 and 7);
- *Single-paper meta-analysis*. This research conducted single-paper meta-analyses to confirm and validate the main effect as hypothesised in this thesis (Chapters 5 and 7).

The research methods used in the thesis are summarised in the following table (*Table 1.2*).

Table 1.2 Summary of Research Methods in the Thesis

	Literature review	Online survey	Experimental studies	Single-paper meta-analysis
Inductive vs. Deductive	First inductive, then synthesizing into deductive	Deductive	Deductive	Deductive
Structure	Structured	Structured	Structured	Structured
Objective	Exploratory	Exploratory Descriptive	Exploratory Descriptive Explanatory	Confirmative/ Validation
Theory	Theory building	Theory testing	Theory testing	Limited theory testing
Qualitative vs. Quantitative	Qualitative	Quantitative	Quantitative	Quantitative

As this thesis attempts to establish causal relationship to understand the impact of salient superstitious beliefs on normative consumer behaviour, an experimental approach, complemented by online survey and meta-analyses, will be employed in the focal research contexts (Rosenthal & Rosnow, 2008). Compared to other methods, an experimental approach could effectively test the causal relationships among variables of interest (Rosenthal & Rosnow, 2008), tease out the responsible factors at play, and at the same time, control for potentially confounding factors (Kardes, Herr, & Schwarz, 2019).

Varying the experimental setting carry distinct advantages and enhance the empirical robustness from differential perspectives. Specifically, laboratory experiments allow for the establishment of the causal relationships as it controls for potential confounding influences. In the meanwhile, field experiments promote greater empirical robustness by enhancing the external validity; if the results remain replicated even with the presence of other factors, the findings ought to bear greater generalizability and veracity, thereby producing more meaningful implications for marketers, industry practitioners, consumers, and policy makers alike.

It is imperative to note that, to facilitate higher robustness of the empiric examination, experimental studies will be pre-registered as per Simmons et al. (2021). According to Nosek et al. (2018), van't Veer and Giner-Sorolla (2016), through the pre-registration process, researchers are required to pre-specify a) the research hypotheses, b) study design (e.g., manipulated factors, measured variables, the presence of any experimental blinding procedures, and randomization), c) sampling plan (e.g., rationale of participant selection, sample size, and exclusion [if any]), and d) analysis plan (analysis models, techniques, and data transformation involved). As such, such practices prevent researchers from artificially manufacture significant results and producing biased, and non-factual research findings.

The empirical examination will feature various experimental designs to promote convergent operationalization of key constructs, as well as the context of studies (online experiments and fielded studies). Moreover, participants will be recruited from a US-based online crowdsourcing panel (Cloud Research, also known as Turk Prime) and the detailed sample size will be determined by results of the pilot study and the G*Power software (a minimum sample size of 50 participants per experimental condition will be guaranteed; Faul, Erdfelder, Lang, & Buchner, 2007). The desired subject pool will feature *consumers reside in the US whose age range from 18 and above* to align with the broader consumer demographics. In the field studies, subjects of populations might be recruited from actual shoppers to enhance generalisability of the findings.

To address the overarching research objective of this thesis, this research collects, analyses, and interprets data and results through *mainly* experimental studies, including five

experiments designed and executed through an online crowdsourcing panel⁴ (Cloud Research, also known as Turk Prime; Chandler et al., 2019; Litman, Robinson, & Abberbock, 2017; Robinson et al., 2019), one field experiment, online survey (to establish correlational evidence), and single-paper meta-analyses. The empirical examination deploying multiple methods, designs, varying levels of incentive compatibility (Haghani et al., 2021; Zawojka, & Czajkowski, 2017), and contexts for testing helps to guide the thesis in closing the research gap identified, answering the proposed research questions, and verifying the hypotheses.

With this design, it allows this thesis to obtain rich data through diverse channels, triangulate the robustness of the findings 1) across different settings and 2) via the single-paper meta-analysis, and, consequently, achieve the overarching research objective. *Table 1.3*, as presented below, provides an overview of all studies included in this thesis.

⁴ Compared to mainstream online crowdsourcing platforms such as Amazon Mechanical Turk (Amazon MTurk), data collection executed via Cloud Research (also known as Turk Prime) has been shown to achieve a superior quality of participants' responses, as reported in previous research (Chandler et al., 2019; Litman, Robinson, & Abberbock, 2017; Robinson et al., 2019).

TABLE 1.3 OVERVIEW OF ALL STUDIES IN THE THESIS

Studies	Objectives	Research Design	Sample Size	Methods of Analysis
Manuscript #1⁵⁶				
Experiment 1	➤ To examine whether activating salient superstitious beliefs leads to significantly greater consumer sustainability.	A one-factor, full-factorial between-subjects design of 2 (superstitious beliefs: control vs. superstitious)	Consumer Panel (Cloud Research; n = 176)	A univariate analysis of variance
Experiment 2	➤ To verify whether karmic reward seeking tendency mediates the effect of salient superstitious beliefs. ➤ To exclude the alternative explanation of self-efficacy (White et al., 2011).	A one-factor, full-factorial between-subjects design of 2 (superstitious beliefs: control vs. superstitious beliefs) and additionally measures participants' karmic reward seeking.	Consumer Panel (Cloud Research; n = 326)	ANOVA; Mediation Analysis (SPSS process Macro)
Experiment 3	➤ To further confirm the underlying mechanism of karmic reward seeking tendency, Experiment 3 manipulates the presence/absence of the need of karmic reward seeking.	A one-factor, full-factorial between-subjects design of 2 (self-affirmation: self-affirmation vs. control).	Consumer Panel (Cloud Research; n = 111)	A Chi-square test

⁵ In manuscript #1, to address the emerging concerns for the veracity of the findings in the social science discipline (Nosek, Ebersole, DeHaven, & Mellor, 2018; Simmons, Nelson, & Simonsohn, 2021; van't Veer & Giner-Sorolla, 2016), all studies were pre-registered, and data, syntax, materials, and pre-registrations will be made available at Open Science Framework (OSF).

⁶Across all studies in manuscript #1, a pivotal factor (e.g., individuals' environmental consciousness) was incorporated as the covariate (Bohlen et al., 1993; Dunlap & Van Liere, 1978; Lin & Chang, 2012). The results were consistent both with and without the covariate, as reported in each study.

	➤ Instead of examining preference revelation, Experiment 3 attempts to test the effect of salient superstitious beliefs on consumers' choices.			
Single-Paper Meta-Analysis (SPM)	➤ To further cement the robustness of H ₁ (salient superstitious beliefs lead to significantly increased consumer sustainability).			A single-paper meta-analysis (SPM) using the single contrast standardized meta-analysis (SCSM)
Manuscript #2⁷⁸				
Study 1	➤ To examine whether consumers' chronic superstitious beliefs are negatively correlated with consumers' trait impulsivity.	Participants' chronic superstitious beliefs and trait impulsivity were measured	Consumer Panel (Cloud Research; n = 110)	Regression Analysis
	➤ To replicate the findings of Study 1 by establishing the causal relationship.			
Experiment 2	➤ To assess consumer impulsivity vis their consumption preference across various scenarios, instead of a chronic individual difference variable.	A one-factor, full-factorial between-subjects design of 2 (superstitious beliefs: control vs. superstitious)	Consumer Panel (Cloud Research; n = 106)	ANOVA

⁷ In manuscript #2, all studies were pre-registered, and data, syntax, materials, and pre-registrations will be made available at Open Science Framework (OSF).

⁸ All studies in manuscript #2 consistently controlled for the influence of two important covariates (e.g., gender and income; Iyer et al., 2020). The results were consistent both with and without the covariates (Please see the Web Appendices in Chapter 7 for detailed results without including covariates).

Experiment 3	➤ To exclude the potential influence of affect of different valences. ➤ To provide incentive-compatible examination of the hypotheses by incorporating actual behaviours.			
	➤ To verify whether the proposed underlying mechanism (i.e., long-term orientation) mediates the impact of salient superstitious beliefs.	A one-factor, full-factorial between-subjects design of 2 (superstitious beliefs: control vs. superstitious beliefs) and additionally measures participants' long-term orientation.	Consumer Panel (Cloud Research; n = 168)	ANOVA; Mediation Analysis (SPSS process Macro)
	➤ To exclude potential alternative explanations, including self-control and awe (Nepomuceno and Laroche 2017; Zhang et al. 2021).			
Experiment 4	➤ To enhance the generalizability of the findings by examining both the total price and the number of items as the focal dependent variables.			
	➤ To examine the hypotheses in a field experiment setting.	A one-factor, full-factorial between-subjects design of 4 (superstitious beliefs: control I [routine activities] vs. control II [priming long-term orientation])	Consumer Panel (Cloud Research; n = 261)	ANOVA; Mediation Analysis (SPSS process Macro)

	➤ To further consolidate the underlying mechanism of long-term orientation through manipulation. ➤ To differentiate the effect of salient superstitious beliefs from that of beliefs in karma. ➤ To enhance the generalizability of the findings by examining 1) the total price, 2) the number of items, and 3) total calories.	vs. control III [beliefs in karma] vs. superstitious beliefs).
Single-Paper Meta- Analysis (SPM)	➤ To further cement the robustness of H₁ (salient superstitious beliefs lead to significantly decreased consumer impulsivity).	A single-paper meta-analysis (SPM) using the multiple contrast standardized meta-analysis approach (MCSM)

1.4 Intended Research Contributions

This thesis has several intended theoretical contributions and practical implications. Specifically, consumer behaviours are not always *rational* and made based on calculative analysis and trade-offs of costs and benefits. More often than not, consumers turn to superstitious forces – paranormal beliefs, metaphysical beings, and supernatural beliefs – as their decision aids to guide their behaviours. This research thesis therefore dives into the psychology of superstitious beliefs, and investigates its impact on consumers’ normative behaviours – by focusing on their sustainability and impulsivity, and more importantly, the psychological underlying mechanisms thereof. Put differently, does remind a consumer of “touching wood” and saying “bless you” after someone sneeze influence one’s behavioural propensity of being more (or less) sustainable and impulsive? This thesis attempts to address this imperative, yet unanswered question.

Using experimental methods, it allows scholars to draw causal conclusions that shed light upon the *true* consequences of temporarily activating superstitious beliefs – that it is indeed superstitious beliefs that drive the effect. In comparison to prior work in marketing predominantly focuses on its impact on how consumers evaluate lucky (vs. unlucky) products, the extent to which they are likely to purchase them, the amount of money they are willing to pay for, as well as post-purchase consumer behaviours (e.g., product satisfaction) (Ang, Lai, & Leong, 2014; Block & Kramer, 2009; Kramer & Block, 2008, 2009), this thesis bridges superstitious beliefs with two critical, yet underexamined domains in consumer research – *normative* consumer behaviour (by focusing on consumer sustainability and impulsivity). In this regard, this thesis joins the emerging transformative consumer research (TCR) stream, and delineates how superstitious beliefs can be leveraged to promote more mindful consumer behaviours.

Second, the investigation features a thought-provoking attempt to understanding consumer behaviours through the underlying driving factors. Specifically, this thesis posits two novel mediating variables – *karmic reward seeking tendency* and *long-term orientation* – and by empirically testing different paths, it allows researchers to gain a more fine-grained understanding of superstitious beliefs. That is, if heightening superstitious beliefs indeed functions due to an elevated karmic reward seeking tendency, or greater long-term orientation, researchers are able

to re-interpret extant findings via this lens. For example, the acts of tempting fate might be perceived to be inappropriate, hence *karmically*, inviting negative outcomes (Risen & Gilovich, 2008). Moreover, a more in-depth understanding of superstitious beliefs in relation to the mediating effects can further encourage more scholarly conversation and advancement to bridge the gap between superstitious beliefs and other uncharted domains, such as consumer welfare and well-being due to the reliance on such magical and wishful thinking (Aggarwal, Block, Kramer, & McGill, 2018).

Practically, marketers, consumers, and policy makers could benefit from the findings of the thesis. Leveraging the impact of superstitious beliefs on consumer sustainability, marketers and industry practitioners are able to implement more effective communication strategies and campaigns to increase their sales in promoting environmentally friendly products and services (e.g., sustainable hotels, organic products, and reducing the use of plastic packaging). Put differently, by emphasizing (or de-emphasizing) the salience of superstitious beliefs, marketers can nudge consumers to behave in a more (or less) sustainable manner. Congenially, findings of this thesis ought to be of great interest to consumers and policy makers alike. By elevating superstitious beliefs, regulatory bodies and non-for-profit organisations can design and implement informative initiatives, educational programs, and social marketing campaigns to curb consumer impulsivity.

1.5 Thesis Structure

This thesis is organised and completed using the publication and draft format (Format 2). In order to address the overarching research objective and answer proposed research questions, this investigation is carried out across nine chapters. These chapters are interrelated, and each chapter builds upon the predecessor. To assist readers with greater clarifications, the chapter outlines and a summary of the content are provided as follow.

Chapter 2 presents a comprehensive and thorough review of existing literature pertaining to the scope of this thesis. This chapter begins by discussing the conceptualisation as documented in prior work, categorization, and measurement of superstitious beliefs, leading to a synthesis of

key components central to superstitious beliefs. Subsequently, Chapter 2 proceed to the discussion of prominent antecedents and consequences of superstitious beliefs. Specifically, the discussion centres around identifying scholars' understanding thus far of what provokes superstitious beliefs, what superstitious beliefs' consequences are, and the mechanisms delineated across different disciplines. This chapter concludes by pointing out a gap in the literature, i.e., a lack of understanding of how superstitious beliefs affect consumers' normative behaviour in two domains (e.g., consumer sustainability and impulsivity).

Chapter 3 elaborates on the methodology that underpin this research. Drawing on the researcher's ontological and epistemological assumptions, it guides the development of research paradigm, and methodological positions adopted in this thesis. Moreover, Chapter 3 details the research design along with corresponding justifications, such as the use of self-report and behavioural measures, and the sampling strategy, data collection and participant selection. In addition, Chapter 3 articulates the ethical considerations of this research.

Upon a prelude to the first empirical investigation (as presented in Chapter 4), Chapter 5 features an inquiry attempting to address *RQ2* and *RQ3* – whether the activation of superstitious beliefs affect consumer sustainability, and if so, why. The research presented in Chapter 5 (titled “the superstitious road not taken: how superstitious belief shapes consumer sustainability”) has been submitted to the Journal of Consumer Research and is currently under review for the considerations of publication. Across four studies, this chapter theorizes and empirically shows that activating salient superstitious beliefs is likely to lead to temporarily enhanced karmic reward seeking tendency, which in turn, significantly increases consumer sustainability. This chapter concludes by articulating the contributions of this research towards theory development, and practice, as well as shedding light on future research directions.

Chapters 6 (the prelude to Chapter 7) and 7 explore the effect of superstitious beliefs on consumer impulsivity, thereby addressing *RQ4* and *RQ5*. The research presented in Chapter 7 (titled “it is a marathon not a sprint: superstitious beliefs curb consumer impulsivity”) has been submitted to the Journal of Consumer Research and is currently under review for the considerations of publication. Chapter 7 details the theorization, data collection and analysis across five studies. Drawing upon theory in relation to individuals' temporal focus, Chapter 7

argues and finds that salient superstitious beliefs activate greater long-term orientation, hence shifting consumers' focus towards future, long-term rewards (vs. immediate, short-term gains) and eventually decreasing consumer impulsivity. This chapter concludes by discussing its theoretical, managerial, consumer and regulatory contributions, followed by avenues for future inquiries.

Chapter 8 synthesizes the findings of this thesis, and discusses the theoretical, managerial, policy and consumer, and methodological contributions/implications. In addition, Chapter 8 presents the limitations of this research, along with an extended discussion of recommendations for future research.

Finally, Chapter 9 concludes this investigation by articulating a personal reflection on this research and offers a concluding remark.

For the convenience of the readers, a pictorial demonstration of the flow of this thesis is portrayed in *Figure 1.1*.

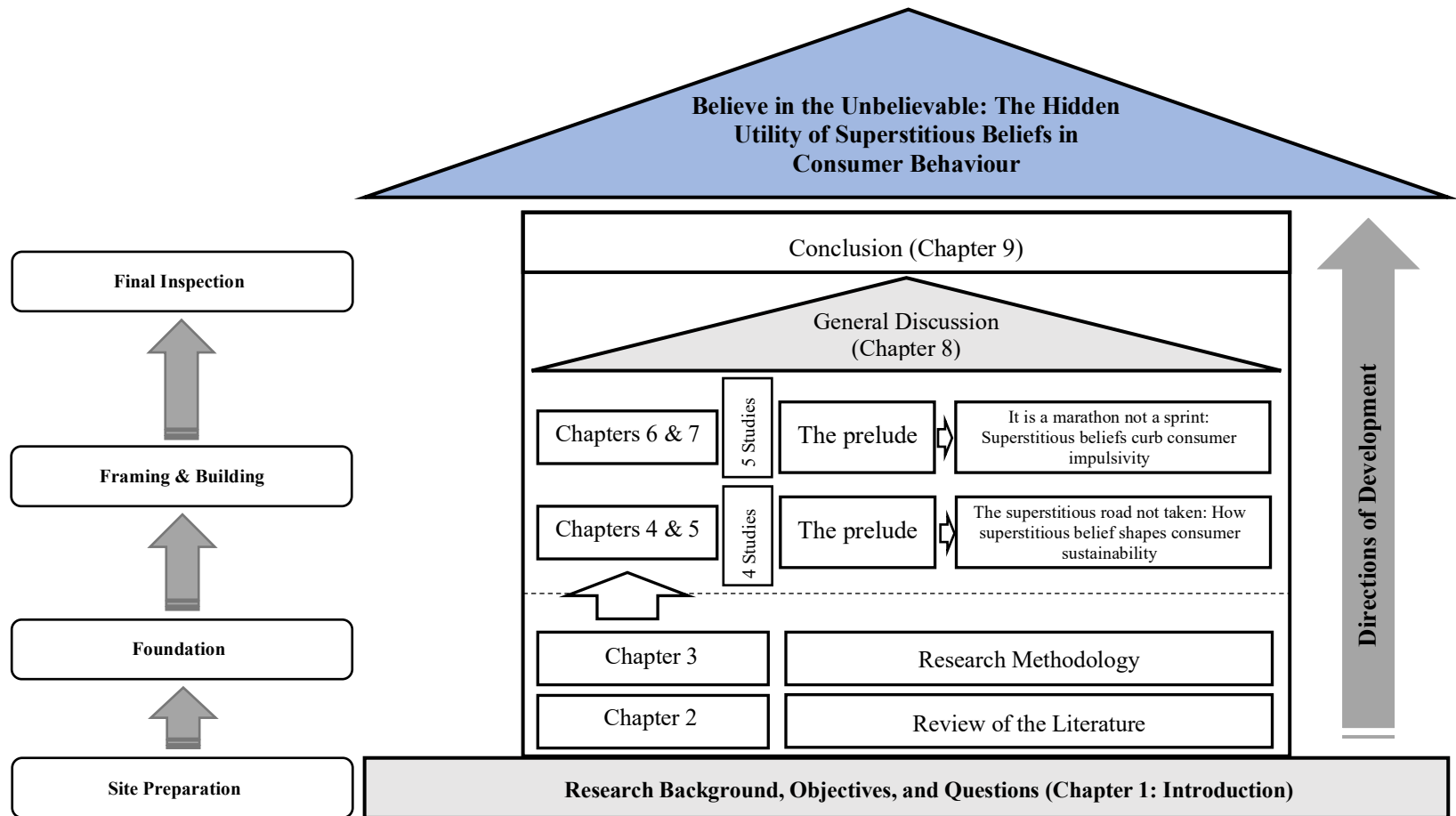


FIGURE 1.1 A PICTORIAL DEMONSTRATION OF THESIS STRUCTURE

1.6 Conclusion of Chapter 1

In Chapter 1, the researcher set the scene of this investigation by outlining several key components, including introducing the research background, as well as identifying research objectives and questions. Moreover, this chapter also provided a synopsis of the methodology and methods adopted in this thesis, articulated the intended contributions, followed by outlining the structure of the remainder of this thesis.

Chapter 1 provided an overview of this thesis, which is dedicated to understanding how activating salient superstitious beliefs may affect normative consumer behaviours, specifically consumer sustainability and impulsivity. In what follows, Chapter 2 provides a comprehensive review of extant literature, including relevant research on superstitious beliefs, its fundamental conceptualisations, categorizations, and operationalisations in existing literature. Upon identifying the antecedental factors and consequences of superstitious beliefs, the research gap that surfaces will then be discussed.

Chapter 2: Review of the Literature

"If I have seen further than others, it is by standing upon the shoulders of giants."

---- Isaac Newton (Letter to Robert Hooke, 1676)

2.1 Introduction to Chapter 2

Although most of us make our way through life with scientific advancement, technological development, and education, one still inevitably fall into the trap of “knocking on wood.” As a myriad of research in behavioural psychology (Skinner, 1948), popular psychology (Vyse, 2013; Wheen, 2004), philosophy (Scheibe & Sarbin, 1965), religiosity studies (Gothóni, 1994), abnormal psychology (Devenport, 1979; Brugger et al., 1994; Shaner, 1999; Nayha, 2002), as well as evolutionary biology and dynamics (Foster & Kokko, 2009), medicine (Diamond, 2001), anthropology, sociology and neurology (Gallagher & Lewis, 2001; Singhal & Khadilkar, 2014) implies, superstition and superstitious beliefs entail an erroneous association between *a proximate cause* and *the effect* while ignoring *the ultimate cause* (Foster & Kokko, 2009).

Despite of extensive scholarships across the aforementioned disciplines, marketing researchers, however, have unfortunately only devoted scarce attention to this line of research (see exceptions in Block & Kramer, 2009; Hamerman & Johar, 2013; Kramer & Block, 2008). The limited investigation is surprising for several reasons. As one of the most deeply rooted beliefs throughout history, superstitious beliefs are widely prevalent across virtually all cultures (Block & Kramer, 2009). Moreover, marketers are no strangers to such beliefs. In the marketplace, industry practitioners often exploit and capitalise on superstitious beliefs to boost their sales, as exemplified by online astrology, healing crystals and spell kits on Amazon.com, remain a perilous enterprise (Vyse, 2018).

This research therefore responds to the call for more research on this topic, and in particular, investigates whether salient superstitious beliefs affect consumer sustainability and impulsivity. If the answer to this question is affirmative, a natural question that arises is: what are the psychological processes that account for its effect? The following chapter summarises relevant literature on superstitious beliefs, and attempts to address the research objective and research questions in this thesis.

Chapter 2 begins by reviewing prior research across a myriad of fields. Synthesizes existing conceptualisations of superstitious beliefs, the researcher next establishes the definition of such beliefs pertaining to the scope of this thesis (Section 2.2.1). Subsequently, this chapter briefly summarises extant categorizations of superstitious beliefs, and corresponding

measurement used in previous research. Following on from this, the researcher conducts an extensive review of what is currently studied/understood regarding superstitious beliefs, and organises these findings. Specifically, Chapter 2 outlines the antecedents of superstitious beliefs, and the mechanisms explaining why these antecedents lead to superstitions. The consequences of such beliefs, along with the mechanisms, are then explored in detail. Finally, a research gap is identified, inspiring the present research.

2.2 Superstition, Superstitious Beliefs and Superstitious Consumption

2.2.1 Definition, Categorization, and Measurement

2.2.1.1 Definitions

In light of the preceding discussion on magical thinking and paranormal beliefs, a fundamental premise in understanding such wishful thinking lies in superstitious beliefs signal erroneous interpretations of past, ongoing and incoming events. Put differently, by possessing superstitious beliefs and engaging in superstitious consumption, consumers establish spurious associations of causal relationships between unrelated events (Foster & Kokko, 2009). Such superstitious beliefs, subsequently, shape the way individuals make judgements and decisions. That is, if leveraging some superstitious beliefs lead to positive outcomes, the focal superstitious beliefs tend to be positively reinforced, thereby resulting in repetition in its associated behavioural domains.

To integrate relevant scholarly inquiries on superstitious beliefs, this thesis conducted a comprehensive review of literature on relevant research, such as studies involving superstition, as well as closely related constructs (e.g., magical thinking, paranormal beliefs; supernatural beliefs, metaphysical forces; Lindeman & Svedholm, 2012; Johnson, 2021). Accordingly, this thesis has summarized and synchronized extant definitions of superstitious beliefs (see *Table 2.1* for selected definitions and conceptualizations). Integrating extant literature, the definitions of superstitious beliefs in previous research, as suggested by Lindeman and Svedholm (2012), are “inadequately precise” (page. 241) and fail to offer a comprehensive conceptualization of superstitious beliefs to capture its multi-layer connotations. For instance, extant research

emphasized on some aspects of superstitious beliefs without tapping into the others – its nature of invalidity in science (Kramer & Block, 2007; Lindeman & Svedholm, 2012), the consequences of superstitious beliefs (Vaidyanathan et al., 2018), or the process of establishing superstitious beliefs (e.g., the establishment of causal inferences; Johnson, 2021; energy transfer/transmission; Kramer & Block, 2011). Therefore, this thesis synchronizes extant conceptualization of superstitious beliefs and posits that there are three essential elements in conceptualizing superstitious beliefs, including:

- Acknowledging that superstitious beliefs represent supernatural and magical thinking and cannot be explained by principles of science such as physics and biology;
- The intent of using superstitious beliefs, at least in part, stems from one's desire of controlling the outcome of a situation or event; and
- An erroneous causation linking *a proximate cause* with *an effect*.

TABLE 2.1 DEFINITIONS OF SUPERSTITIOUS BELIEFS IN THE LITERATURE

<i>Author(s)</i>	<i>Definition</i>	<i>Term Used</i>	<i>Focus in Conceptualisation</i>
Piaget (1929/1951), Subbotsky & Matthews, (2011)	Events and entities that violate physical principles and science, such as beliefs that individuals' thoughts can pose direct consequences on inanimate objects.	Magical thinking	The establishment of causal inferences
Zusne & Jones (2014)	A belief system that involves the transfer of energy from an object (action) to another solely due to the similarity and continuity in some aspects (e.g., time and space) regardless of the restrictions bounded by the principles of energy transmission.	Magical thinking	Energy transfer/transmission
Foster & Kokko (2008)	Due to ignorance, blind trust in magic, and/or uncertainty about the unknown, one falsely forms a relationship of <i>cause</i> and <i>effect</i> .	Superstition	The establishment of causal inferences
Damisch, Stoberock, & Mussweiler (2010)	Irrational beliefs that mistakenly link outcomes with unrelated events, actions, and/or situations.	Superstition	The establishment of causal inferences
Vyse (2013)	The utilitarian and pragmatic beliefs that are employed to bring good luck and/or to ward off bad luck.	Superstition	Consequences of superstitious beliefs [A utilitarian view]
Kramer & Block (2011, 2013)	A belief that by engaging in certain rituals and actions, one is able to control how an event or a situation evolves.	Superstition	Consequences of superstitious beliefs [A utilitarian view]
Vaidyanathan, Aggarwal, & Bakpayev (2018)	Actions and/or rituals that are recognized by individuals to be 1) metaphysical and supernatural, and 2) are able to affect the outcome of an event.	Superstition	Energy transfer/transmission; Consequences of superstitious beliefs [A utilitarian view]

Pronin, Wegner, McCarthy, & Rodriguez (2006)	An individual's belief in his/her ability in influencing the development of an event/situation without scientific explanations.	Magical thinking; mental powers; mental causation	The establishment of causal inferences
Catina & Iso-Ahola (2004); Tylor (1989)	Inaccurate perceptions and beliefs that are a) self-aggrandizing, b) offering an illusion of control, and c) leading to unrealistic optimism.	Positive illusions	Consequences of superstitious beliefs [A utilitarian view]
Lindeman & Aarnio (2006)	A belief system in which the ontological properties of one event can be accounted for using features of an ontological entity from another category.	Paranormal beliefs	The cross-domain contagion of attributes
Kramer & Block (2007)	The irrational fear of Friday the thirteenth by simply reminding people of Friday the thirteenth.	Paraskevidekatriphobia	The invalidity in science
Lindeman & Svedholm (2012)	A belief in which people believe in the existence of beings and forces that are "higher than that of nature" (p. 242).	Supernatural beliefs	The invalidity in science
Johnson (2021)	Individuals' beliefs to explain situations and/or events using the existence of supernatural beings or forces, such as God, karma, jinx, and spirits.	Metaphysical forces	The establishment of causal inferences
Thalbourne, Dunbar, & Delin (1995); Tobacyk & Wilkinson (1990)	Beliefs that establish causal relationships among events that are normally invalid in conventional scientific principles.	Magical ideation	The establishment of causal inferences
Kramer & Block (2011)	A belief system where individuals acknowledge that wishful thinking might be invalid, yet still choose to perform superstitious behaviours.	Half-beliefs	Energy transfer/transmission
Boden & Berenbaum (2004)	Individuals' beliefs in entities, such as UFO, extra sensory perception (ESP), and miracles that are not supported by science.	Peculiar beliefs	The invalidity in science

Ang, Lai, & Leong (2014)	A process that involves pattern matching, where individuals allocate elements values and sequences in order to guide their behaviours.	Superstition	The establishment of causal inferences
<i>This thesis</i>	• supernatural and magical thinking and cannot be explained by principles of science such as physics and biology; • The intent of using superstitious beliefs, at least in part, stems from one's desire of controlling the outcome of a situation or event; and • An erroneous causation linking <i>a proximate cause</i> with <i>an effect</i>.	<i>Superstitious beliefs</i>	<i>A three-dimensional definition</i>

2.2.1.2 Categorization

Superstitious beliefs can be categorized, contingent upon different criteria. For instance, by the *valences* of superstition, superstitious beliefs can entail either *negative* superstitious thinking patterns – walking under the ladder, breaking a mirror, and/or seeing a black cat will bring bad luck in western cultures – or *positive* ones – wearing lucky items (e.g., the colour “red,” crossing fingers, and/or lucky “8” in Chinese culture) will bring good luck.

In addition to the valence, superstitious beliefs can be viewed through its origins; superstitious beliefs can be shared among individuals with similar cultural backgrounds – *cultural* superstition. For instance, taking the superstitious symbolics in numbers as an example, Chinese consumers perceive number “8” as a lucky number and “4” as an unlucky one, whereas western consumers associate number “7” with positive and lucky connotations and number “13” with negative and unlucky meanings (Vyse, 2013).

On the other hand, some superstitious beliefs are originated from *idiosyncratic* values, norms, and rituals (Marques & Tourinho, 2015). Such individualized superstitious beliefs have been commonly witnessed in athletes’ and fans’ rituals in sports. A myriad of individuals, including both athletes and fans, will wear specific colours and types of outfits when attending important games. For example, does eating chicken right before a game improve athletes’ performance and accordingly, the outcome of a game? It might seem illogical or crazy to assume that it does. Nevertheless, Wade Boggs, a famous baseball athlete and also one of the best performers in history, evidently falls for this magical thinking. Throughout his athletic career, Wade has been engaging in this magical “ritual;” before every important game, he ate chicken for over 20 years.

2.2.1.3 Measurement

Among prior work attempting to develop and investigate superstitious beliefs, a myriad of work has predominantly focused on its conceptualization, and more importantly, how one can operationalize it via measurement (see *Table 2.2* for a summary of measurement). Through this line of inquiry, some commonly opted measurements include the Paranormal Belief Scale (PBS;

Tobacyk, 1988; Tobacyk & Milford, 1983), trait of superstition (Carlson, Mowen, & Fang, 2009; Delacroix & Guillard, 2008), and superstitious beliefs (Wiseman & Watt, 2004).

TABLE 2.2 SAMPLE MEASUREMENT OF SUPERSTITIOUS BELIEFS IN THE LITERATURE

	<i>Item(s)</i>	<i>Focus of Operationalization</i>
Tobacyk (1988); Tobacyk & Milford (1983)	Black cats can bring bad behaviours.	The superstition sub-scale in the PBS; negative (vs. positive) superstition
	If you break a mirror, you will have bad behaviours.	
	The number “13” is unlucky.	
	In many situations, what happens to people is determined by fate.	
	Your personality is determined by astrological alignment.	
Hernandez et al. (2008)	Black magic exists.	Proactive and passive superstition
	Fu Lu Shou/Cornstalk plant attracts health, wealth, and prosperity.	
	Carrying a lucky charm will bring good behaviours.	
	Performing a team ritual before a football match will lead the team to win.	
	Getting a good job or promotion in the future will depend on my getting the right turn of events.	
	Horoscopes are right too often for it to be a coincidence.	

King a Naga exists.

Houses and buildings placed in auspicious land and appropriate locations are good for future flow.

Numbers 8 and 9 attract good behaviours. *

Having a magic pen in the car will bring a safe driving journey.

Praying for success before going to work will bring you success in the day.

With fate the way it is, many times I feel that I have little influence over the things that happen to me.

Your birthday affects your destiny.

Some consumers are able to lift objects through mental forces.

Your palm lines impact your future.

A statue of beckoning women attracts financial prospects.

The dreams while you sleep tell you what will happen.

Given red water to a sacred statue and pledging will receive blessings.

Receiving a banknote from the first customer and taking it to touch products in the shop will attract more money.

	Number 0 and 6 attract bad behaviours. *	
	Have you avoided walking under a ladder because it is behaviours with bad behaviours?	
	Would you be anxious about breaking a mirror because it is thought to cause bad behaviours?	
Wiseman & Watt (2004)	Are you superstitious about the number 13?	Superstitious beliefs; positive and negative superstitious beliefs
	Do you say “fingers crossed” or actually cross your fingers?	
	Do you say “touch wood” or actually touch or knock on wood?	
	Do you sometimes carry a lucky charm or object?	
	I often find myself reading the horoscope section in newspapers, magazines, and/or online.	
Sierra et al. (2018)	Information found in horoscope is important to me.	Tendency to employ superstitious (horoscope) thinking
	I take my daily horoscope seriously.	
	For the most part, I want to know what horoscopes say.	
Carlson, Mowen, & Fang (2009)	I sometimes perform little rituals to bring good behaviours to myself.	Trait superstition
	I do not want to lose things that bring me good behaviours.	

	I have to admit that sometimes I act like I am superstitious.	
	People who know me well will say that I am superstitious.	
	I have at least one good behaviours charm.	
Carlson, Mowen, & Fang (2009)	I have placed objects that signify good behaviours in my home or apartment.	Good-behaviours charms; positive and proactive superstitious beliefs
	I have purchased several good behaviours charms for myself.	
	When I hope something good arrives, I cross my fingers.	
	I have some days which brings me good behaviours.	
	I have some figures which brings me good behaviours.	
Delacroix & Guillard (2008)	Friday the thirteenth brings me good behaviours. behaviours	The trait of superstition
	I have some objects which brings me good behaviours.	
	To avoid misfortune, I touch my threat or wood.	
	I have some rituals which bring me good behaviours (I always wear the same tee shirt for example).	
	I think that the fate sends us some signs which guides us in our choice.	

If something wrong happened to me, I tell me “I was written.”

I believe on good or bad destiny.

I look for signs to guide me in the life.

I often look for signs when I want to be reassured (for example if I cross more than 7 underground trains).

Sometimes, I challenge me to know if I have good behaviours (I draw a pellet of paper in a trash).

I never buy a gift for a baby who is not born...

I do not like to celebrate my birthday before the D day, it brings bad behaviours.

When I believe that something good will arrive, I do not say it in case it does not arrive.

When I make a wish, I do not say it out loud as it will not come true.

If I see a crow, it is a sign that misfortune will happen to me.

To meet a black cat is a sign of misfortune.

Friday the thirteenth is a day which brings bad behaviours.

Passing under a ladder brings bad behaviours.

	Breaking a mirror brings bad behaviours.	
	Finding a four-leaf clover brings bad behaviours.	
	Some numbers are bad behaviours.	
Sierra et al. (2018)	I believe in the power of lucky charms.	Extrinsic superstitious beliefs
	Some numbers are good behaviours.	
	I believe it is possible to jinx things or situations.	
	Good chi attracts prosperity.	
Sierra et al. (2018)	I believe in karma.	Behavioural superstitious beliefs
	I believe in fan rituals, like wearing lucky shirts during a game can influence game outcomes.	

Note. Items with * will be modified based on cultural contexts.

2.2.2 Antecedents of Superstitions, Superstitious beliefs, and Superstitious Consumption

2.2.2.1 Socio-Demographic, Socio-Economic, and Developmental Factors

Individual differences in demographic, socio-demographic, as well as socio-economic factors have been shown to influence consumers' tendency to engage in superstitious beliefs. A myriad of research has documented superstitious beliefs as a function of consumers' socio-demographic make-ups, such as age and gender. For example, prior work consistently shows that, compared to male consumers, *females* are more likely to manifest greater propensity of behaving in a superstitious manner (Dag, 1999; Vyse, 2013; Wolfradt, 1997). Additionally, as consumers get older, researchers witness a decline in superstitious beliefs compared to younger consumers (age; Vaidyanathan, Aggarwal, & Bakpayev, 2018).

Moreover, Torgler (2007) found a significant concurrence between superstitious beliefs and determining socio-economic factors, and concluded that, generally speaking, people with stronger religiosity beliefs, a formerly Communist cultural background, who are unemployed, being in an undesirable marital/relationship status (e.g., widowed, divorced and/or separated) exhibit stronger superstitious beliefs. Nevertheless, the correlation between education backgrounds and superstitious beliefs seem more complex, with mixed implications (Vaidyanathan, Aggarwal, & Bakpayev, 2018); for instance, Rice (2003) put forth that although the belief in astrology, supernatural entities such as ghosts and/or reincarnation is negatively behaviours with education level, certain superstitious beliefs have been found to be more salient in more educated consumers – including déjà vu, telepathic as well as extrasensory perceptions (ESP).

In addition to demographic factors, consumers' previous experiences might as well shape ones' developmental paths and psychological processes, thereby affecting such propensity of superstitious beliefs. For example, prior work documents engaging in superstitious beliefs as a coping mechanism in responding to childhood traumatic experiences (French & Kerman, 1996; Irwin, 1992; Lawrence et al., 1995; Ross & Joshi, 1992).

Furthermore, individual differences in personality and psychological traits such as neuroticism (Wiseman & Watt, 2004), nostalgia tendency (referred as “yearning for the past;” Sierra, Hyman, & Turri, 2018), agreeableness (Peng, Hsuiung, & Chen, 2012), openness (Carlson, Mowen, & Fang, 2009), self-esteem, and need for learning (Kashiha, 2015; Mowen & Carlson, 2003) play a potent role in superstitious consumption. For instance, Wiseman and Watt (2004) found that individuals with high neuroticism scores manifested stronger agreement on both negative (e.g., “would you be anxious about breaking a mirror because it is thought to cause bad behaviours?”) and positive superstitious beliefs (e.g., “do you say ‘touch wood’ or actually touch or knock on wood?”) than low neurotics (p. 1535).

2.2.2.2 *Situational Factors*

The same consumer might opt to engage in superstitious beliefs on some occasions, while choose not to do so under other circumstances – for example, researchers made an intriguing observation in that sometimes, fishmen in New Guinea perform magical rituals before fishing, while such rituals are absent on other occasions (Malinowski, 1954; as cited in Kramer & Block, 2008). It is therefore imperative to acknowledge the presence of situational factors at play.

When portraying this picture, prior work has delineated the correlation between superstitious beliefs with distinct determining activities. Researchers noted that people are more likely to manifest stronger superstitious beliefs when the situation involves anthropomorphism (Sierra et al., 2018), role ambiguity (Mayo & Mallin, 2014), anxiety-inducing situations (Roe & Bell, 2016), and negative mood (Källmén, Andersson, & Andren, 2008).

Taken together, superstitious beliefs seem more salient when *the stake is relatively high* (e.g., an important exam and/or athletic competition). When the environment seems *uncertain and unpredictable*, or when *the perceived odd of failure is salient*, people are more prone to engage in superstitious behaviours (Vaidyanathan, Aggarwal, & Bakpayev, 2018). Circling back to the fishing example in New Guinea, Malinowski (1948) observed that the occurrence of performing superstitious rituals is substantially more frequent when fishermen were planning on deep sea fishing, instead of fishing in the lagoons.

2.2.2.3 Mechanisms: From Antecedents to Superstition

Superstitious beliefs have been long considered to be a *mistake* in individual cognition. Researchers favouring this tenant view the possession of superstitious beliefs as being *irrational* as the formation of causation stems from noises in judgement and decision-making – internally (i.e., the decision-maker) and externally (i.e., in the environment) – such as uncertainty, stress, high expectation, and lack of control (Hamerman & Johar, 2013; Rudski, 2001).

Nevertheless, another line of research, intriguingly, posits that superstitious beliefs also shares a common ground in *rational* decision-making (Beck & Forstmeier, 2007; Shermer, 2002). Utilizing an analogy in statistics, superstition can be accounted for by leveraging a simple cost-benefit analysis. In decision-making and specifically, making an inference, individuals often encounter a trade-off between Type I error and Type II error. Among which, *Type I error* refers to believing a false positive whereas *Type II error* denotes the rejection of the truth (Beck & Forstmeier, 2007). As such, according to the rationale behind computing opportunity cost, when the cost of making Type II error – lost opportunities lost due to rejecting the true causation – outweigh the cost of making Type I error – those behaviours with believing causal relationships that are invalid, a rational individual would presumably capitalize on superstitious beliefs to avoid loss (i.e., opportunities cost) as a result of failing to be superstitious (see *Figure 2.1* for detailed visual demonstration using this metaphor).

		Reality	
		There is no utility in being superstitious	Being superstitious brings me good luck (wards off bad luck)
Perceived Reality	I won't do anything that is superstitious		Type I Error
	I will do everything that is superstitious	Type II Error	

FIGURE 2.1 A VISUAL DEMONSTRATION OF SUPERSTITIOUS BELIEFS USING THE METAPHOR OF TYPE I/II ERROR

Departing away from psychology and social science, research in evolutionary biology intriguingly offers convergent findings. Interestingly, a study conducted by Foster and Kokko (2009) shows that the development of superstitious beliefs is grounded in evolutionary biology. By establishing a model, the authors document that superstitious beliefs – the tendency to incorrectly assign two irrelevant events as the *cause* and *effect* – tend to be favoured in the process of natural selection. Supporting a notion in which superstitious beliefs engender an adaptive response, as long as engaging in superstitious beliefs lead to occasionally correct causation, its benefits in individual fitness in responding to environmental changes is prone to offset the costs when at times, it is proved to be incorrect.

In a nutshell, superstitious behaviours can be accounted for via three mechanisms – namely *instrumental*, *protective*, as well as *social-adjustive rationales* (Vaidyanathan, Aggarwal, & Bakpayev, 2018). Leveraging this reasoning, extant findings can therefore be classified accordingly. Consumers who engage in superstitious behaviours – such as athletes eating chicken before important games, college students wearing lucky charms on the day they take important exams, and fishermen going deep sea fishing – do so to gain an illusion of control (i.e., instrumental function). Consequently, by engaging in such superstitious behaviours, consumers believe that they will perform better as a result of wearing a lucky charm (Hamerman & Johar, 2013), and that products with lucky colour will function better (product performance; Block & Kramer, 2009), hence speaking to the instrumental mechanism. Related to the aforementioned argument to some extent, consumers sometimes rely on superstitious beliefs even when such beliefs cannot provide minimal instrumentality value. A scenario of cancer diagnosis can serve as an appropriate example here: imagine a patient has been diagnosed to have a certain cancer, with a survival rate of X%. By engaging in superstitious belief, the patient does not necessarily wish to change the survival rate, but instead *hopes* that he/she can be one of the surviving populations (1 – X%). Put differently, superstitious beliefs, in this instance, does not provide instrumental value/benefits as it cannot interfere the outcome of the focal situation. Nevertheless, it can offer benefits even at the absence of instrumental values as it provides consumers with *hope*, and attenuates undesirable emotions such as *fear*. Finally, prior studies also hint at a social-adjustive account on why people engage in superstitious beliefs. To fit into a desirable social group (alternatively, to avoid being

isolated for being the outlier), one might manifest similar superstitious beliefs performed by its members driven by a need for belongingness (Vaidyanathan, Aggarwal, & Bakpayev, 2018).

2.2.3 Consequences of Superstition, Superstitious Beliefs, and Superstitious Consumption

Regardless of the way scholars coin wishful thinking as either being superstitious beliefs, or magical thinking, metaphysical and paranormal beliefs, such false causation and association-making carries “predictable variability in health, well-being, and social attitudes” towards diverse matters, domains, and decision-making contexts (Johnson, 2021, p. 10). Such Acknowledgement thus leads this thesis to dive deeper into the downstream consequences of superstitious beliefs.

2.2.3.1 Consumer Consequences

Acknowledging that scholarly inquires on superstitious beliefs remains largely a place no man has ever set foot on, this thesis next examines scarce research initiating such investigations. Through a comprehensive review of relevant studies, few exceptions in consumer research have predominantly focuses on its implications on product and/or brand preferences – during which superstition functions as either the focal outcome variable, and/or the dependent variables directly speak to superstitious outcome (e.g., behaviours). Representing pioneering efforts in superstitious beliefs, Block and Kramer have conducted several studies looking into the impact of superstitious beliefs in various contexts (Block & Kramer, 2009; Kramer & Block, 2008, 2009). For instance, exploring superstitious consumption in Taiwan, Block and Kramer (2009) found that compared to non-superstitious consumers, those who are at least somewhat superstitious were more likely to purchase products with lucky colours (e.g., red) versus those with neutral colours (e.g., green). Interestingly, such irrational preference over lucky products still holds when it comes to willingness to pay (WTP): consumers manifested significantly higher WTP for products containing a *smaller* but *luckier* number of items (e.g., 8 units; vs. products containing a larger yet behaviours-neutral number of items, e.g., 10 units). If capitalizing on superstitious beliefs

leads to more favourable consumer responses, why do not marketers utilize superstitious appeals in a universal manner?

They further built upon the findings above and put forth to a negative consumer consequence; although using superstitious beliefs result in greater purchase intent and accordingly, are willing to pay more for *lucky* products, their satisfaction towards using a lucky product tends to suffer compared to products with a behaviours-neutral connotation.

2.2.3.2 *Development and Social Consequences*

What are the domains that have been influenced by engaging in superstitious beliefs?
Does carry a lucky charm bear unintended consequence in other spheres of life?

Researchers have found that the activation of a more salient superstitious belief leads to better performance (Damisch, Stoberock, & Mussweiler, 2010; Kramer & Block, 2014). Supporting this assertion, Damisch, Stoberock, and Mussweiler (2010) noted that, by heightening good-behaviours-related superstitious beliefs, respondents showed significantly improved performance in various tasks of different natures, including the ones involving *motor abilities* (physical coordination and flexibility) – putting golf balls (in Study 1), placing balls into holes accurately and quickly (i.e., motor dexterity; in Study 2), as well as tasks examining *cognitive abilities*, such as finding matching patterns on game cards (memory; in Study 3) and in anagram games (in Study 4). Congenially, Kramer and Block (2014) applied this argument and revealed that merely physical contact of superstitious objects is able to initiate the “law of contagion.” Participants in the superstition condition believe that the transmission of superior ability can occur via touching an object used by previous high performers, which leads them to outperform those in the control condition (i.e., no superstition cues mentioned) in solving creativity problems.

Second, the salience of superstitious beliefs has been shown to manifest implications for consumer behaviours involving risks. Kramer and Block (2007), for example, demonstrated this magic effect of paraskevidekatriaphobia (i.e., the irrational fear of Friday the thirteenth; by simply reminding participants of *Friday the thirteenth*, they were more likely to opt for less risky (vs. riskier) options (e.g., receiving \$18 for sure vs. a 20% chance to win \$240 and an 80% chance to gain nothing; see also Kramer & Block, 2008). Therefore, it seems logical to conclude that

negative superstitious beliefs can temporarily elevate negativity biases (Risen & Gilovich, 2008; see Kruger, Risen, Gilovich, & Savitsky, 2009). Echoing this contention, Risen and Gilovich (2008) intriguingly documented the “tempting fate” effect; following behaviours tempting fate – someone behaving presumptuously, thereby tempting fate – participants were more prone to overestimate the likelihood of negative outcomes. In a similar inquiry, Kruger et al. (2009) suggested that by calling attention to someone’s success via pointing out the streak of behaviours by others, participants mistakenly believed that such acts bragging about good fortune would end up inviting misfortune and bad behaviours. Consequently, participants behaved less confidently and tend to stop the experiment although the odds of continue winning did not change.

Finally, superstitious beliefs also interfere with societal, structural issues. In a recent investigation, for example, the results from analysing survey responses from Iranian samples revealed that paranormal beliefs are negatively correlated with two sub-dimensions in attitudes towards human rights, namely civilian constraints, and personal liberties, but not towards social securities (Sohrabi & Sohrabi, 2020). Put differently, the human right consciousness seems to decrease with elevated superstitious beliefs (Gregg, 2016).

2.2.3.3 *Mechanisms: From Superstition to Consequences*

A critical component in understanding the consequences of superstitious beliefs lies in its potential in shedding light upon the psychological processes associated thereof. Put differently, now that researchers are aware of the impact of superstitious beliefs, a question logically and naturally arises: what are the factors and mechanisms that drive overt judgements and behaviours? To this end, theoretically, the downstream consequences of superstitious beliefs are closely linked to contributing mechanisms. Examining prior work in this line of research has documented three factors, namely *confidence booster (internalization)*, *external attribution*, and *elevated expectations*.

First and foremost, possessing beliefs that erringly attribute the outcome of an event to magic, jinx, and spiritual forces tends to mistakenly boost consumers’ confidence in relation to their ability (see Study 6; Hamerman & Morewedge, 2015). As a consequence, superstitious beliefs, psychologically serving as *a confidence booster*, might as well lead to one’s actual

behavioural changes. Supporting this tenant, research shows that consumers, indeed, *internalize* the utility of superstitious beliefs. By initiating an investigation using ethnic minority populations in China, Li (2021) found support for this internationalization process. For instance, when participants were seated at a table with lucky symbols (e.g., koi fish in Chinese culture; Study 1), the author found that superstition, as expected, elevated their *internal* beliefs about their ability (e.g., “I can always solve most problems if I invest the necessary effort” and “no matter what comes my way, I’m usually able to handle it”). Consequently, participants in the treatment condition reported significantly over-confident estimation (e.g., in a hypothetical job-hunting scenario, they would be hired before other students). Another related inquiry by Kramer and Block (2014) formally examined the role of confidence using the “law of contagion”; by touching objects used by previous high performer, participants were more likely to feel more confident in a creativity task, which mediated the effect of superstition on actual performance.

Second, in contrast to the aforementioned internalization process – superstition enhances consumers’ belief in their own performance ability, another line of inquiries on superstitious beliefs are in favouring of an *external attribution* process. According to the attribution theory, an individual is motivated to account for why an event occurs using either *internal* causes, or *external* causes. As such, superstition might influence consumers’ judgement and decision-making via two routes; in the former route, one incorporates superstition into their own ability (i.e., *internalization*), and the latter one enacts consumers to believe that their ability is determined by the presence of lucky charms (i.e., *externalization*). Consolidating this external attribution process, research has shown that after consumers succeeded using a product associated with good luck, entity theorists (vs. incremental theorists) were more prone to attribute their success to such rituals. Surprisingly, their performance in subsequent tasks was contingent upon superstitious consumption; when entity theorists was deprived of continuing using lucky products, the authors witnessed a substantial decrease in their performance. This finding thus offers support for the aforementioned externalization process, such that the annulment of superstitions consumption results in ability beliefs.

Finally yet not least, superstitious beliefs are likely to colour consumer psychology and behaviours through an *elevated expectation heuristic*. Pertaining to the preceding discussion on

the law of contagion, consumers anticipate that the magical power of superstition is contagious, such that positive superstition is behaviours with higher performance expectation, and following the same vein of reasoning, negative superstition tends to set up lower expectations. Congenially, in assessing students' expectations about their performance in exams, its connection with superstition has been supported. Specifically, engaging in positive superstition leads to higher performance expectations – taking an exam using a lucky pen allows a consumer to believe that he/she will receive a better grade; on the contrary, taking a taxi with unlucky license plate numbers on exam days erroneously facilitate students' belief that they would fail the exam (Yardley, 2006). Such expectation setting account has been later generalized to the marketplace. In a Taiwanese context, Block and Kramer (2009) dived into the implication of superstitious beliefs in consumption, and cemented the argument that consumers ironically believe that a red rice cooker – symbolizing a lucky rice cooker – will perform better than a green rice cooker (Block & Kramer, 2009).

2.3 Identifying the Research Gap in Extant Literature and Research Questions

Taken together, a research void surfaces, thereby inspiring the present thesis. In light of the preceding review of literature, despite of considerate attention devoted to understanding superstitious beliefs, scholarly efforts have been invested disproportionately in non-marketing disciplines, such as behaviours psychology (Skinner, 1948), popular psychology (Vyse, 2013; Wheen, 2004), abnormal psychology (Devenport, 1979; Brugger et al., 1994; Shaner, 1999; Nayha, 2002), philosophy (Scheibe & Sarbin, 1965), religiosity studies (Gothóni, 1994), as well as evolutionary biology (Foster & Kokko, 2009) and medicine (Diamond, 2001; see *Table 1.1*). Therefore, the investigation of superstitious beliefs in the domain of marketing, especially in consumer psychology and behaviour, remains to be a nascent topic.

Although in recent years, consumer researchers have initiated their inquiries and shed light upon superstition, such efforts often disproportionately feature either a) factors enhancing and/or attenuating superstitious consumption (Hamerman & Johar, 2013), and b) how using

superstitious cues impacts consumers' preferences in relation to product evaluation (Kramer & Block, 2009), product preference (Ang, Lai, & Leong, 2014), purchase likelihood and intention, as well as their satisfaction after purchasing a lucky (unlucky) product in a generic setting (Block & Kramer, 2009) or following a product failure (Kramer & Block, 2008). In this regard, prior scholarships in the field of marketing emphasise the *positive* consequences of superstitious beliefs; in other words, these investigations attempt to describe “*what it is*” aspect (e.g., willingness to pay, preferred product features). In contrast, inquiries of the *normative* consequences of such beliefs – i.e., *what it should be* – remains largely an uncharted territory.

As a consequence, this research void invites more scholarly investigations to dive into the impact of superstitious beliefs on consumer behaviours departing away from *product evaluation and purchasing*. Responding to the call for more research portraying “a more fine-grained understanding of the psychological functions” pertaining to superstitious beliefs (Wiseman & Watt, 2004, p. 1540), this thesis is devoted to exploring the implications of superstitious beliefs on consumer consequences *outside* the realm of daily consumption, and instead, pivoting into on domains that seem even *irrelevant*.

In this line of inquiries, the researcher has witnessed some pioneering insights, such that superstitious beliefs result in more risk-averse decisions (note that such effect is limited to negative superstitious beliefs; Kramer & Block, 2007) and a greater tendency of variety-seeking (Zhao, Li, & Xiong, 2021). The lack of research herein seems astonishing given its substantial impact; from an economic impact standing point alone, the single superstition of Friday the 13th causes businesses approximately \$800 million *each year*, according to CNBC (WCNC Staff, 2020). On a separate note, products and services capitalising on superstitious beliefs, such as online astrology, healing crystals, and spell kits on Amazon.com, remain a highly remunerative venture (Vyse, 2018). It is therefore surprising that researchers in marketing, specifically in the realm of consumer research, have only paid scant attention on this topic, which further speaks to the imperative and urgency for more research looking at the impact of superstitious beliefs on consumer behaviour, outside the *positive* scope of product consumption.

Research on the downstream consequences of superstitious beliefs to date remains largely “fragmented with gaps yet to be described and filled” (Vaidyanathan, Aggarwal, & Bakpayev,

2018). Given that academic research offers “such little empirical evidence on the effect of superstition” (Kramer & Block, 2008) and we know surprisingly even less about how superstitious beliefs affect consumer psychology and decision-making on domains more than just purchasing a lucky (unlucky) product, such investigations merits attention.

Through the lens of Transformative Consumer Research (TCR) as espoused by Vyse (2018), this thesis seeks to address these preceding issues by documenting the effect of superstitious beliefs on consumers’ normative behaviours. Specifically, this investigation aims to examine how such beliefs affect consumer behaviours in the realms of *sustainability* and *impulsivity*. The theoretical significance of this inquiry is two-fold, as it adds to a scant stream of research and helps brew a more fine-grained understanding of superstitious beliefs; at the same time, this thesis contributes to the literature on identifying intervention strategies curating more mindful consumer behaviours (Andrews et al., 2022; Davis, Ozanne, & Hill, 2016; Newman, Finkelstein, & Davis, 2021). Furthermore, this research is of great managerial significance in the marketplace. In the ensuing section, the researcher details the justification on focusing these two specific consumer behaviours.

2.4 Normative Consumer Behaviours

Responding to the call for more consumer research aiming at “addressing the general frustration with society and market limitations” (Andrews et al., 2022), there is a considerable need to investigate normative behaviours, defined as *actions that align with social norms, expectations, values, and consumer welfare* (Fukukawa, 2003; Gruber & Schlegelmilch, 2014; White & Simpson, 2013).

This stream of research encompasses a myriad of issues, including, but not limited to, ethical consumptions (e.g., fair-trade, organic, and/or cruelty-free products), environmentally conscious consumptions (e.g., cycling, energy consumption and preservation, product disposal), and prosocial behaviours (e.g., charitable giving, volunteering). These scholarships can be further categorised based on whether such behaviours align with the *social* dimensions of normative values, which concerns social and environmental impacts of ones’ consumption behaviours;

alternatively, these behaviours might speak to the *personal* dimension – thereby addressing their implications for individual welfare. To grasp a more comprehensive understanding of the effects of salient superstitious beliefs, this thesis therefore opts for one specific consumer behaviour in each dimension, namely consumer sustainability and impulsivity.

Specifically, both sustainable and anti-impulsive behaviours entail making conscious consumption decisions to reflect “*what should be*” instead of “*what it is*.” The former, consumer sustainability, involves consumer behaviours considering the environmental effects of their consumption and posing minimal harm to the planet, such as choosing sustainable products, opting for minimal packaging, and/or deferring purchasing decisions. On a different note, academic inquiries of the latter focus on curating more mindful consumption patterns that align with individuals’ long-term goals and well-being, encompassing interventions such as budget setting, practicing self-control, and avoiding unplanned purchases. Taken together, through investigating both consumer sustainability and impulsivity, this thesis seeks to understand how salient superstitious beliefs can be leveraged to promote more mindful, sustainable, and socially responsible consumer behaviours.

These inquiries also hint at managerially important implications. First, sustainability does not merely pose environmental and societal impact, it also carries economic and marketing implications; for instance, according to Nielsen reports, the industry has been expecting a significant increase in the sales of sustainable products to approximately US\$150 billion by the time when the manuscript is written; Conick, 2019). Moreover, taking consumer impulsivity as an example, consumers are not strangers with this following scenario: walking into a supermarket for some shampoo, yet ending up checking out with more than a hundred dollars’ worth of unplanned purchases. Also referred as the Target effect, impulsive consumers contribute to an astonishing annual spending of approximately \$18 billion, in U.S. alone (Khait, 2020). Accompanied with the surging peer pressure on social media, the “treat yourself” mentality as well as stress, consumer impulsivity poses profound impact on financial issues, diminished savings, and high debt-to-income ratios (DeVon, 2022; Zhang & Shrum, 2009; Vohs & Faver, 2007).

2.4.1 Consumer Sustainability

2.4.1.1 *Sustainability in Consumer Research*

Sustainable consumer behaviour – defined as actions that minimize negative environmental impact via reducing the utilization of resources across purchasing, consuming products/services as well as alternative post-consumption actions (White et al., 2019) – is of great interest to not only researchers, but also to consumers as well as marketers alike. Modern consumerism enables mass production in businesses, and at the same time, encourages a fast-paced cycle of “purchase, consumption, disposal” – all of which brews the urgency to take the “steps needed to safeguard our imperilled biosphere” (Ripple et al., 2017). Reassuringly, the industry is acknowledging the need for doing business differently – companies such as Starbucks, Nike, Dell have woven sustainability into their DNA make-up (Hardcastle, 2013; Vos, 2019). Accordingly, businesses adapting to sustainability values enjoy long-term benefits (e.g., more behaviours consumer responses, and higher profitability) as they are able to engage in innovation, satisfy changing consumer needs, as well as utilize technologies (Hopkins et al., 2009).

However, solving environmental issues does not merely require businesses’ measures. Hotels, restaurants and businesses in consumer product/service industries can proactively engage in pro-environmental practices. Nevertheless, without the patronage and participation of consumers, businesses’ awareness can only tap into the tip of the sustainability iceberg, leaving the vast unseen challenge untouched. Therefore, scholars ought to be cognizant of the facilitators and inhibitors of sustainable consumer behaviours (White et al., 2019).

2.4.1.2 *Determinants of Sustainable Consumer Behaviours*

A myriad of research has investigated determinants of sustainable consumer behaviours, in which sustainable behaviours have been shown to stem from a wealth of factors, such as individual’s habits of behaving sustainably, if they incorporate sustainability in their identity, whether incentives are present to motivate sustainable behaviours, and if so, the extent to which the incentives are tangible (intangible), and emotions encouraging these behaviours (e.g., guilt, pride, nostalgia, White et al., 2019); the list goes on and it is practically almost infeasible to

delineate all factors in this picture. Reviewing the extant literature, findings in this realm can be classified into three major perspectives, including a) the self, b) social influences, and c) habitual sustainable behaviours.

The way consumers form self-related concepts affects the likelihood of engaging in sustainable behaviours. If a consumer incorporates sustainability into their self-view, he/she is more prone to behave accordingly to maintain a positive and consistent sustainable self-image; that is, activating a positive self-view promotes greater endorsement of sustainable consumer behaviours (Brough et al., 2016; van Prooijen & Sparks, 2014). On a related stream of investigations, scholars combine self-views with emotions for an optimal boost of pro-environmental behaviours. Utilizing positive emotions – such as joy, warm glow, and pride – when performing sustainable behaviours (or anticipating experiencing such emotions), consumers are able to rationalize their sustainable behaviours as they can derive positive affective values from doing so (Giebelhausen et al., 2016). On the flip side, framing sustainable campaigns so that it emphasizes the impact of sustainable (or unsustainable) behaviours on a consumer's self-view can lead to positive behavioural changes. Specifically, capitalizing on negative emotions – such as guilt, fear, and sadness – enacts consumers to feel responsible for their negative environmental impact, thereby promoting sustainable consumption behaviours (Mallett, 2012). On the other hand, challenging one's identity might lead to backfire effect, leading them to shy away from sustainable acts. For example, threatening one's Republican political identity has been shown to decrease their tendency to mitigate negative environmental impact (Hart & Nisbet, 2012), and their purchase intent for eco-friendly products (Gromet, Kunreuther, & Larrick, 2013).

In addition to one's self-image, the literature suggests that one can leverage social influences to promote pro-environmental behaviours. Individuals behave in a manner that conforms to the presence, behaviours, and expectations of others (the theory of planned behaviour [TPB]; Ajzen, 1991). Synchronizing extant findings, the impact of social influences on sustainable behaviours can be categorized via two paths: 1) social norm, and 2) social desirability (White & Simpson, 2013). Specifically, when it is socially appropriate to avoid littering (Cialdini, Reno, & Kallgren, 1990), engaging in energy conservation (Dwyer, Maki, & Rothman, 2015), and opting for green consumption options (Teng, Wu, & Liu, 2015), consumers might behave

accordingly to meet such social norms. Moreover, even when sustainable behaviours are not considered the norm, consumers still leverage consumption patterns to make inferences about one's social desirability. Accordingly, consumers might intentionally engage in sustainable consumption – to make a positive impression on others (Green & Peloza, 2014) and to signal a behaviours social status (Griskevicius, Tybur, & Bergh, 2010).

Another means by which sustainable consumer behaviours can be influenced is through habituation. When sustainable consumption behaviours are incentivized, such positive reinforcement might then lead to repetition, thereby eventually facilitate the formation of habituated sustainable consumption. Nevertheless, the use of certain incentives seems more effective in facilitating short-term, and/or one-time sustainable behaviours, instead of long-term ones (Geller, Bechtel, & Churchman, 2002). Different types of incentives also have distinct impacts, in that free gifts, complimentary lottery tickets and even the sign of social praise and recognition are often more motivating than monetary incentives. In a similar line of research, studies also show that by making sustainable options the default option (hence reducing the cost/barrier to act sustainably), the adoption of sustainable behaviours becomes more effortless and easier. As a consequence, for example, placing recycling bins in a close proximity, and/or setting a sustainable option as the option selected (hence, choosing less sustainable behaviours requires more efforts) result in a substantially greater uptake of sustainable consumption.

2.4.2 Consumer Impulsivity

2.4.2.1 *Impulsivity in Consumer Research*

Impulsivity represents a complex, multi-faceted construct, and has been extensively investigated across a myriad of disciplines, such as psychology, psychiatry, neuroscience, and marketing (Baumeister, 2002; Lades, 2014; Piron, 1991; Zhang & Shrum, 2009).

In light of its complicated nature, existing scholarships investigating impulsivity have categorized it into several subtypes. Depending on distinct emphasis of the conceptualization, scholars have arrived at three schools of thought in defining impulsivity, namely *conative*, *visceral*, and *cognitive* impulsivity. Conative impulsivity focuses on its unplanned nature, and is

referred as actions taken without much thought being given. A common example illustrating conative impulsivity is “acting before thinking” (Lades, 2014; Piron, 1991). In contrast, visceral impulsivity highlights the emotional aspects of impulsive behaviours. Following this line of reasoning, researchers conceptualize impulsivity as behaviours driven by intense emotional experiences and conflicts, or the lack of emotion regulation (Baumeister, 2002). Finally, cognitive impulsivity speaks to individuals’ inability in resisting temptations. Consequently, individuals with cognitive impulsivity struggle with impulse control, and are more inclined to indulge in the pursuit of immediate gratification, such as addition and overconsumption, without conscious awareness of the long-term implications (Dholakia, 2000; Rook, 1985). In the sphere of marketing, consumer impulsivity is often defined as instances where consumers make unplanned purchases to achieve immediate gratification (Zhang & Shrum, 2009; Vohs & Faver, 2007).

It is imperative to note that impulsivity does not necessarily equate a negative trait. In fact, researchers identified circumstances under which impulsivity entail benign consequences. Reviewing scant literature, scholars have, at times, couched that impulsivity is positively related to enhanced creativity (Aytekin et al., 2017; Kipper, Green, & Prorak, 2010), and in other scenarios, an increased (benign) risk-taking tendency (Baumann & Odum, 2012; Upton, Bishara, Ahn, & Stout, 2011). However, while low of moderate levels of impulsivity have the potential of inducing beneficial implications, excessive impulsivity can be detrimental and is often associated with negative consequences, including but not limited to post-consumption dissatisfaction (e.g., regret), financial instability, diminished savings, and surging debt-to-income ratios (Zhang & Shrum, 2009; Vohs & Faver, 2007).

2.4.2.2 Determinants of Consumer Impulsivity

Extensive research has been conducted to explain impulsivity, in which a variety of models and frameworks have been proposed. Among which, the dual-system model offers an elegant illustration elucidating how impulsivity occurs, which suggests the existence of two systems and processes involved for individuals to arrive at a decision, i.e., system 1 and system 2 (O'Brien, 2012). System 1 is a fast and automatic system that individuals use as the default system in making decisions on a daily basis. People adopting system 1 are more inclined to be influenced

by heuristics, mental shortcuts, and intuitions (Morewedge & Kahneman, 2010). In contrast, system 2 involves deliberative, rational, and analytical processing, which entails careful examination of all relevant information, and greater effort in decision-making. These two systems can operate simultaneously and their interplay, therefore, determines the quality of decision-making (Alter, Oppenheimer, Epley, & Eyre, 2007). Drawing upon the dual-system model, impulsivity ought to arise when, in decision-making, system 1 overrides system 2, thereby leading to insufficient deliberation given to the focal scenario, and subsequently more impulsive behaviours.

Furthermore, to obtain a more fine-grained understanding of consumer impulsivity, not surprisingly, considerable research has examined factors triggering such behaviours. Data from examining both internal, and external factors in this stream of research evinced four types of determinants, namely *traits*, *motives*, *consumer recourses*, and *marketing stimuli* (Iyer et al., 2020). The very first school of thought emphasizes the importance of individual traits and self-identity. In this line of research, scholars posit that some individual psychological characteristics and traits, such as impulsivity trait, may serve as an internal source of impulsive consumer behaviour. People who score high on impulsivity trait measures, intuitively, are more likely to purchase on impulse (Beatty & Ferrell, 1998; Rook & Fisher, 1995; Rook & Gardner, 1993). In addition, researchers also identified other influential individual-level factors that tap into individuals' desire of seeking new, stimulating experiences, including sensation-seeking, variety-seeking, and novelty-seeking (Punj, 2011; Sharma et al., 2014; Van Trijp & Steenkamp, 1992). Finally, impulsive consumer behaviours are more prevalent among consumers with unfavourable self-identity, as a compensation measure. That is, when individuals experience a deficit in their self-identity, they are more inclined to purchase (on impulse) products that communicate a more desirable and ideal self-identity, or that of greater potential of identity-expression (Dittmar et al. 1995; Dittmar et al., 2009; Dittmar & Bond, 2010).

The second school of thought argues that consumer motives, their available resources, as well as their interplay, jointly affect impulsive consumer behaviours. In particular, researchers posit that the mere individual impulsivity is not sufficient to drive impulsive behaviour. Rather, when individuals' failure of resisting temptations is coupled with available recourses, such

behaviours are more likely to be enacted (Baumeister, 2002; Hoch & Loewenstein, 1991; Iyer et al., 2020). In relation to motives, consumers might believe that purchasing certain products will stimulate positive experiences – such as emotional gratification and rewards – or ward off negative feelings. Following on from this, consumers with sufficient resources, including psychic resources, time, and money (Vohs & Faber, 2007), are more prone to purchase on impulses compared to those who lack these required resources (Hoch & Loewenstein, 1991; Jones et al., 2003; Kacen & Lee, 2002). Additionally, consumers' prior experience of impulsive behaviour might affect their subsequent engagement. That is, if one's prior impulsive consumption entails positive experiences, they are more likely to repeat such behaviours in the future.

Finally, marketing efforts in designing and revising marketing stimuli, such as in-store promotions, merchandise, communications, pricing strategies, store ambient environment and atmospherics, affect consumers' impulsive behaviours (Mattila & Wirtz, 2001). By curating external stimuli that are appealing to prospects' sensory experiences, it speaks to their urges to purchase, thence triggering more impulsive behaviours (Chamorro-Premuzic, 2015; Eroglu et al., 2003; Park et al., 2012; Verhagen & van Dolen, 2011).

In examining these determinants, scholars attempted to study the psychological processes that explains their impact on impulsive behaviour. Through examining over 186 academic research, two prominent mediating mechanisms emerge, including *self-control* (Vohs & Faber, 2007; Sultan et al., 2012), as well as *positive and negative emotions* (Silvera et al., 2008; Verhagen & van Dolen, 2011). Given that impulsive behaviours stem from consumers' failure in resisting their urges, individuals' self-control, which speaks to the extent to which one has control over oneself, is associated with such urges (Rook, 1987). A variety of determining factors, such as the depletion of resources, might alter one's self-control, and subsequently, influence consumers' impulsive behaviours (Baumeister, 2002; Verplanken & Sato, 2011). Moreover, environmental psychology researchers argue that environmental stimuli, such as price discounts and in-store ambience, might trigger different affective experiences, which stimulate consumers to purchase on impulses. For instance, impulsive behaviour is often related to intense positive emotions, such as arousal, excitement, and gratification (O'Guinn & Faber, 1989). These emotions, consequently, function as stronger predictors of impulsive purchases over product ownership. Interestingly,

scholarships also reveal that in addition to positive affective experiences, negative emotions can also drive impulsive behaviours. Indeed, research in emotion regulation suggests that, when experiencing negative feelings, consumers tend to resort to impulsive behaviours – such as retail therapy – to elevate and manage their emotional states (Mick & Demoss, 1990; Rook & Gardner, 1993; Verplanken et al., 2005).

2.5 Conclusion of Chapter 2

The aim of Chapter 2 is to set the scene for the focal investigation of superstitious beliefs. By critically synthesising and integrating relevant literature, this Chapter reviews and categorises superstitious beliefs through different perspectives: the extant conceptualisation of superstitious beliefs (Section 2.2.1), its antecedents and the mechanisms thereof (from antecedents to superstitious beliefs; Section 2.2.2), as well as consequences of superstitious beliefs and the mechanisms (from superstitious beliefs to consequences; Section 2.2.3). Based on the discussion, a research void was identified that virtually, there is minimal scholarships exploring the impact of superstitious beliefs on normative consumer behaviour. In light of the preceding discussion, the next chapter illustrates the methodology and methods deployed to address the research questions and objectives of this thesis, along with ontological, epistemological and methodological justifications (Chapter 3).

Chapter 3: Research Methodology

"Methodology is to the social sciences what anatomy is to medicine: without it, the body of knowledge that constitutes the discipline is a haphazard assortment of isolated facts and observations."

---- Neil J. Smelser (Theory of Collective Behaviour, 2011)

3.1 Introduction to Chapter 3

In the realm of social science, a fundamental premise for every research study and scholarly investigation lies in the establishment of the research paradigm, and the philosophical perspectives guiding the selection of distinct methodology and methods (Burrell & Morgan, 1979). Therefore, it is beyond imperative to declare and clarify the researcher's standpoint in viewing research (i.e., research philosophy), which allows for a more appropriate, meaningful, and accurate interpretation of data and results obtained thereof.

The way and the lens through which a researcher uses in viewing and understanding the external world – in other words, their worldview – have a profound impact on how the researcher approaches their work and research, including formulating research questions, selecting appropriate research methods, and interpreting the results. Therefore, before carrying out and presenting the empirical examination in relation to the research questions, it is imperative to establish the methodological position as the next logical step in this thesis.

In this thesis, the present work is dedicated to understanding and explain the effects of salient superstitious beliefs on consumer behaviours. In this regard, this research is deeply grounded in positivism as the focal research philosophy as it allows researchers to gain an objective knowledge and understanding of certain phenomena of interests and minimise any personal biases (Panhwar, Ansari, & Shah, 2017; Weber, 2004). An experimental approach, complemented by online survey and meta-analyses, allows for the establishment of causal relationships between constructs of interests, and seeks to shed light upon both the “*what*” – what will be likely to happen – as well as “*why*” and “*how*” – offering explanations of the process regarding why it happens – of the phenomenon. the focus of Chapter 3, therefore, is to provide detailed justifications in relation to the research methods adopted in this thesis.

3.2 Philosophical Approach and Methodological Position

In academic research, the process of conducting research is fundamentally guided by the researchers' philosophical views, which subsequently shapes the assumptions that underlie different research paradigms, and helps with the development of research questions, design, and

analysis (Creswell, 2009). The development of research perspectives is predominantly constructed on the basis of three key philosophical concepts, including ontology, epistemology, and methodology; each of which is comprised of various paradigms, and more importantly, these concepts tend to be interwoven with each other, and jointly influence the design and execution of research studies (Biedenbach & Müller, 2011). Furthermore, a researcher's epistemological understanding of knowledge is not only reflected in their decisions in research questions and methods, but interestingly, also in the interpretations of the findings (Feilzer, 2010).

In this Chapter, the researcher will provide a brief synthesis of these schools of thought, which then guides the distillation of the researcher's own position, and consequently, the formation of research methods of this thesis.

3.2.1 Ontology and Epistemology

As pivotal supporting pillars in social science research, careful considerations of ontology and epistemology are warranted. Ontology, for instance, is concerned with the nature of reality, being, and existence (Crotty, 1998). It speaks to researchers' beliefs and philosophical assumptions in research, such as what exists, what can be known thereof, and how it can be known. Noteworthy, epistemology – as frequently juxtaposed with ontology in scholarly discourse – is commonly referred as the theory of knowledge. Epistemology taps into a branch of beliefs in relation to *what knowledge is, how it is acquired, how we know what we claim to know*. In this sense, it pertains to the creation, acquisition, and communication of knowledge (Scotland, 2012). Together, a researcher's ontological and epistemological perspectives inform how one approaches research. For example, if a researcher is in favour of viewing reality as an objective entity, and the knowledge about the world can be obtained through empirical observation and measurement, such ontological and epistemological assumptions will prioritize the use of quantitative methods, such as experiments, surveys and statistical analysis. Before articulating the researcher's methodological stance in this thesis and the methodology employed thereof, we, next, offer a brief synopsis of primary research paradigms, along with their underlying ontological and epistemological underpinnings.

3.2.2 Research Paradigms

Given the existence of distinct philosophical assumptions and outlooks in research, there are several dominant research paradigms discerned, each of which entails particular ontological, epistemological, and methodological concerns as well as corresponding research methods (Carson, Gilmore, Perry, & Gronhaug, 2001; Crotty, 1998). Thus far, prevailing scholarship evinces five primary research paradigms, including positivism (along with post-positivism), interpretivism, constructivism, pragmatism, and critical theory (Biesta, 2010; Burrell & Morgan, 1979; Carson et al., 2001; Creswell, 2009; Tashakkori & Teddlie, 2010). These five research paradigms will be elaborated in the following sections, and summarised in *Table 3.1*.

Positivism and Post-Positivism

Positivism, first originated in inquiries in nature sciences, assumes that all phenomena – including social phenomena – can be objectively observed and measured. In light of the preceding discussion of ontological and epistemological perspectives, positivist researchers argue that there is a singular, objective reality; moreover, knowledge of the reality can be reliably obtained, typically through rigorous empirical observation and the utilisation of quantifiable research methods (Carson et al., 2001). Within the positivism paradigm, researchers tend to be more impartial and personal-value-free, and seek to distance themselves from the data to ensure that findings of the research are free from biases (Tashakkori, Teddlie, & Teddlie, 1998); they typically employ quantitative techniques and seek causal relationships between variables, thereby leading to rejection or acceptance of hypotheses (Collis & Hussey, 2013).

In this sense, not surprisingly, proponents of positivism strongly emphasize the importance of empirical robustness in research. Through rigorous design and implementation of quantitative methods – such as experimentation – and hypothesis testing, findings emerged from positivist research are prone to be more generalisable across other domains (Creswell, 2009; McGrath & Johnson, 2003). Moreover, owing to the objectivity in the phenomena under investigation, these resultant findings and conclusions are typically endowed with greater likelihood of replicability. This attribute, consequently, empowers researchers to assess the falsifiability of assertions from other scholars, both within the same realm and in alternative

realms. Taken together, positivism remains advantageous as it facilitates the interpretation of a given phenomenon in a more meaningful manner, and additionally, reliable predictions of the future based on statistical processing and analysis. Nevertheless, this research paradigm is not without criticism. Critics of positivism argue that, due to researchers' focus on identifying statistical significance and isolating the causal relationships between (often very few) variables, positivist research can underestimate the complexity in social phenomena, and potentially omit to account for other influences. To mitigate this limitation, a modified research paradigm, post-positivism, later emerged while maintaining the focus on hypotheses testing. Compared to positivism, post-positivist research recognizes that a singular, "correct" way to investigate a given phenomenon does not exist. Moreover, post-positivism acknowledges the existence of researchers' biases, personal values, and assumptions in research, and emphasises the significance of reflexivity (the process of reflecting on and being aware of one's own assumptions in research; Fox, 2008; Ryan, 2006; Tashakkori, Teddlie, & Teddlie, 1998).

Interpretivism and Constructivism

Interpretivism, often considered as the antithesis of positivism, disputes the concept that there exists a singular, objective reality. Instead, the fundamental premise in interpretivism posits that reality is inherently subjective, shaped by individual values and the surrounding environment (context-dependent). Advocates of this research paradigm argue that individuals construct their own realities, based on their unique experiences and interpretations of the world around them. Subsequently, the reality constructed by different individuals lead to a multitude of meanings and interpretations. Therefore, in studying a social phenomenon, such as human behaviour, a priority for interpretivist researchers ought to be to understand how individuals interpret their "reality" within a specific context in which the focal phenomenon occurs (Gephart, 1999).

In reference to the ontological and epistemological perspectives, interpretivism assumes that reality is constructed through shared social interpretations among individuals. Furthermore, the creation, acquisition, and communication of knowledge occurs by the examination of individuals' subjective experiences and interpretations/meanings that they attach to such

experiences, instead of focusing on the objective characteristics of the phenomena being studied (Cavana, Delahaye, & Sekaran, 2001).

Which brings us to constructivism. Although interpretivism and constructivism share considerable similarities, such as 1) ontological and epistemological assumptions, and 2) the prioritization of using qualitative methods in gathering subjective experiences of individuals, they represent different research paradigms. Take the basic premise in interpretivism as an example. While both research paradigms posit that the reality is constructed by individuals, constructivism takes this assertion further, and emphasizes that the construction of reality is an evolving process that occurs through active interactions between individuals and the surrounding environment. In other words, the reality is not only subjectively constructed with interpretations and meanings, but more importantly, these meanings also enable individuals to shape their behaviours and actions, thereby leading to a revised reality.

The subjectivity imbedded in interpretivism and constructivism is advantageous, especially in research domains such as anthropology, sociology, and cultural studies where diving into the nuances of individual behaviours is essential. By employing methods such as interviews and observations, researchers can obtain rich, in-depth understanding of the phenomenon of interests. Nevertheless, subjectivity – on the flip side of the coin, the lack of objectivity inherent in these research paradigms – also invites criticism. For one, as interpretivism and constructivism research emphasizes the subjective experiences and interpretations of the phenomenon under investigation, this very focus makes it challenging to shed light upon generalisable findings, and potentially diminishes the contributions of such findings. For another, researchers' background, beliefs, and values can – consciously and unconsciously – influence their interpretations of the research, thereby introducing potential biases, and jeopardising the veracity of the research (Creswell, 2009).

Pragmatism

Due to the ongoing debate surrounding positivism, interpretivism and constructivism, as well as strengths and weaknesses presented in silo, pragmatism was later introduced to address the limitations. Since the seminal work (Cherryholmes, 1992), pragmatism has become a major

paradigm, and is concerned with the practical applications of knowledge, and finding solutions to real-world problems (Creswell, 2009). In this sense, pragmatism seeks to bridge the gap between theory and practice by focusing on identifying meaningful contributions to the society.

One of the key tenets of pragmatism lies in the rejection of rigid ontological and epistemological assumptions, as well as the separation of qualitative and quantitative methods. Specifically, pragmatism acknowledges reality as a constantly evolving, dynamic, and complex entity, which entails greater flexibility in selecting appropriate research methods. Following this ontological stance, researchers emphasize that research paradigms should not necessarily prescribe particular methods, and vice versa. Rather, the choice of research method(s) ought to be based on the nature, purpose, and need of the research. As such, pragmatist researchers can employ both qualitative and quantitative methods in the same investigation, if deemed necessary (Brewer & Hunter, 1989; Datta, 1994).

Critical Theory

Finally, critical theory is a research paradigm that is originated in the realm of sociology, and predominantly aims to explore hierarchies in the society, such as power structure and social inequality. In a departure from alternative paradigms such as interpretivism and constructivism, critical theory refutes the ideology of value-neutral research. It is noteworthy to highlight that this paradigm argues that research inherently is of a political nature, and therefore, researchers should not be impartial. Instead, proponents of critical theory employ a normative approach in viewing research (Creswell, 2009) – what should be rather than what it is. For instance, research following this paradigm is often dedicated to understanding social, political and ideological factors contributing to social injustice and inequality. By challenging and critiquing existing structures, critical theory researchers aim to facilitate the liberation and transformation of unjust systems, processes, and phenomena (Ponterotto, 2005), and ultimately promote positive changes (Tolman & Brydon-Miller, 2001).

TABLE 3.1 SUMMARY OF RESEARCH PARADIGMS AND UNDERLYING ASSUMPTIONS

Philosophical Assumptions	Positivism & Post-positivism	Interpretivism	Constructivism	Pragmatism	Critical Theory
Ontology	A singular, objective reality	Subjective, multiple realities	Subjective, multiple realities	Explanations of the reality depends on what suits the results the best. Reality evolves, and is constantly interpreted in unpredictable situations	Socially constructed realities (shaped by power and structure disparity in the society)
Epistemology	Objective; Knowledge can be obtained through observation and measurement	Subjective; Knowledge is created through interactions and interpretations among individuals	Subjective; Knowledge is created through interactions (between individuals and the world), and interpretations among individuals	Both objective and subjective; Knowledge is not fixed or absolute truth, but a product of inquiry	Subjective; Knowledge is socially constructed and also influenced by power relations in the society
Types of reasoning	Deductive	Inductive	Inductive	Deductive, and/or inductive, and/or abductive	Deductive and inductive
The role of researcher	The researcher is independent from the research	The researcher is related to the research (interpreter, and sense-maker)	The researcher is related to the research (co-creator and co-creator of knowledge)	The role is contingent on the research methods chosen (activists that challenge the existing reality and raise awareness of issues)	The researcher is related to the research (problem-solver)
Values	Value-free	Value-laden	Value-laden	Value plays a role in the interpretation of results	Value-laden
Research methods	Quantitative	Qualitative	Qualitative	Quantitative and qualitative	Qualitative

Adapted from: Creswell, 2009; Rosenthal & Rosnow, 2008; Tashakkori & Teddlie, 2010.

3.2.3 Methodological Position of this Thesis

In light of the preceding discussions of dominant research paradigms, positivism and post-positivism are ubiquitously adopted paradigms within the marketing discipline for their emphasis on empirical rigor and objectivity.

In social science, especially in the field of marketing, it is crucial to shed light on the “causal laws” to elucidate consumer behaviours and diverse phenomena in the marketplace, and propose corresponding predictions in the future (Carey, 1995; Imai, Tingley, & Yamamoto, 2013; Malhotra, Hall, Shaw, & Oppenheim, 2006). The increasing demand for establishing causal relationships, therefore, offers sound rationale of employing positivism and post-positivism in approaching marketing phenomena. Given that the purpose of this thesis is to explain the effects of salient superstitious beliefs on consumer behaviour, and suggest new predictions drawing on existing theories and frameworks in the consumer behaviour literature, a post-positivism paradigm is therefore deemed to be more appropriate given the acknowledgment of an imperfectly captured reality (Guba & Lincoln, 2000).

As research paradigms steers the way a researcher approaches research, the next logical step is to choose appropriate research methodology and methods in addressing the research questions. Within the paradigm of post-positivism, the inherent emphasis on objectivity, which assumes that reality can be objectively measured and observed, aligns well with quantitative methodologies that involve research techniques that “seek to quantify data and typically, apply some form of statistical analysis” (Collis & Hussey, 2009; Malhotra et al., 2006, p. 175).

In quantitative empirical inquiries, research respondents serve as the primary source of data. To ensure the quality of data and subsequently, the veracity of findings, it is therefore imperative to understand the purpose of the focal research project, and strategically map out respondents’ roles and interactions in the research process based on these purposes (Malhotra et al., 2006). Contingent upon different investigatory focus, scholars contend that there are three mainstream quantitative approaches in such investigations, namely *descriptive research*, *relational research*, and *causal/experimental research* (Malhotra et al., 2006; Zikmund, Ward,

Lowe, Winzar, & Babin, 2011; Rosenthal & Rosnow, 2008). Specifically, the primary focus in descriptive research is typically to describe a phenomenon – what is happening, the situation, the characteristics of the population, etc (Zikmund et al., 2011). Accordingly, it often entails methods such as surveys, observations, and statistical analysis based on existing data (Sarantakos, 2017). This type of focus is often considered *necessary* as the preliminary steps in research and findings from descriptive research often serve as the cornerstone of future inquiries. However, it is rarely deemed as sufficient: to grasp a thorough, comprehensive understanding of any given phenomenon, it is more critical to disentangle how and why a phenomenon occurs, instead of merely knowing what happens. Although descriptive research might offer observational speculations regarding the causal relationships, it requires relational and causal/experimental research to empirically examine plausible explanations, and answer the “how” and “why” questions.

To mitigate the aforementioned limitations of descriptive research, relational research was then introduced as an alternative approach to explore how the phenomenon under investigation changes with variations with respect to other observations. For example, a researcher might have certain working theories, hypotheses, and/or impressions regarding the relationship between a phenomenon and other factors. Consequently, to examine these working theories, relational researchers will empirically test a set of “coordinated observations” on the population of interests (Rosenthal & Rosnow, 2008, p. 10). Through methods such as surveys, researchers can form statements that of quantitative nature in relation to the relationship between the phenomenon and other tested factors, in terms of 1) its existence (whether other tested factors [X] and the phenomenon [Y] is related), 2) the form of the relationship (e.g., positive, negative, and linearity), and 3) the strength of the relationship (i.e., the effect size). Nevertheless, one pitfall of relational research lies in its inability of inferring direction of the influence (Ambler & Styles, 2000). To delineate this further by adopting the example above, assume that X and Y is indeed significantly related. Upon establishing this relationship, it is yet still unclear that whether the occurrence of X leads to variation in Y, or alternatively, changes in Y cause the occurrence of X. Put differently, X can either be the *result* of Y or the *determinant/antecedent* thereof.

Which redirects scholarly attention to causal/experimental research. Causal research is designed to identify “cause-and-effect relationships among variables” (Zikmund et al., 2011, p. 25). By manipulating the conditions that the researcher hypothesise to be responsible for the observed effect, this research method allows researchers to identify the *cause* of a phenomenon, and thus, reveal the underlying mechanisms of how and why it occurs (e.g., what leads to Y). Notably, this research approach differs substantially from relational research (claiming “X is related to Y”), as it specifically aims to establish the causal link between variables of interests (claiming “X causes Y”).

Recall that the objective of this thesis is to understand how the activation of salient superstitious beliefs might affect consumer behaviours, specifically, in the domain of sustainability and impulsivity, a quantitative, experimental approach is thus deemed more appropriate for this research. Congenial to a post-positivism paradigm, experimental design “manipulates and controls one or more independent variables and observes the dependent variables” (Churchill & Iacobucci, 2006, p. 128; Malhotra et al., 2006), thereby shedding light on the observed phenomenon. In addition, by controlling for other factors that might be influential, this design acknowledges the “limited” objectivity of reality/phenomenon that can be captured in research, and attempts to address this by incorporating and excluding covariates. By empirically examining the causal relationship between the independent variable (through manipulation) and the outcome/dependent variables (through measurement), the findings afforded by experimental research design offer more robust support towards the phenomenon under investigation – *what causes what*, and *what the underlying mechanisms are* (Churchill & Iacobucci, 2006). In the following section, appropriateness of the design will be elaborated in greater detail.

3.3 Research Design and Justification

In behavioural research inquiries, the research design functions as a veritable blueprint that guides researchers to formulate a plan for collecting and analysing data. Therefore, it is important to probe the basics in research designs, including the structure and logic thereof. The experimental design, in particular, is associated with a heightened level of control over

participants and condition(s) via direct manipulation and experimental treatment (Hair, Black, Babin, & Anderson, 2010; Spector, 1993). As a result of such controlled manipulations, researchers are able to tease out extraneous influences that could potentially confound the veracity of findings, and in turn, methodically observe and interpret the causal relationships among variables (Spector, 1993; Tharenou, Donohue, & Cooper, 2007; Vogt, 2011).

Within the sphere of experimental design, researchers contend that, depending on the allocation of treatment among the sampling units (e.g., the research participants), there exist two types, namely the true experimental design, and the quasi-experimental design (Shadish, Cook, & Campbell, 2002). A primary characteristic differentiating the former from the latter is the extent to which the researcher achieves the *randomization*. Specifically, in a true experimental design, the researcher ought to randomly assign the experimental treatment to the sampling units, whereas the research design failing to do so will be categorised as a quasi-experimental design.

The purpose of randomization, and at the same time, its advantages, is to eliminate unsuspected sources of biases during the data collection process. As conceived in the post-positivist research paradigm, it recognises the existence of researchers' biases and assumptions in research, and highlights the importance of reflexivity – reflecting on these assumptions. For instance, a researcher might consciously or subconsciously influence which sampling unit receives certain treatment, based on their own opinions (Gigerenzer, Swijtink, Porter, Daston, Beatty, and Krüger, 1989). By introducing unbiased procedures such as tossing a coin, randomisation therefore operates as a safeguard measure to optimize the possibility that each participant will have an equal chance of being allocated to a given treatment, and that biases (e.g., characteristics among participants, researchers' values) will be minimised.

Given the aforementioned considerations, a true experimental design (vs. a quasi-experimental design) eliminates the potential contamination due to alternative influences of the causal relationship (e.g., confounding factors), and thus, offers greater validity of findings, this thesis employs the former research design (Shadish, Cook, & Campbell, 2002). Participants in all experimental studies will be randomly assigned to different conditions, including the treatment conditions and control conditions. In what follows, the researcher offers a detailed plan in the operationalisation of constructs, the development of experimental stimuli, and data collection.

3.3.1 The Use of Self-Report and Behavioural Measures

In line with a post-positivism perspective, it is critical for researchers to obtain a reliable understanding of individuals' affective, cognitive and behavioural attributes, such as their attitudes, beliefs, personality traits, emotions, and behavioural tendencies, in order to gain a comprehensive knowledge of the phenomenon being studied (De Houwer, Teige-Mocigemba, Spruyt, & Moors, 2009). In marketing, the utilisation of self-report measures has been the most commonly adopted and conventional approach in assessing participants' psychological states and processes (Dempsey & Mitchell, 2010; Ewing, Allen, & Kardes, 2008; Gawronski & Bodenhausen, 2006).

As a widely used tool in psychology and behavioural research, self-report measures typically involve the direct solicitation of participants' responses in relation to their psychological attributes (e.g., asking participants to report their feelings). In this sense, this approach is highly cost-effective, easy, and convenient for researchers to administer. Moreover, as these measures are typically administered through previously developed, validated and highly standardised questionnaires, it is associated with other benefits. On the one hand, participants are more likely to comprehend the questions, and provide meaningful responses accordingly. On the other hand, the standardisation of the measures also empowers researchers to improve the reliability of the data, thereby facilitating a more accurate and robust conclusions.

However, self-report measures are also subject to several limitations and drawbacks, such as the social desirability bias (Chung & Monroe, 2003; Fisher, 1993; Fisher & Katz, 2000; Nederhof, 1985), response scale bias (Bolt, Lu, & Kim, 2014; Herriges & Shogren, 1996; Hopkins & King, 2010), and the lack of access to unconscious processes (Greenwald & Banaji, 2017; Gawronski, Hofmann, & Wilbur, 2006; Jacoby, Lindsay, & Toth, 1992). For example, participants might be motivated to portray themselves in a more favourable and socially desirable manner, leading to more positive responses than they actually are (e.g., the social desirability bias; Fazio & Olson, 2003; Gawronski & De Houwer, 2014). As another illustration, participants might have the tendency to respond in a particular way regardless of the content, such as avoiding extreme options. These biases inherent in self-report measures, therefore, might result in errors in

measuring the phenomenon, and distort the findings. To address these limitations, alternative methods have gradually gained scholarly attention, including implicit measures (e.g., reaction time; Calvert, Fulcher, Fulcher, Foster, & Rose, 2014), physiological measures (Podlesny & Raskin, 1977; Stewart, 1984), and behavioural tasks/responses (Morales, Amir, & Lee, 2017; Yan & Sengupta, 2021). These alternative measures complement the use of self-reporting and are less susceptible to participants' biases in their responses (De Houwer et al., 2009; Gawronski & De Houwer, 2014).

Among recent investigations in marketing, the use of behavioural responses has become increasingly ubiquitous (Nikolova & Nenkov, 2022; Xu, Bolton, & Winterich, 2021; Yan & Sengupta, 2021). With the rising concerns regarding the disconnection between participants' self-reported responses (in the research context) and their behaviours in naturalistic settings, the academic community has called for the development and introduction of alternative measures to better translate research findings to feasible solutions to real-world problems. Responding to the shifting emphasis of research, behavioural measures have emerged as a strong candidate of capturing participants' natural (re)actions in response to experimental treatments, thereby substantially mitigating the influences of biases stemming from social desirability concerns and responses. Furthermore, explicit self-report measures are typically reliant on participants' conscious awareness of their psychological processes, memory, and deliberate thinking, which poses limitations on researchers' ability to assess more automatic and unconscious processes. By observing and measuring real behaviours, researchers can gain deeper, richer insights into participants' automatic responses. Taken together, behavioural measures afford findings with greater ecological validity, by reducing the susceptibility to biases, increasing objectivity, and facilitating more robust assessment of automatic processes.

To examine the effects of salient superstitious beliefs on consumer behaviour, this thesis employs both explicit, self-report measures, and participants' behavioural responses as a supplementary measure. While self-reported responses from participants allow the researcher to obtain reliable data in a cost-effective and convenient manner, the addition of behavioural measures further enrich the robustness of findings.

3.3.2 The Sampling Strategy, Data Collection, and Participant Selection

3.3.2.1 *Sampling Strategy*

As succinctly captured in Rosenthal and Rosnow (2008) the essence of inductive inferences, highlighting that such inferences are necessarily made based on samples (p. 206). In other words, researchers make generalisations about the entire population based on their observations of a subset of individuals, often a small proportion of the overall population. Therefore, the establishment of appropriate sampling methods and plans according to the objectives, questions, and design of the focal research is imperative. This is because the quality of sampling – choosing a representative subset of individuals from the overall population – has a profound impact on the accuracy and generalisability of the results. Indeed, poorly selected sampling methods can potentially compromise the veracity of the findings, thereby undermining the contributions of the research (Taherdoost, 2016). For instance, if the researcher selects biased sampling units that fail to represent the population under investigation, it might result in erroneous and misleading conclusions regarding the phenomenon being studied.

In approaching sampling, there are two primary categories of methods used in research, depending on the extent to which randomness is achieved in the selection process (Rosenthal & Rosnow, 2008). On the one hand, probability sampling refers to the selection of participants in such a way that every member of the population has an equal chance of being selected for the sample (e.g., through throwing a dice, and spinning a roulette wheel). By using methods such as simple random sampling, systematic sampling, and/or stratified/cluster sampling, probability sampling plans enable researchers to alleviate biases and ensure that the sample is representative of the overall population (Singh & Masuku, 2014). On the other hand, non-probability sampling plans are frequently employed in research, despite of its limitations (Vehovar, Toepoel, & Steinmetz, 2016). In contrast to probability sampling, non-probability sampling plans are, in essence, methods that allow for minimal randomness to be introduced in the selection processes, in which laws of mathematical probability do not necessarily apply. Among which, the most commonly adopted sampling methods include convenience sampling, purposive sampling, snowball sampling and quota sampling (Rosenthal & Rosnow, 2008). Take snowball sampling as

an example, researchers using this method often initiate their participant selection by approaching a limited pool of individuals, with additional participants recruited through referrals from the initial subject pool (Zikmund, D'Alessandro, Winzar, Lowe & Babin, 2014). Compared to in probability sampling, non-probability sampling methods mainly recruit participants based on their accessibility and availability, which offers benefits such as reduced time and costs (Buelens, Burger, & van den Brakel, 2018). Furthermore, it may not always be feasible to work within the confines of probability sampling, and non-probability methods are therefore deemed to be more appropriate in some circumstances. Moreover, in behavioural inquiries, the focus of researchers typically is on understanding individuals' experiences, or studying the causal relationships between variables, instead of making statistical inferences and/or estimating population values (e.g., in public opinion polling). In this regard, the necessity of opting for sampling units who constitutes a randomly selected sample of the population is often considered less critical.

In fields such as personality, social psychological and marketing, a considerable number of experimental researchers contend that "people are people" in that the primary objective is to optimize the internal validity of the findings, and establish the "cause-and-effect" relationships between the independent variable and dependent variables (Rosenthal & Rosnow, 2008, p. 219). In principle, in so far that researcher adopt appropriate measures, such as random assignment of participants and careful considerations of confounding factors, the use of non-probability sampling, typically through convenience sampling, is unlikely to affect the validity of the findings. Furthermore, the external validity and generalisability of the findings (about the population) can be achieved by incorporating diverse subject pools, distinct recruitment channels and platforms across studies (Litman & Robinson, 2020). Taken together, although probability sampling plans remain advantageous in establishing generalisable findings, researchers often resort to non-probability sampling plans owing to considerations of feasibility and necessity. However, researchers ought to be mindful that the generalisability of the findings might be limited when using convenience sampling method, and consider strategies to improve the generalisability accordingly before selecting this method in experimental research.

3.3.2.2 Data Collection

Within the marketing discipline, a point of contention has been the increasing use of convenience sampling strategies, specifically through online crowdsourcing panels. These panels, such as Amazon's Mechanical Turk (i.e., Amazon MTurk; Litman, & Robinson, 2020; Paolacci, Chandler, & Ipeirotis, 2010), Prolific (Litman, Moss, Rosenzweig, & Robinson, 2021; Palan & Schitter, 2018; Peer, Brandimarte, Samat, & Acquisti, 2017), and Cloud Research (i.e., Turk Prime; Chandler et al., 2019; Litman, Robinson, & Abberbock, 2017), are micro-task platforms that connect potential participants (i.e., workers) with tasks requiring human intelligence (launched by researchers).

Similar to using conventional convenience sampling methods, researchers should approach and recruit participants. However, the key factor differentiating the use of online panels from traditional approaches is that, instead of employing flyers and social media advertisements, participant recruitment occurs via online panels empowers researchers to 1) gain access to a larger and more diverse participant pool, both geographically and culturally, 2) recruit participants in a more timely and cost-effective manner, and 3) facilitate greater anonymity among participants (Chandler et al., 2019).

With the increasing ubiquitousness of online crowdsourcing panels, a myriad of research has been conducted to verify the quality of data collected (Chmielewski & Kucker, 2020; Kees, Berry, Burton, & Sheehan, 2017; Kennedy et al., 2020; Litman, Rosenzweig, & Moss, 2020; Matherly, 2019). Specifically, critics often argue that, compared to participants recruited through traditional approaches, those recruited through online panels are more likely to be “*professional*” subjects who are more experienced in completing academic surveys. Consequently, these participants might be more susceptible to experimenters' demand effect (Chandler et al., 2015), more savvy about the true purpose of the research, and less likely to pay attention to the experimental instructions. In addition, participants recruited via online panels tend to be significantly younger, more educated and more technologically savvy compared to the overall population, which might potentially lead to erroneous, or at least biased results of research (Casey, Chandler, Levine, Proctor, & Strolovitch, 2017; Huff & Tingley, 2015; Levay, Freese, & Druckman, 2016). Nevertheless, recent scholarly advancement asserts, reassuringly, that while

limitations exist, online crowdsourcing panels are still a reliable alternative, and provide high quality of the data similar to those obtained through traditional approaches (Buhrmester, Kwang, & Gosling, 2011; Farrell, Grenier, & Leiby, 2017; Goodman, Cryder, & Cheema, 2013; Horton, Rand, & Zeckhauser, 2011; Litman, Robinson, & Rosenzweig, 2015; Paolacci & Chandler, 2014; Shapiro, Chandler, & Mueller, 2013). More importantly, in responding to criticisms of overusing a particular online panel (i.e., Amazon's Mechanical Turk [Amazon MTurk]), a new alternative has been later introduced, i.e., Cloud Research. Compared to the former, the latter, fortunately, incorporates additional screening measures to improve the quality of the data, such as identifying inattentive and fraudulent participants, blocking workers with suspicious geographical locations and IP addresses (Chandler, Rosenzweig, Moss, Robinson, & Litman, 2019; Chandler, Paolacci, & Hauser, 2020; Litman, Rosenzweig, & Moss, 2020). Consequently, by incorporating these measures, the findings offer researchers with greater confidence in terms of the veracity and validity.

In this thesis, participants will be recruited through a convenient sampling method via the aforementioned reputable online crowdsourcing panel (i.e., Cloud Research). Using this approach, the priority of researchers is to identify the target population of interest and determine the sampling criteria, such as age, gender, geographic locations, etc. Upon finalising the sampling units, researchers then initiate the recruitment process, which may entail the distribution of invitations, advertisements, and/or direct engagement with potential respondents. Notably, a critical step prior to the commencement of data collection is to obtain informed consent to participate in the study, such as articulating purposes of the research, offering a brief overview of procedures, communicating risks and benefits of their participation, and incentives and compensations associated thereof (Rosenthal & Rosnow, 2008; Varnhagen et al., 2005). With gained consent from selected participants, researchers then proceed to administer the surveys and/or experiments, depending on the selected research methods.

3.3.2.3 Participant Selection

In light of the preceding discussion in that this thesis employs a convenience sampling method, identifying groups and individuals as the sampling units is of critical importance as the

subsequent step. The selection of participants necessitates the researcher's careful considerations of several vital aspects, such as determining clear inclusion and exclusion criteria before commencing data collection, ascertaining an adequate sample size, ensuring the representativeness of the sampling units, mapping out the recruitment process, and finally, understanding participants' motivation for participating in the study (Saunders, 2012). As the findings and conclusion of research are drawn on the observation of a phenomenon based on a selected subset of the population, the surgical planning and transparent communication of these considerations play an essential role in promoting the reliability of research findings.

First of all, the establishment of participant selection criteria involve defining the characteristics of participants who are eligible, or ineligible to participate in a study. These criteria can be either more generic *demographic* characteristics such as age, gender, geographic locations, and ethnicity. Alternatively, according to the scope of research, the theoretical conceptualization, and empirical considerations, the researchers can incorporate more specific criteria. For example, given the declining participants' attention to research instructions, along with the proliferation of various online panels, an increasing number of researchers have realised the significance of utilising *attention checks* as an exclusion criterion. Specifically, in administering the research, researchers can include infrequency items (such as "*I eat cement occasionally*") or asking participants questions with obvious answers (such as "*what colour is grass [the fresh, uncut grass, not leaves or hay]*" with options of *green* and *purple*) (Huang, Bowling, & Liu, 2015). Alternatively, researchers can instruct participants in an explicit manner by requiring them to choose specific responses (e.g., "to monitor quality, please respond with 'neutral' for this item;" Meade & Craig, 2012). By introducing attention checks, researchers then are able to detect participants who fail to pay attention to the study, and subsequently, use such data to screen out and remove these noncompliant participants (Barends & De Vries, 2019).

In this thesis, in order to promote greater robustness in both the empirical examination and analysis, the researcher develops and establishes a list of clear selection criteria, including 1) effectively passing the attention check question administered in the study, 2) being native English speakers to appropriately comprehend the experimental instructions, 3) ensuring that all responses are non-aberrant, 4) being human respondents rather than bot participants, 5) a reasonable

completion duration of their participation (falling within the range of ± 3 standard deviations [SDs] from the average time spent on the experiment), and 6) being geographically located in the United States and older than 18 years old. Notably, these criteria have been employed in prior empirical inquiries, which ensures the validity of these measures (Barends & De Vries, 2019; Dewitt et al., 2019). Through the introduction of the aforementioned selection criteria, it facilitates a more rigorous examination of the research questions, leading to more reliable and valid findings.

3.4 Ethical Considerations

In addition to upholding the integrity afforded by the aforementioned procedures, the researcher has paid conscious attention to the ethical considerations throughout the research process. Ethical deliberations and corresponding measures are surgically embedded in every phase and aspects of this thesis. Indeed, transparent communication of research methodology and its design, including the selection of representative samples, reliable measurement of key constructs and well-thought-out research procedures, are essential in fortifying the credibility and validity of research (Marsden, 2019), so are the compliance with ethical principles and protocols.

Ethical considerations typically involve a set of principles, guidelines and measures that aims to ensure that the research is conducted in a morally and ethically sound manner, with due regards given to the welfare of the research participants, and other stakeholders involved in the process. These considerations encompass a variety of matters, such as obtaining informed consent, protecting privacy and the confidentiality of participant information, articulating the risk-benefit ratio of the study, selecting and recruiting participants free from biases and discriminations, and clarifying the use of vulnerable participants, if any (e.g., children; Bell, Bryman, & Harley, 2022; Fassin, 2000; Hill, 2005). By adhering to these principles, it helps protect participants and other stakeholders by preventing adverse consequences that may arise from their participation in the research. Before commencing an investigation, researchers ought to seek approval from regulatory institutions, such as Institutional Review Boards (IRBs) or Ethics Committees. The approval requires that participants will be fully aware of the purpose of

the study, that there will be minimal to none risks and harm involved, and that their information will be utilised in a responsible manner.

Given that experimental research involves intentional and deliberate manipulations of participants' psychological, affective, or behavioural status to observe/measure their impact on participants, these interventions are more likely to have implications on participants' welfare (Iphofen, 2009). Consequently, it is particularly imperative for the researcher to adhere to these ethical principles in experimental research. The ethical approval of this thesis has been obtained, and a copy of the approval letter from the University Ethics committee is provided in Appendix A in this thesis.

Specifically, in the empirical examination, the researcher strictly follows several established ethics protocols. First of all, before the data collection commences, each participant will be given an information sheet (please refer to Appendix B) and a consent form (Appendix C), explaining the nature and purpose of the study, how they are selected, as well as risks and benefits they might be exposed to. More importantly, the participants are informed that their participation in the study is completely voluntary, such that they are able to withdraw from the study at any time during the data collection process. Furthermore, in social sciences, particularly in the fields of psychology and marketing, experimental studies frequently employ the use of cover stories, which involves the deliberate fabrication of a fictitious narrative to disguise the true purpose of the research. By introducing this application, it allows researchers to prevent participants from suspecting researchers' intentions, and modifying their responses accordingly. Nevertheless, it is vital to acknowledge the ethical implications of such deceptive practices and take initiatives to mitigate them. To this end, upon the completion of the study, participants are to be debriefed to ensure that they are fully apprised of the study's true purpose.

3.5 Conclusion of Chapter 3

In summary, Chapter 3 offers an overview of the research methodology in the thesis, and synthesizes critical aspects of the considerations, rationales, and justifications in determining this methodology. This Chapter begins by articulating the philosophical approach and methodological

position employed in research. By detailing the ontological (philosophical assumptions regarding the reality) and epistemological (philosophical assumptions regarding the knowledge and the acquisition thereof) stances of this research, it informs the researcher to develop an appropriate paradigm in the focal research, and subsequently, determine the methodological position accordingly.

Given the purpose of this thesis is to understand the “*cause-and-effect*” relationship between salient superstitious beliefs and consumer behaviours in the realm of sustainability and impulsivity, this investigation therefore approaches the reality as an objective, observable, and measurable entity, of which the knowledge can be (*imperfectly*) obtained through rigorous empirical examination and hypothesis testing. Consequently, these philosophical stances inspire the researcher to deploy a post-positivism paradigm. In particular, this study employs a quantitative approach, specifically causal/experimental research methodology.

Additionally, this Chapter also offers a detailed elaboration of the research design and its corresponding justifications thereof. In particular, Chapter 3 delineates a blueprint that specifies how key constructs (i.e., the dependent variables) will be measured (using both explicit and behavioural measures), the execution of data collection, as well as how participants are to be selected in the study. Specifically, this Chapter expounds on the rationale of employing convenience sampling and the selection criteria. Furthermore, ethical considerations of the focal investigation have been explicated, detailing adherence to research ethics protocols, and the acquisition of ethics approval from the researcher’s institution.

In what follows, the ensuing Chapters, namely Chapters 4 and 5, present the first empirical investigation aiming at addressing RQ2 and RQ3 – does the activation of salient superstitious beliefs influence consumer sustainability? If so, what are the underlying mechanisms?

Chapter 4: Prelude to Manuscript 1

“The true delight is in the finding out rather than in the knowing.”

---- Isaac Asimo

The following chapter (Chapter 5) addresses the first set of research questions pertaining to consumer sustainability. It has been submitted to the *Journal of Consumer Research* and is currently under review for the considerations of publication. The research, as presented in Chapter 5, serves as the first step in exploring the impact of activating salient superstitious beliefs on consumers' normative behaviours. Specifically, this research investigates how thinking about superstitious beliefs might encourage consumers to patronize sustainable products and services, and accordingly, the psychological processes that account for the effect.

In this sense, the research in Chapter 5 addresses to answer research questions in Part II, namely *RQ2* and *RQ3* (Section 1.2; Chapter 1). Methodologically speaking, the studies in this research are conducted using an experimental approach, thereby enabling the establishment of the causal relationship between variables of interest. Additionally, the researcher incorporates a single-paper meta-analysis (SPM) to further cement the robustness of the findings achieved in the experimental studies. The findings revealed that salient superstitious beliefs indeed lead to significantly greater preference for sustainable products. Furthermore, the mediation analysis evinced that this occurred because when superstitious beliefs was made more salient, consumers were more inclined to experience an elevated karmic reward seeking tendency, encouraging them to engage in sustainable behaviours.

Chapter 5: The Superstitious Road Not Taken: How Superstitious Belief Shapes Consumer Sustainability (Manuscript 1)

"The goal of social science research is to illuminate the human experience, to understand the social world in which we live, and to use that understanding to improve our lives and our communities."

---- American Sociological Association (ASA)

5.1 Consumer Relevance and Contribution Statement

Even though a myriad of research has examined factors influencing sustainability behaviours, consumers often fail to behave sustainably. This research investigates whether salient superstitious beliefs impact consumers' sustainability consumption preference, by activating their tendency of seeking karmic rewards. Given the annual economic impact of \$35.59 billion dollar, let alone its societal and consumer well-being implications, this research is of great theoretical and managerial significance. Examining extant literature, much is known about how a rational approach influence sustainability consumption, such as emphasizing one's sustainability identity, offering incentives, and habit formation. Nevertheless, one is unlikely to engage in sustainable behaviours if they fail to realize the consequence of not doing so. Establishing the karmic causality may help promote more sustainable consumption, and little is known about this. Across three pre-registered experiments and a single-paper meta-analysis, the findings yield support for the hypothesis. First, Study 1 establishes the phenomenon: consumers with salient superstitious beliefs tend to prefer sustainable consumption. Second, Studies 2 (through measurement) and 3 (through manipulation) demonstrate karmic reward seeking as the underlying mechanism: the karmic causality as induced by superstitious beliefs motivate consumers to link their actions to future consequences, thereby encouraging them to invest in sustainability consumption in exchange for good karma. In contrast, when such good karma is present – for example by recalling past good deeds – the tendency of karmic reward seeking is attenuated. Finally, a single-paper meta-analysis (SPM) further cements the veracity of the findings. This research reveals that how irrational factors, such as thinking about superstitious beliefs – can help consumers to engage in sustainable consumption, and to the best of our knowledge, is the first to empirically test the role of karmic reward seeking in influencing sustainability consumption.

5.2 Abstract

Have you ever said “bless you” when someone around you sneezes – just in case the devil might steal their soul? Have you ever shied away from flying on a Friday, the 13th, or ever knocked on a piece of wood just to ward off bad luck? Although superstition is ubiquitous in our lives, the investigation in the marketing literature remains a largely nascent scholarly realm. In a departure from predominant work highlighting the luck benefit of superstition, three experimental studies show that consumers with salient superstitious beliefs are more likely to engage in sustainability consumption (Study 1). Through both measurement (Study 2) and a theory-driven experiment (Study 3), this research identifies karmic reward seeking tendency as the underlying mechanism: when exposed to salient superstitious beliefs, people feel motivated to engage in current good deeds – via sustainability consumption – as an investment in exchange for future karmic rewards. This research sheds light upon the downstream consequences of superstitious beliefs in promoting the greater good in consumer behaviour, aligning with transformative consumer research. Practically, these results identify a powerful, yet underutilized strategy in promoting consumer sustainability – emphasizing superstitious beliefs – with compelling implications for consumers, marketers, and policy makers.

Keywords: *Superstition, Superstitious beliefs, Sustainability, Sustainable consumption, Choice, Karmic reward seeking tendency.*

5.3 Introduction

Let us not be weary in well doing: for in due season we shall reap, if we faint not.

--- Galatians 6:9-10

The biblical quote above not only reflects an esoteric philosophical lesson in life, but – more importantly – explains the superstitious doctrine by highlighting its karmic implications in people’s day-to-day lives. Consider two campaigns aiming at helping consumers to be more sustainable. The first highlight the superstitious beliefs, emphasizing negative consequences of choosing non-sustainable products, for example, by adopting expressions such as “you reap what you sow”. The second campaign portrays a rational picture, communicating the pros and cons of using sustainable products. Which campaign will be more successful in eliciting consumers to purchase biodegradable dishwasher detergent?

This is \$35.59 billion dollar question – the estimated expenditure allocated to protect the environment in 2022 (USA Spending, 2022). However, this is a battle where consumers are losing, despite their favourable attitudes towards sustainability (Auger & Devinney, 2007; Giebelhausen et al., 2016). Indeed, in the U.S., approximately 30 – 40% of food is wasted (U.S. Environmental Protection Agency [EPA], 2022). In 2020 alone, the U.S. has spent more than US \$1 trillion on energy (U.S. EIA, 2022), with 275.9 million vehicles on the road (U.S. Department of Transportation, 2022), and only half of Americans are currently enrolled in curb-side recycling programs (The Recycling Partnership, 2020). To translate the environmental impact, if everyone maintains a similar consumption pattern to average Americans, it requires over 5 Earths to support human activities (Centre for Sustainable Systems, 2021).

To combat this battle, companies have turned to karma. For example, a challenger brand of Coca Cola names the brand as *Karma drinks*, aiming at promoting both social and environmental value (Carroll, 2022). Congenially, a start-up company, *Karma*, connects consumers with restaurants and grocery stores alike offering surplus food at half price or less – offering a solution curbing food waste issue (Coleman, 2018). While many agencies, interest groups, and organizational initiatives have examined potential karma-based strategies to promote

consumer sustainability, academic inquiry has been limited in understanding the psychological mechanisms contributing to such behaviours.

To close this lacuna, this research proposes leveraging irrational factors as a solution, and thus research ought to examine such factors and how the underlying mechanisms impact the way consumers respond to different sustainability campaigns. Prior work supports this contention. For instance, in a different line of inquiry, Converse et al. (2012) found that when facing uncertainty, job seekers were more generous pledges to charities. They further speculated karmic investment as the underlying mechanism, however, failed to empirically validate this assertion. Therefore, to better understand how irrational factors affect the occurrence of sustainability consumption, one area of particular importance lies in examining the impact of superstitious beliefs – such as “what goes around comes around.”

In this research, we suggest that, when superstitious beliefs are made more salient, consumers tend to behave more sustainably. Drawing from prior work on superstition and karma, we hypothesize and empirically show that superstitious people are more prone to engage in sustainability consumption in the pursuit of future karmic reward. Together, this research contributes to consumer sustainability and superstition literature by offering thought-provoking insights – how superstitious beliefs as an irrational force affect if, when, and why consumers patronize more sustainable products.

As a preview of what is to come, the remainder of this paper proceeds as follows. We first begin by reviewing relevant literature, including superstition and superstitious beliefs, sustainability consumption and its moral foundation. Next, we develop and lay out a model drawing upon theories in relation to karmic reward seeking, followed by three experimental studies (all pre-registered, pre-registration links presented in the according studies) featuring different product categories, capturing consumer sustainability through both choice and preference revelation, and a consistent covariate across all studies⁹. Finally, we conclude by

⁹ The results were consistent with and without incorporating the covariate (i.e., environmental consciousness). In all studies, the results were reported with and without including the covariate in the analysis.

offering scholars, marketers, consumers, and policy makers toolkits to apply these insights broadly, and acknowledging limitations and future research agenda.

5.4 Conceptual Background

5.4.1 Superstitious Beliefs and Karma

Human beings exhibit a host of irrationalities, one of which is the ubiquitousness of superstitious beliefs. *Superstitious beliefs* are erroneous causal associations that spuriously link *proximate causes* with *effects*. Known as “thoughts under threat,” prior work has demonstrated that such paranormal beliefs are more likely to influence behaviours when people experience high levels of uncertainty (Kramer & Block, 2008), and have a strong desire for control over the external environment or the outcome of their actions (e.g., when discussing their health; Keinan, 2002).

Jaw-dropping anecdotes abound. Not surprisingly, people resort to superstitious beliefs in a myriad of domains, such as gambling, sports, and education (Risen & Gilovich, 2008; Rudski & Edwards, 2007). Many athletes and students often practice culturally-known superstitions or develop their own ones, given the embedded uncertainty and the desire to control the outcome in their performance tasks – important exams and games to name a few (Kramer & Block, 2014; Womack, 1992). Even in political realms, superstitions still work the magic. For example, Black Obama, the formal president of the United States, has established the ritual of hosting basketball games on the election days, especially after losing to Hillary Clinton for skipping a game (Helin, 2012; Hamerman & Morewedge, 2015).

Although superstitious beliefs are nothing but an inconsequential collection of irrational thoughts, it remains plausible that the investment in superstitions might as well be beneficial for individuals and other parties concerned. As a matter of fact, researchers have long speculated the benefits of superstitions. In particular, the mere exposure to lucky items results in greater confidence in achieving better performance (Hamerman & Morewedge, 2015; Kramer & Block, 2014) and improved performance (Damisch et al., 2010; Kang et al., 2018). For marketers alike, imbuing superstitions into marketing strategies has been demonstrated to exert more favourable

consumer responses (e.g., purchase likelihood [Study 1] and willingness to pay [Follow-up Study]; Block & Kramer, 2009). Moreover, engaging in superstitious beliefs regulates people's psychological tension and anxiety by offering an illusion of control over the otherwise tumultuous environment (Keinan, 2002; Schippers & Van Lange, 2006).

Although the gist of superstitious beliefs will likely resonate with many people, research in this field has been unfortunately limited, with the majority predominantly focus on its implications in the marketplace (Block & Kramer, 2009; Kramer & Block, 2008; Hamerman & Johar, 2013). Do superstitious beliefs matter in other spheres of life? Does simply thinking about superstitions very peoples' normative behaviours? This research examines this possibility with an affirmative answer. One common theme surfacing from the extant literature is that, when people engage in superstitious behaviours, they often do so for a strategic consideration. For instance, if behaving in accordance with superstitious beliefs entails an attempt to (re)gain control over the environment, such commitment ought to manufacture an illusion of control. In a similar vein, when exposed to luck-related cues and/or objects, these superstitions bolster people's self-efficacy and confidence, serving as a strategic leverage that consumers adopt, and eventually, lead to greater performance (Block & Kramer, 2009).

In support of this notion, this research proposes that in forming normative behaviours, the salience of superstitious beliefs also plays a central role in highlighting the strategic component. Interestingly, in marked contrast to prior research emphasizing a focus on self-efficacy, this research focuses on the fundamental premise of superstitious beliefs: the establishment of erroneous causal relationships.

It will be a remiss of us not to introduce *karma*, a construct closely pertaining to superstitious beliefs. Often known as the "moral law of causation," karma refers to an impersonal supernatural force or if-then law that weaves causal connections between individuals' actions and their experiences (or perceived experiences; Bronkhorst, 2011; Daniel, 1983; Wadley, 1983; White, Willard, Baimel, & Norenzayan, 2021). Believers of karma tend to subscribe to a moralization belief, in which good people experience fortunate outcomes, whereas bad people inevitably suffer from misfortunes. It is imperative to notice that karma in itself does not enforce

rewards or punishments. Rather, it merely connects ones' own actions with their consequences, either in this life or the ones to come.

One way of viewing karma is as an extension of superstitions. Specifically, both karma and superstitious beliefs share conceptual similarity, in that they both involve causal attributions between unrelated events (Aggarwal et al., 2018; Kang et al., 2018). Moreover, the notion of karma builds upon that of superstitions by emphasizing its implications in moral decision-making. Although both superstitious beliefs and karma imply individuals' current actions influence future outcomes, the gist of karma is rooted in the ethical reasoning – the universe, as an institution, rewards virtue, yet punishes sins (Converse et al., 2012). Intuitively, people believing in karma tend to commit righteous acts, such as behaving less selfishly (e.g., in dictator games after being told to “make your decisions based on your belief in the law of karma”; White et al., 2019; p. 13), and people also expect greater trustworthiness from karmic believers (Ong et al., 2022).

Surprisingly, despite mounting evidence suggesting the prevalence of karma, only nascent research has been conducted with respect to its influence on consumer behaviour. For example, Converse and colleagues (2012) found that, in situations involving high levels of desirability with minimal to no control (e.g., job hunting), job seekers are more likely to donate time and money to charities. The authors theorized this effect espousing karma, yet unfortunately overlooked to empirically test this underlying driving mechanism, which we will attempt to address in the present research.

5.4.2 Sustainability Consumption

Deciding whether or not to purchase certain options over other alternatives, resembles a common dilemma that consumers encounter on a daily basis. One might choose to purchase a biodegradable dishwasher detergent over other options, alternatively a consumer might decide to carry their own shopping bags instead of purchasing disposable ones. To grasp a more in-depth understanding of sustainability consumption, scholars in a myriad of disciplines, including marketing, environmental studies, tourism and hospitality have acknowledged the negative (often

irreversible) consequences of unsustainable consumer behaviours, such as global warming, destruction of the natural environment, and reduced productivity of the land and water.

When it comes to sustainability consumption, the trade-off is not so much purely about whether a consumer decides to purchase right now, give up purchasing, or defer the decision to a later time. Instead, it matters more sometimes to persuade consumers to patronize sustainable options over unsustainable ones. Indeed, the rapid growth and ubiquity of the “sharing economy” clearly support this assertion. Through shifting consumers’ consumption pattern from *possession* to *access*, it delivers economic success without compromising the environmental impact (Luo & Bhattacharya, 2006; Olsen, Slotegraaf, & Chandukala, 2014).

Despite the increasing awareness of and the importance of sustainable behaviour, consumers are often tempted to prefer unsustainable products over sustainable alternatives, due to excessive price premium (Sun, Bellezza, & Paharia, 2021), the lack of trust/confidence in the quality/performance of sustainable options (Luchs & Kumar, 2017; Pancer, McShane, & Noseworthy, 2017), the unfavourable social desirability associated with consuming sustainable products (Ratliff et al., 2017), and sometimes, simply the observation of others not behaving sustainably (Cialdini, Reno, & Kallgren, 1990; Schultz et al., 2007). The difficulty in addressing the attitude-behaviour gap, therefore, has led researchers to investigate feasible strategies to help consumers to behave in a more sustainable manner. As sustainable decisions often require more cognitive efforts and justifications to forego the benefits of unsustainable options (Luchs & Kumar, 2017), some strategies focus on offering incentives to make such decisions easier (Frederiks et al., 2015). Given that most consumption behaviours are repetitive and habitual in nature (e.g., choosing transportation modes, food consumption, shopping modality in daily consumption including the need for disposable shopping bags, and the disposal of products), and such habitual behaviours are prone to be unsustainable (Verplanken, 2011), this approach often involves the removal of unsustainable habits, and/or the formation of sustainable habits (Verplanken & Roy, 2016): varying the choice architecture, enforcing penalties (Bolderdijk, Lehman, & Geller, 2012), encouraging mental imagining of implementing sustainable behaviours (Kurz et al., 2015), and reducing the complexity involved (Frederiks, Stenner, & Hobman 2015; Theotokis & Manganari, 2015).

In contrast, other strategies are designed to capitalize on social influence (Abrahamse & Steg, 2013). As one of the most influential factors determining peoples' sustainable behaviours, the presence, behaviours (or absence of behaviours) and expectations of others have been shown to substantially undermine consumers' unsustainable behaviours, including social norms (e.g., recycling; White & Simpson, 2013; e.g., energy conservation; Jachimowicz et al., 2018), social identities (e.g., identifying as being an organic consumer; Bartels & Onwezen, 2014; e.g., the desire to disassociate with certain groups; White, Simpson, & Argo, 2014), and social desirability (e.g., the desire to make a positive impression; Green & Peloza, 2014; e.g., singling favourable social status; Griskevicius, Tybur, & Bergh, 2010). For example, in romantic relationships, after one partner manifests unsustainable behaviour, the other partner tends to act more sustainably if that individual believes they possess high levels of relationship power. This occurs because high-relationship-power individuals feel responsible to engage in compensatory measures to re-store their damaged couple sustainability identity (Cakanlar, Nikolova, & Nenkov, 2022).

Although these strategies differ in distinct emphases, what they have in common is that both strategies take consumers' rationality in consumption decision-making for granted. By overlooking the benefit of irrational thoughts – such as superstitious beliefs, this research posits that extant intervention strategies ignore a pivotal actor in determining why people engage in sustainability behaviours, and therefore, might neglect an opportunity to promote greater sustainability.

5.5 Hypotheses Development

5.5.1 (Un)Sustainability Consumption and Karmic Causality

Curbing unsustainable behaviours often entails social dilemmas where individuals encounter conflicts between personal and societal gains, not to mention the temporal trade-offs between immediate and the delayed long-term implications (Thøgersen, 2014). It is rather critical to realize that it remains a rarity that unsustainable behaviours deliberately intend to cause harm. Instead, as elegantly noted by Warde and Southerton (2012), much of the implications of

unsustainable consumption are “invisible, unremarkable, and unrecorded at the point of purchase or use” (p. 6).

Following this rationale, people might make unsustainable choices, *at least in part*, because the personal implications of purchasing unsustainable products (e.g., enjoyment, joy, pleasant consumption experiences of choosing unsustainable products) are directly experienced, whereas the negative societal consequences of doing so remain “silent” as 1) such harm is delayed, and 2) the lay intuition in which the society ought to share collective responsibility for sustainability, instead of an individual. Therefore, the illusion of “many responsible others” dilutes the environmental impacts and individual responsibilities people ascribe to themselves, thereby justifies unsustainable consumption behaviours.

Without belittling other contributing factors documented in prior literature, this research focuses on how the activation of superstitious beliefs can promote consumers’ sustainable behaviours. In contrast with extant research emphasizing on a *rational* approach in promoting sustainable consumption, this research instead suggests an *irrational* perspective: facilitating consumer sustainability via highlighting the karmic causal implications of their (un)sustainable behaviours (i.e., karmic causality; White et al., 2021). In particular, we propose that the salience of the karmic causality tends to be more effective than previously researched rational factors, such as social influence, and/or offering incentives – because *without feeling responsible for peoples’ own (un)sustainable behaviours, it seems unlikely that individuals will be sufficiently motivated to engage in sustainable consumption*. In aggregate, this research argues that activating superstitious beliefs makes the karmic causal relationship more salient, thereby encouraging consumers to feel responsible for their (un)sustainable behaviours, manifested in an elevated preference for sustainable consumption.

5.5.2 Karmic Reward Seeking Tendency, and Sustainability Consumption

Previous research has demonstrated the significance of causal attribution – linking causes and outcomes – in consumers’ decision-making processes (Kelley, 1973). For instance, the salience between actions and their resulting consequences sufficiently result in a greater perception of choice-making, which subsequently exerts greater satisfaction of both outcomes

(e.g., the enjoyment of a message when decisions are self-made vs. externally-determined by a third party; Study 2; Botti & McGill, 2011), and the decision-making process (e.g., choosing which museum to visit; Study 1; Botti & McGill, 2011).

One common aspect of the aforementioned research lies in that the causal relationship *does* exist between different events (e.g., participants choose one of the four main courses [cause] for their dining experience [outcome]; Botti & McGill, 2011). Extending research investigating causal relationships, this research predicts that the presence of causal relationship still exerts positive effects, even when such relationships *do not* actually exist.

The prediction aligns with prior research highlighting illusions in causal attributions (Kelly, 1973) and the work that followed (Cho & Schwarz, 2012; Karremans, Stroebe, & Claus, 2006; Payne et al., 2005). When the causality is falsely established, interestingly, such causal attributions – or misattribution to be more accurate – still remain at work, leading to different consumer decision-making. For instance, Cho and Schwarz (2012) examined the misattribution account and found that when consumers tried on products using a virtual mirror by uploading their own pictures, they tend to evaluate the products more favorably. This occurs because when using the virtual mirror, it is taxing to distinguish between ones' reactions towards their own image and the product, let alone isolating their evaluations of the product from biases.

Karmic reward seeking tendency, as induced by superstitious beliefs, can restore the missing connection between individuals' (un)sustainable behaviours and delayed consequences. In other words, when peoples' superstitious beliefs are made more salient, the illusional relationship between a cause (e.g., knocking on wood) and outcome (e.g., it will prevent bad things from occurring) will likely transfer to their subsequent decision-making, causing individuals to associate their own (un)sustainable behaviours with delayed consequences. That is, whereas consuming unsustainable products typically entails superior performance and greater enjoyment (e.g., driving a car instead of using public transportation), the salient implications of their unsustainable behaviours are more likely to dominate and elicit greater karmic reward seeming tendency, encouraging more sustainability consumption.

In light of preceding discussion, this research argues that merely activating superstitious beliefs, as an irrational factor, will lead consumers to draw causal relationships between unrelated

events – their own (un)sustainable behaviours and the consequences thereof. Subsequently, the realization of such karmic causal relationships motivates consumers to engage in sustainability consumption to invite future good luck (e.g., “what goes around comes around”). Revisiting the opening example, we anticipate that consumers exposed to the first campaign will be more likely to experience greater karmic reward seeking tendency, and have the penchant for the biodegradable dishwasher detergent over unsustainable alternatives.

The hypotheses, stated formally,

H₁: Engaging in superstitious beliefs (vs. not) will likely result in greater consumers’ sustainability consumption.

H₂: The positive effect of engaging in superstitious beliefs (vs. not) on sustainability consumption is mediated by karmic reward seeking tendency.

The conceptual model is depicted in *Figure 5.1*.

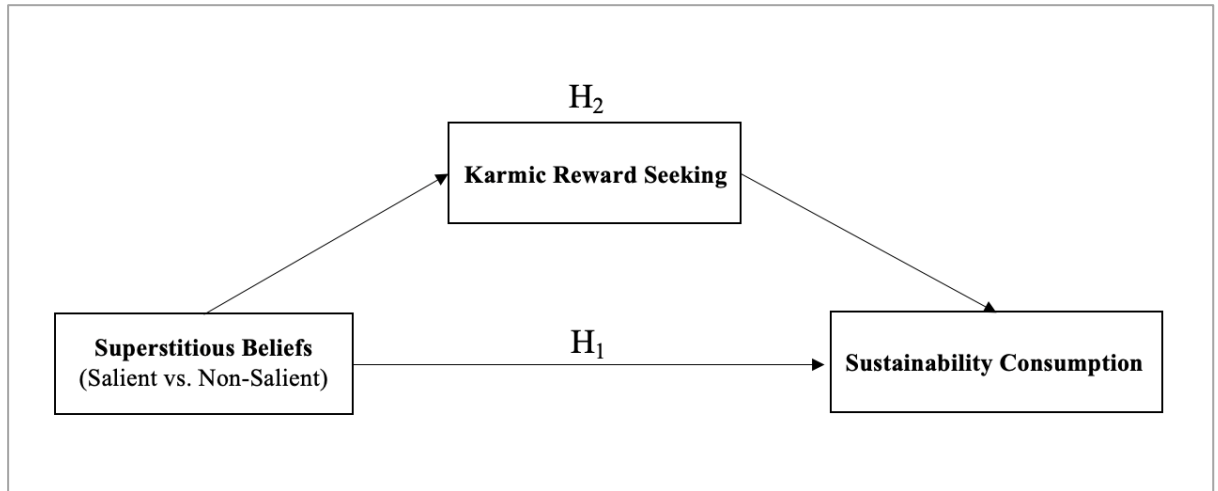


FIGURE 5.1 CONCEPTUAL FRAMEWORK

5.6 Empirical Overview

To examine the proposed conceptual framework (*Figure 5.1*), we conducted four studies, including three experiments and one single-paper meta-analysis. Data collection was executed via an online crowdsourcing platform (i.e., Cloud Research) due to its superior quality of participants’ responses compared to those from Amazon Mechanical Turk (Amazon MTurk), as reported in

previous research (Chandler et al., 2019; Litman, Robinson, & Abberbock, 2017; Robinson et al., 2019).

To address the emerging concerns for the veracity of the findings in the social science discipline (Nosek, Ebersole, DeHaven, & Mellor, 2018; Simmons, Nelson, & Simonsohn, 2021; van't Veer & Giner-Sorolla, 2016), all studies were pre-registered (DOIs specified in the studies reported below). Specifically, Study 1 tests H_1 – the main effect of activating superstitious beliefs on consumers' preference of sustainable products. Study 2 then examines the underlying mechanism (H_2) and verifies whether karmic reward seeking drives greater sustainability consumption under the influence of superstitious beliefs. Additionally, one could argue that salient superstitious beliefs – such as good luck – enact individuals to experience greater self-efficacy, thereby encouraging consumers to engage in sustainable consumption (Kramer & Block, 2011). Study 2 also attempts to exclude self-efficacy as an alternative explanation. Through the introduction of a self-affirmation task where participants recall their previous good deeds, Study 3 conceptually replicated the mediation process. Finally, we conducted a single-paper meta-analysis (SPM), further cementing the robustness of the effect of superstitious beliefs (H_1).

To ensure sufficient power obtained in the findings of the experiments, all sample sizes have been pre-determined (Brysbaert, 2019). Data, syntax, materials, and pre-registrations are available at OSF: *Link masked to remain anonymous during the review process, and anonymous view-only pre-registration links were provided in each study.* We also report the effect sizes when applicable to facilitate more meaningful interpretation of findings of this research. Across four studies, we confirmed the robustness of the findings to a pivotal factor (e.g., individuals' environmental consciousness).

5.7 Study 1

Study 1 aims to examine the main effect of activating superstitious beliefs on consumers' preference for sustainability consumption (pre-registration DOI: https://osf.io/6gnzx/?view_only=d7e8b6e69c5a4cf3970417cd58962ecb).

5.7.1 Study Design, Procedures and Measurement

Study 1 features a one-factor, full-factorial between-subjects design of 2 (superstitious beliefs: control vs. superstitious beliefs). This study recruited 176 participants through a research agency in the United States (Cloud Research, also known as Turk Prime), who reside in the United States and are at least 18 years old (50.6% Female, $M_{Age} = 41.17$, $SD = 13.59$).

All participants were given a participant information sheet and provided a cover story to address the experimenters demand effect (Zizzo, 2010), such that they were made to believe that they were about to report their attitudes towards commercial activities. After gaining participants' consent, participants were directed to the first task. To mitigate participants' potential suspicions, both conditions featured a visualization task that reportedly assesses participants' ability of recalling and describing an incident. In order to manipulate the salience of superstitious beliefs, participants in the treatment condition (i.e., salient superstitious beliefs) were instructed to recall a situation where their superstitious beliefs affect the outcome (see Web Appendix A for detailed scenario). In contrast, participants in the control condition were asked to describe their yesterday. Notably, all participants were given identical text entry space for their response to eliminate potential confounding factors. To assess the effectiveness of the superstitious belief operationalization, participants indicated the extent to which they are superstitious using a four-item, seven-point scale (e.g., "I believe it is possible to jinx things or situations;" anchored by "1" [Strongly disagree] and "7" [Strongly agree]; Sierra, Hyman, & Turri, 2018; $\alpha = .85$; see Web Appendix B for measurement scales used).

After the manipulation of superstitious beliefs, participants were instructed to engage in a consumption task and asked to imagine that they were shopping for five products (Griskevicius, Tybur, & Van den Bergh, 2010), including a dishwasher, a cleaner, a lamp, a backpack, and batteries (the order of exposure was counterbalanced to eliminate the response order effect; Brooks, 2012). The focal products were selected as, for each product, there are both sustainable and conventional options in the current market, thus enhancing greater ecological validity of the experimental design; with identical prices and brands, the sustainable option (i.e., Option A) is superior on pro-environmental dimensions, whereas the non-sustainable option (i.e., Option B) is superior on functionality and product performance. By doing so, the experimental design enacts

participants to make a conscious trade-off between two options. Moreover, the sustainability aspect was operationalized via distinct product features, for example, water saving (dishwasher), biodegradable materials (cleaner), electricity efficiency (lamp). The selected products also differed in prices, hence excluding price-related confounding influence thereof. Specifically, for each product category, participants indicated their preference between two options along a seven-point scale (“Please imagine that you are out shopping for a [product], which of these two products would you buy?”; anchored by “1” [definitely {product} A] and “7” [definitely {product} B]; higher scores indicate higher preference for sustainable product options; Ma, Bradshaw, Janakiraman, & Hill, 2019; $\alpha = .81$). Right after indicating their preference, participants reported their agreement regarding the environmental sustainability of their chosen product (“To which extent do you believe that the [PRODUCT] you chose is environmentally sustainable?”; Garvey & Bolton, 2017). Moreover, an attention check question was included to ensure that participants were following the experimental instructions (Hauser & Schwarz, 2016).

To control for the potential influence of participants’ environmental consciousness on their preference for sustainability consumption, this study then measured participants’ opinions regarding environmental issues (“We are approaching the limit of the number of people the earth can support”; Dunlap & Van Liere, 1978; Lin & Chang, 2012; $\alpha = .91$). Finally, participants reported their agreement on the experimental realism (“How realistic do you find the experience in the task above?”; anchored by “1” [very unrealistic] and “7” [very realistic]; Lee, Kim, Hwang, & Cui, 2021; $r = .76, p < .001$) and their demographic information, including ethnicity, income, education background, gender, age, and native language.

5.7.2 Findings and Discussion

Preliminary Analysis. To eliminate any a priori differences due to the experimental manipulation of superstitious beliefs on participants’ environmental consciousness, an analysis of variances (one-way ANOVA) was conducted on environmental consciousness. The results showed that, reassuringly, participants’ environmental consciousness did not differ across conditions ($M_{Control} = 4.43, SD = 1.16$ vs. $M_{Superstitious\ Beliefs} = 4.70, SD = 1.18, F(1, 174) = 2.26, p$

= .135; $\eta^2 = .01$). Therefore, differences observed among participants cannot be attributed to the experimental manipulation of superstitious beliefs.

In addition, results of one-sample t-test showed that the experimental scenario was perceived as realistic ($M = 5.53$, $SD = 1.25$ vs. the neutral point of 4 [out of 7]; $t(175) = 16.31$, $p < .001$; Cohen's $d = 1.22$), suggesting sufficient ecological validity. Moreover, the experimental realism did not differ across conditions ($M_{Control} = 5.62$, $SD = 1.14$ vs. $M_{Superstitious\ Beliefs} = 5.39$, $SD = 1.39$, $F(1, 174) = 1.44$, $p = .232$; $\eta^2 = .01$).

Manipulation Check. The results of an analysis of variances (one-way ANOVA) showed that the manipulation successfully led to significant differences in participants' superstitious beliefs ($M_{Control} = 3.82$, $SD = 1.66$ vs. $M_{Superstitious\ Beliefs} = 4.71$, $SD = 1.66$, $F(1, 174) = 12.16$, $p = .001$; $\eta^2 = .07$).

The Main Effect. To examine H_1 , a univariate analysis of variance was conducted, with superstitious beliefs as the independent variable (fixed factor), participants' preference as the dependent variable, and environmental consciousness as the covariate.

First, the Levene's test of equality of error variances was insignificant ($F(1, 174) = 1.85$, $p = .176$). Therefore, the difference of participants' sustainability preference observed in the superstitious belief (vs. control) condition cannot be attributed to error variance across conditions. Furthermore, supporting H_1 , the results demonstrated that, even after controlling for the influence of environmental consciousness ($F(1, 173) = 22.91$, $p < .001$, $\eta^2 = .12$), superstitious belief had a significant main effect on participants' sustainability preferences ($F(1, 173) = 4.05$, $p = .046$, $\eta^2 = .02$; observed power: .52 [computation based on $\alpha = .05$]; *Figure 5.2*).

Importantly, the results remained consistent when removing environmental consciousness as the covariate. Again, the Levene's test of equality of error variances was insignificant (*Levene statistic* (1, 174) = .92, $p = .340$ [computation based on mean]), thereby eliminating any biases in the data distribution. More importantly, supporting H_1 , superstitious beliefs led to significantly higher preferences for sustainable product options ($F(1, 174) = 5.87$, $p = .016$, $\eta^2 = .03$; observed power: .67 [computation based on $\alpha = .05$]).

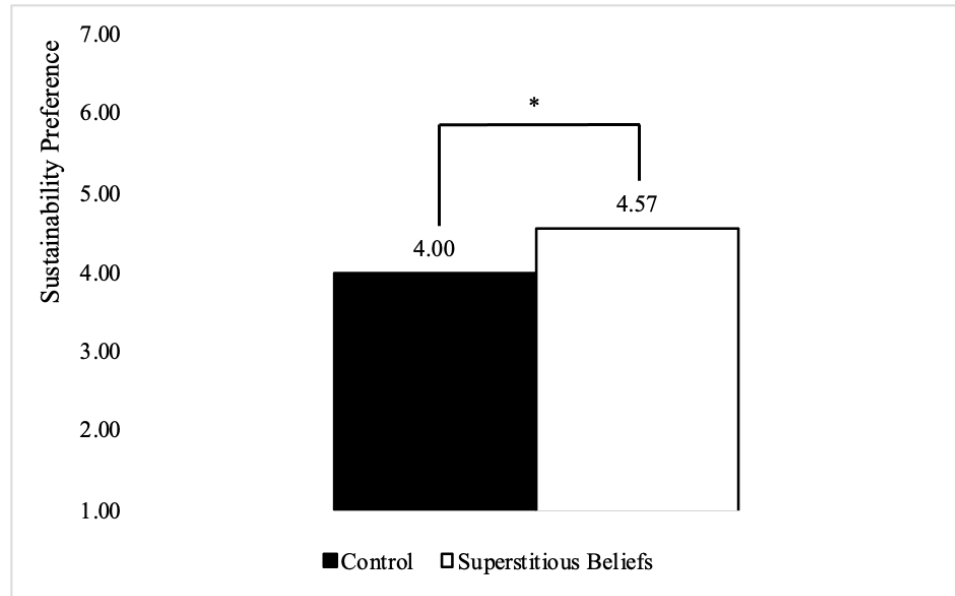


FIGURE 5.2 RESULTS OF STUDY 1

Note. $*p < 0.05$.

5.8 Study 2

Study 2 attempts to examine the underlying mechanism contributing to the effect of superstitious beliefs on sustainable consumption. This study, specifically, tests the mediating effect of karmic reward seeking – whether activating superstitious beliefs influences consumers’ tendency of karmic reward seeking. Additionally, one might argue that salient superstitious beliefs might alter consumers’ perceived self-efficacy regarding sustainability consumption. Therefore, Study 2 aims to further consolidate the karmic reward seeking account, and exclude an alternative explanation of self-efficacy (pre-registration DOI: https://osf.io/ybzgq/?view_only=f194f393e5124e708565c018a1163f32).

5.8.1 Study Design, Procedures and Measurement

Study 2 features a one-factor, full-factorial between-subjects design of 2 (superstitious beliefs: control vs. superstitious beliefs) and additionally measures participants’ karmic reward seeking. This study recruited 326 participants through a research agency in the United States

(Cloud Research, also known as Turk Prime), who reside in the United States and are at least 18 years old (60.4% Female, $M_{Age} = 40.11$, $SD = 11.70$).

The experimental design and procedures of Study 2 mirrored those of Study 1, except for few modifications (see Web Appendix C). First, a different control condition was adopted based on previous research to enhance participants' engagement during the experimental session (e.g., writing about everything that they have eaten and drank in the past 48 hours; Chatterjee et al., 2013). Second, Study 2 additionally measured karmic reward seeking and self-efficacy as the underlying mechanisms; third, environmental consciousness was operationalized using an alternative scale (Bohlen et al., 1993).

Study 2 measured the effectiveness of the superstitious belief operationalization using the same scale used in Study 1 ($\alpha = .88$; see Web Appendix D). Next, participants engaged in a scenario shopping for a lamp, and indicated their preference, and the extent to which they perceived it to be environmentally sustainable. To examine H₂, participants reported questions measuring karmic reward seeking (e.g., "I believe in karma"; Ong et al., 2022; $\alpha = .87$), self-efficacy (e.g., "I feel that I know how to go about sustainable consumption"; White et al., 2011; $r = .86$, $p < .001$) and their attention on the survey. Finally, we assessed participants' environmental consciousness using a scale focusing on its behavioural aspects (e.g., how often they engage in recycling water; Bohlen et al., 1993; $\alpha = .77$), the experimental realism ($r = .80$, $p < .001$), and their demographic information.

5.8.2 Findings and Discussion

Preliminary Analysis. Again, a one-way ANOVA showed that participants' environmental consciousness did not differ across conditions ($M_{Control} = 3.45$, $SD = .96$ vs. $M_{Superstitious\ Beliefs} = 3.62$, $SD = .95$, $F(1, 324) = 2.45$, $p = .118$; $\eta^2 = .01$).

In addition, a one-sample t-test revealed a satisfactory level of experimental realism ($M = 5.52$, $SD = 1.24$ vs. the neutral point of 4 [out of 7]; $t(325) = 22.18$, $p < .001$; Cohen's $d = 1.23$), and it did not differ across conditions ($M_{Control} = 5.52$, $SD = 1.32$ vs. $M_{Superstitious\ Beliefs} = 5.53$, $SD = 1.12$, $F(1, 324) = .01$, $p = .909$; $\eta^2 < .001$ [one-way ANOVA]).

Manipulation Check. A one-way ANOVA revealed that the superstitious belief manipulation performed as intended ($M_{Control} = 3.64$, $SD = 1.69$ vs. $M_{Superstitious\ Beliefs} = 4.71$, $SD = 1.67$, $F(1, 324) = 32.04$, $p < .001$; $\eta^2 = .09$). Additionally, a regression analysis on the environmental sustainability with participants' product preference showed that participants who chose the sustainable option (i.e., Lamp B) were perceived it to be more environmentally sustainable ($\beta = .79$, $t = 22.82$, $p < .001$, $CI_{95\%}: .62, .74$).

The Main Effect. Replicating the findings of Study 1, an analysis of variance shows that after controlling for the influence of environmental consciousness ($F(1, 323) = 38.40$, $p < .001$; $\eta^2 = .11$), salient superstitious beliefs led to significantly greater preference for the sustainable option (i.e., Lamp B; $M_{Control} = 4.78$, $SD = 2.17$ vs. $M_{Superstitious\ Beliefs} = 5.34$, $SD = 1.92$; $F(1, 323) = 3.97$, $p = .047$; $\eta^2 = .01$; *Figure 5.3*).

Additionally, the results remained consistent without incorporating environmental consciousness as the covariate; Compared to participants in the control condition, those in the superstitious beliefs condition reported greater preference for the more sustainable option ($M_{Control} = 4.78$, $SD = 2.17$ vs. $M_{Superstitious\ Beliefs} = 5.34$, $SD = 1.92$; $F(1, 324) = 5.78$, $p = .017$; $\eta^2 = .02$ [one-way ANOVA]), therefore further cementing the robustness of the findings.

Mediation Analysis. To examine H₂, we conducted a mediation analysis (Model 4, 10,000 bootstrapped samples; SPSS PROCESS Macro; Hayes, 2018), with superstitious beliefs as the independent variable, sustainability consumption as the dependent variable, karmic reward seeking and self-efficacy as parallel mediators, and environmental consciousness as the covariate.

Supporting our theorization (total effect: $\beta = .44$, $SE = .22$, $t = 1.99$, $p = .047$, $CI_{95\%}: .01, .88$), superstitious beliefs led to significantly higher karmic reward seeking (*a path*: $\beta = .63$, $SE = .18$, $t = 3.45$, $p < .001$, $CI_{95\%}: .27, .99$). Moreover, the elevated karmic reward seeking enacted participants to indicate greater preference for sustainable options (*b path*: $\beta = .38$, $SE = .06$, $t = 5.85$, $p < .001$, $CI_{95\%}: .25, .50$). Taken together, even after controlling for the influence of environmental consciousness ($\beta = .71$, $SE = .11$, $t = 6.20$, $p < .001$, $CI_{95\%}: .48, .94$), karmic reward seeking significantly mediated the effect of superstitious beliefs on sustainability consumption (*a*

x b path: $\beta = .24$, $SE = .09$, $CI_{95\%}: .09, .43$). Interestingly, the direct effect of superstitious beliefs became insignificant once karmic reward seeking is introduced (*c' path*: $\beta = .22$, $SE = .22$, $t = 1.03$, $p = .306$, $CI_{95\%}: -.20, .65$). Ruling out the alternative explanation, self-efficacy failed to account for the proposed effect ($\beta = -.02$, $SE = .02$, $CI_{95\%}: -.07, .02$).

Moreover, the results remained unchanged even when environmental consciousness was not included as the covariate. With a significant model (total effect: $\beta = .56$, $SE = .23$, $t = 2.40$, $p = .017$, $CI_{95\%}: .10, 1.02$), karmic reward seeking mediated the relationship between superstitious beliefs (*a path*: $\beta = .70$, $SE = .19$, $t = 3.73$, $p < .001$, $CI_{95\%}: .33, 1.06$; *b path*: $\beta = .44$, $SE = .06$, $t = 6.81$, $p < .001$, $CI_{95\%}: .31, .57$; *a x b path*: $\beta = .31$, $SE = .11$, $CI_{95\%}: .13, .54$). Again, the direct effect of superstitious beliefs became insignificant once karmic reward seeking was introduced (*c' path*: $\beta = .27$, $SE = .22$, $t = 1.24$, $p = .217$, $CI_{95\%}: -.16, .71$) and self-efficacy was also insignificant ($\beta = -.02$, $SE = .04$, $CI_{95\%}: -.09, .06$), thereby supporting a full mediation model through karmic reward seeking tendency.

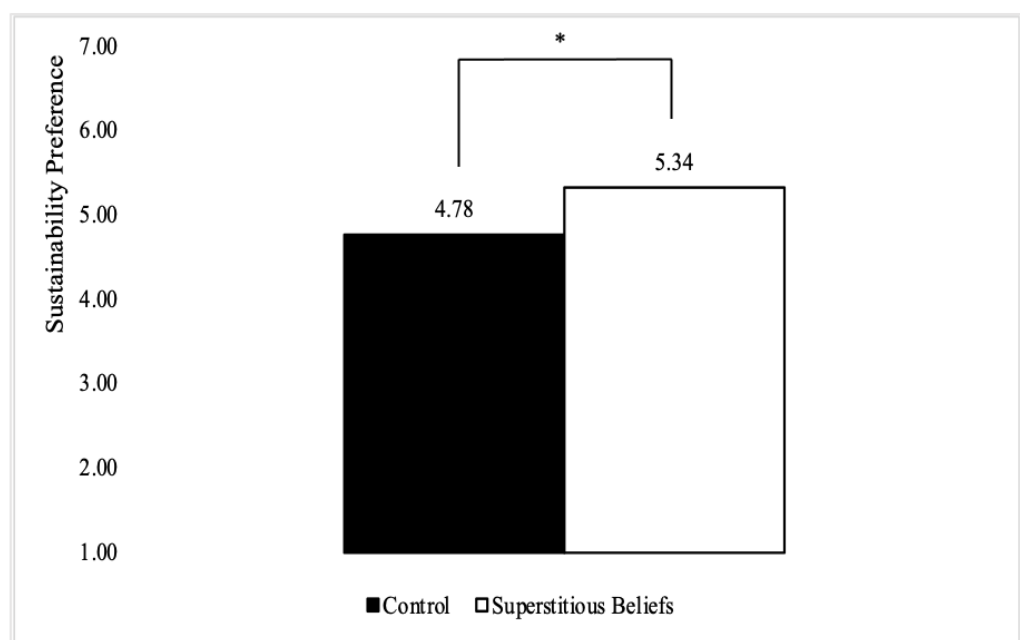


FIGURE 5.3 RESULTS OF STUDY 2

Note. * $p < 0.05$.

5.9 Study 3

Having established that superstitious beliefs activate consumers' tendency of seeking karmic rewards (H_2), which in turn leads to greater preference for sustainability consumption (H_1), Study 3 attempts to consolidate this finding by satisfying their goal of investing in karmic reward seeking. That is, this research proposes that the salience of superstitious beliefs is likely to motivate consumers to experience karmic reward seeking – *doing good deeds now will likely invite future fortune and good luck*. Therefore, if participants were offered an opportunity to recall their good deeds in the past, the self-affirmation will attenuate the tendency of karmic reward seeking, thereby invalidating the effect of superstitious beliefs on sustainability consumption (pre-registration DOI: https://osf.io/vjwq8/?view_only=c29ac08b93c343e486c69dda9e5d5b33).

5.9.1 Study Design, Procedures and Measurement

Study 3 features a one-factor, full-factorial between-subjects design of 2 (self-affirmation: self-affirmation vs. control). This study recruited 111 participants through a research agency in the United States (Cloud Research, also known as Turk Prime), who reside in the United States and are at least 18 years old (50.5% Female, $M_{Age} = 37.44$, $SD = 11.89$).

To operationalize superstitious beliefs, all participants engaged in the same visualization task as in Studies 1 and 2, with manipulation check questions to assess the effectiveness of the manipulation ($\alpha = .86$). Next, all participants were instructed to complete a personal recall exercise; those in the self-affirmation task were asked to recall and describe personal experiences in which their actions have benefited other people and the society in general, whereas participants in the control condition were asked to recall everything they have eaten or drank in the previous 48 hours (Chatterjee et al., 2013; see Web Appendix E).

To enhance the ecological validity of the findings, participants reported their sustainable preference for a cleaner measured as a binary choice, instead of a continuous variable, and the environmental sustainability of their chosen product (see Web Appendix F). Finally, participants responded to the attention check question, environmental consciousness ($\alpha = .74$), experimental realism ($r = .83$, $p < .001$), and demographic information.

5.9.2 Findings and Discussion

Preliminary Analysis. Again, a one-way ANOVA revealed that participants' environmental consciousness did not differ across conditions ($M_{Self-affirmation} = 3.54$, $SD = .80$ vs. $M_{Control} = 3.42$, $SD = 1.01$, $F(1, 109) = .44$, $p = .510$; $\eta^2 < .01$).

Additionally, a one-sample t-test showed a satisfactory level of experimental realism ($M = 5.78$, $SD = 1.37$ vs. the neutral point of 4 [out of 7]; $t(110) = 13.69$, $p < .001$; Cohen's $d = 1.30$), and it was invariant across conditions ($M_{Self-affirmation} = 5.89$, $SD = 1.12$ vs. $M_{Control} = 5.68$, $SD = 1.57$, $F(1, 109) = .62$, $p = .432$; $\eta^2 = .01$).

Manipulation Checks. A one-sample t-test showed a satisfactory level of superstitious beliefs ($M = 4.82$, $SD = 1.63$ vs. the neutral point of 4 [out of 7]; $t(110) = 5.29$, $p < .001$; Cohen's $d = .50$). Moreover, a one-way ANOVA revealed that participants who selected the sustainable option (i.e., Cleaner B) perceived it to be the more environmentally sustainable ($M_{CleanerA} = 2.94$, $SD = 1.59$ vs. $M_{CleanerB} = 6.25$, $SD = .93$, $F(1, 109) = 189.90$, $p < .001$; $\eta^2 = .64$).

Results. Supporting the theorization, significantly fewer participants in the self-affirmation condition (47.2% [25/53]) chose the more sustainable option (i.e., Cleaner B), compared to those in the control condition (67.2% [39/58]; $t = 4.57$, $p = .033$; *Figure 5.4*).

Discussion. Through the addition of a self-affirmation task, participants' need for karmic reward seeking was temporarily met, thereby reducing the likelihood of engaging in sustainable consumption. This moderation-of-process approach (Spencer, Zanna, & Fong, 2005) therefore further cements the focal theorization (*superstitious beliefs* $\rightarrow$ *karmic reward seeking* $\rightarrow$ *greater preference for sustainable consumption*).

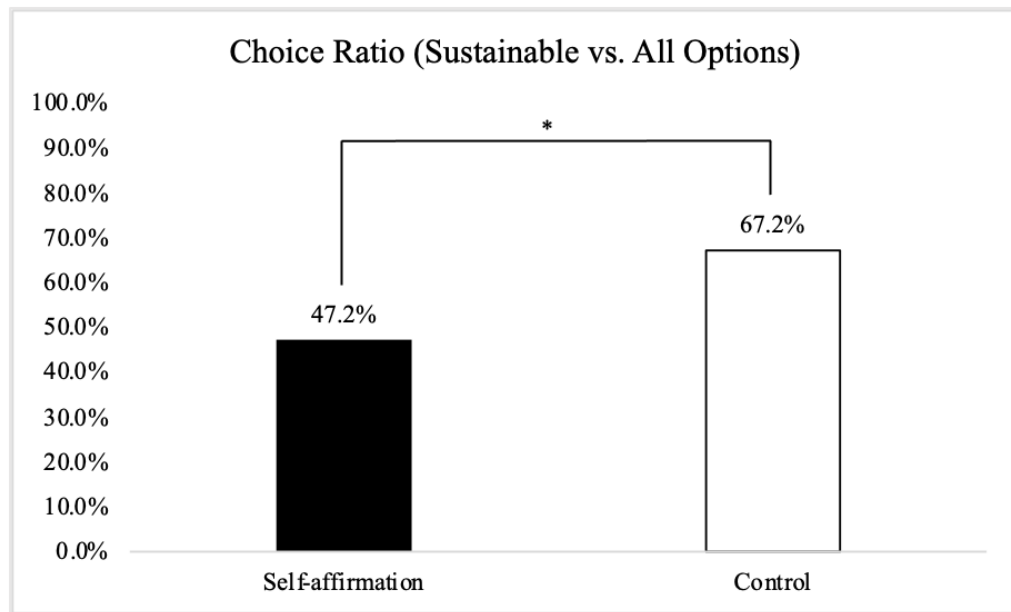


FIGURE 5.4 RESULTS OF STUDY 3

Note. $*p < 0.05$.

5.10 Study 4

Thus far, Studies 1 – 3 demonstrate that sustainability preference was significantly greater among superstitious participants than those in the control condition. To further verify the robustness and strength of the findings (H_1), we conducted a single-paper meta-analysis (McShane & Böckenholt, 2017).

The results of SPM revealed a significant effect of activating superstitious beliefs on participants' sustainability preference¹⁰. Specifically, when superstitious beliefs were made more salient, the meta-analysis estimate (Control condition estimates = 4.39, SE = .39) was significantly lower than that of the superstitious condition (Superstitious beliefs condition

¹⁰ McShane and Böckenholt (2017) argue that the use of single-paper meta-analysis (SPM) accommodates one dependent variable measurement across studies, otherwise it might increase the heterogeneity of produced results. Accordingly, they suggest that if the difference in the measurement scales is present, it will be more appropriate to adopt a different methodology (i.e., Multiple Contrast Standardized Meta-analysis [MCSM]). Nevertheless, the authors note that, when the dependent variable used across studies was operationalized using closely related constructs, or similar measurement scales, the use of SPM is sufficiently justified.

To further cement the veracity of the SPM findings, we conducted two separate sets of meta-analyses, including one single-paper meta-analysis (SPM, as reported above), and one multiple contrast standardized meta-analysis (MCSM). Importantly, both analyses yielded compatible results (see Web Appendices G and H for detailed results).

estimates = 4.96, SE = .40). In aggregate, the SPM yielded an overall estimate of contrast of .57 (SE = .16), as depicted in *Figure 5.5*. Furthermore, the SPM showed an estimate of I^2 of 91.32 ($CI_{95\%} = 77.61, 96.63$).

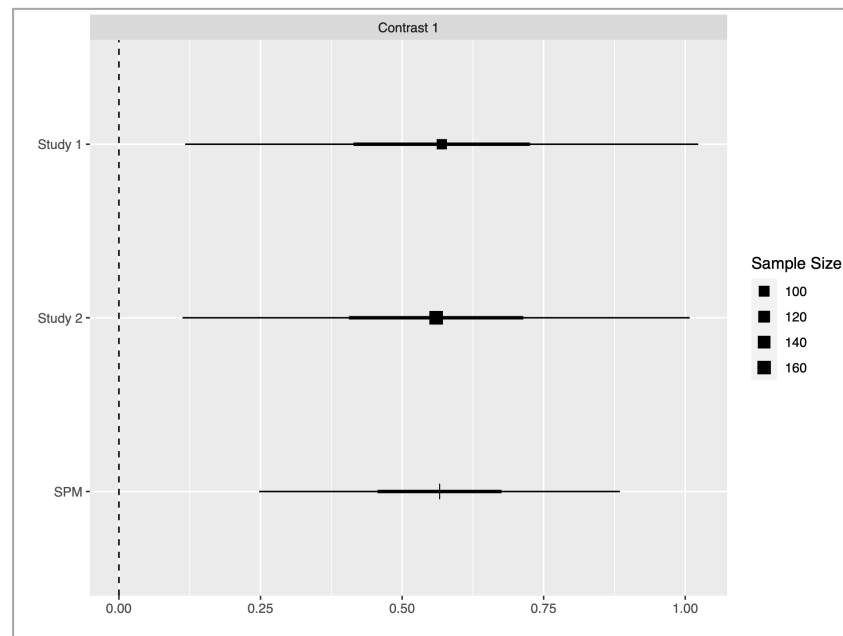


FIGURE 5.5 SINGLE-PAPER META-ANALYSIS

5.11 General Discussion

Attempts to understand sustainability consumption based solely on a rational perspective is myopic, at best. Reviewing previous literature, scholars have predominantly examined how researchers can motivate more sustainable consumer behaviours by packaging sustainable behaviour as the rational choice to make. For example, Jachimowicz et al. (2018) documented the positive effect of “injunctive norms” (i.e., communicating acceptable and unacceptable behaviours) on promoting more sustainable behaviours. In a similar line of inquiry, other researchers attempt to boost sustainability by encouraging the habit formation of sustainable behaviours (Verplanken & Roy, 2016), and/or offering incentives (including the ease to implement such behaviours; Frederiks et al., 2015); Donald, Cooper, & Conchie, 2014; Verplanken & Roy, 2016). However, despite of fruitful investigations thus far, the attitude-behaviour gap witnessed in this line of work clearly delivers a message: due consideration of an

irrational perspective is warranted. As noted by Damisch and colleagues (2010) and the work that follows, superstitious beliefs might as well entail psychological benefits (e.g., reduced tension as a result of greater perception of control). This research documents an additional utility stemming from superstitions that goes above and beyond the above: superstitious people are more likely to engage in sustainability consumption as a result of karmic reward seeking.

We would be remiss not to emphasize that people can and ought to enjoy consumption, even though it might be unsustainable. In accord, this present research is inspired by the abundance of research claiming that consumers are often too irrational and do so unconsciously. Often, people can benefit from harnessing the irrational influences, and this research puts forth to one such solution to help promote sustainable behaviours. Specifically, we argue by highlighting superstitious beliefs, consumers are made more aware of the downstream consequences of their sustainable behaviours (i.e., karmic reward), thereby encouraging them to be more mindful in deciding whether or not to do so.

This research therefore hypothesizes the positive effect of one of the most prevalent irrational forces – superstitious beliefs – in promoting consumer sustainability. Across four studies, including one single-paper meta-analysis, this research showcases that activating superstitious beliefs enacts people to behave in a more sustainable manner (Study 1). Moreover, this research also sheds light upon the underlying driving mechanism: superstitious people are more likely to display sustainable behaviours because they tend to seek karmic reward – *doing good deeds today so that good things occur in the future* (Study 2). Study 3 further cements the mediation role of karmic reward seeking tendency using a different approach, revealing that salient superstitious beliefs motivate consumers to prefer sustainable options, which attenuates when their need for karmic reward seeking is satisfied (through espousing a self-affirmation task). Finally, a single-paper meta-analysis (SPM) – incorporating findings of experiments 1-3 – confirmed the robustness of the findings.

5.12 Theoretical Contributions

The present research departs from the mainstream approach in promote sustainability consumption – instead, we document a rather novel strategy: thinking about superstitious beliefs, thus highlighting the karmic reward following sustainable behaviours. Therefore, we add to the literature on sustainability, which predominantly focuses on factors such as offering incentives (Frederiks et al., 2015), facilitating habit formation (Verplanken, 2011), and emphasizing one's sustainable identity (Cakanlar et al., 2022), by showing the motivational power of highlighting the karmic reward in sustainable behaviours.

In examining karmic reward seeking as the underlying mechanism, this research further advances our understanding of goal pursuit and motivation (Kruglanski et al., 2018; Shah et al., 1998). Contemporary models explaining goal attainment propose the concept of “fusion” between means and the end, highlighting the significance of connectivity – that is, the extent to which individuals' action is linked to its end (Kruglanski et al., 2018). The closer the gap is between activities and the end goal, the more likely the activity will be perceived as intrinsically motivated, thereby beneficial for goal attainment. For instance, the same action by a tennis athlete can be viewed as either hitting a ball, or scoring – the former separates the activity and its goal, whereas the latter focuses on the *fusion* (i.e., activity as the goal itself). Echoing these notions, this research, therefore, is the first to empirically test this novel conception: our findings imply that, by highlighting the karmic causality between peoples' actions – (un)sustainable consumption – and consequences (i.e., karmic reward), it contributes to greater fusion, and consequently, increases the intrinsic motivation in engaging in sustainability consumption.

Furthermore, this research adds to the nascent research investigating superstitions. Over the last two decades, despite growing interests in paranormal beliefs such as superstitions, there remains a deep-seated void in our understanding of superstitious beliefs in consumer research. Examining extant literature, the spotlight centres around the profitability implications of superstitions, such as willingness to pay (Block & Kramer, 2009), consumer satisfaction (Botti & McGill, 2011), and product evaluation following its failure (Kramer & Block, 2008) – yet less so when it comes to societal and consumer well-being. Given its significance in both practical and theoretical senses, its neglect in research therefore bears rectification. Indeed, Vyse (2018)

expressed his concerns surrounding a sole pursuit of economic expansion, and encourage future research to bridge superstitions and transformative consumer research (TCR). The present work, therefore, responds to the call for research and depicts a novel finding: superstitious beliefs elevate a greater tendency of karmic reward seeking, thus leading to greater sustainability consumption.

5.13 Practical Implications

The findings herein promoting greater consumer sustainability carry several practical implications. First, this research offers a feasible strategy for consumers who is and/or consider consciously practicing sustainable behaviours. Indeed, superstitious participants in this present work reported significantly stronger preference for sustainable consumption. In a departure from previous findings, Study 2 further showed that it is karmic reward seeking tendency, instead of elevated self-efficacy, that is driving the positive effect of superstitious beliefs on sustainable behaviours. Against the mainstream common-sense surrounding self-efficacy, this research finds that, in order to become a more sustainable consumer, they ought to bring to mind superstitious thoughts to avoid their patronage for unsustainable products.

Second, the present work is also informative for marketers of sustainable products/services. To the opening example in this manuscript, when designing and implementing marketing campaigns, non-for-profit organizations and companies alike would benefit from making superstitious beliefs more salient. For example, by using headlines such as “what goes around comes around” or “karma” explicitly, or implicitly (e.g., by combining superstition with sustainable call-to-actions), it can function as an effective strategy to prevent consumers from making unsustainable choices. In addition, when coupled with extant strategies (e.g., Verplanken & Roy, 2016), the additive effect will likely optimize the effectiveness, even when rational persuasions fall short. Refraining from sustainable behaviours can be challenging, however, the reminder of karmic rewards might be motivating, even in the absence of rationale of doing so.

Beyond aforementioned practical advancements, a critical contribution of this research is in offering fruitful insights for policy makers with a feasible toolkit, such as the United States Environmental Protection Agency (EPA), aimed at promoting greater sustainability. We depart

away from those who typically emphasize the rational benefits and/or costs of sustainable behaviours (Mckenzie-Mohr, 2000; Sachdeva et al., 2015; Tiefenbeck et al., 2018; Trudel, 2018), and in marked contrast, find that adopting an irrational perspective can actually be equally, if not more effective, in promoting sustainable behaviours. Therefore, instead of persuading consumers to participate in sustainability consumption by outlining facts and statistics, the education could be achieved by emphasizing the karmic rewards of their (un)sustainable behaviours.

5.14 Avenues for Future Research

This research takes another step in examining how utilizing irrational thoughts – superstitious beliefs – can help people become more sustainable consumers. We therefore invite future research further investigating irrationality-based interventions to facilitate such behaviours. We specifically lay out three sets of questions for future inquiries.

First of all, scholars can take our findings one step further and tests whether this effect occurs outside of the scope of sustainability. This present research views sustainability consumption from a moral lens, such that sustainable (unsustainable) behaviours resemble morally good (bad) actions, thereby inviting future karmic rewards (absence of such rewards). Following the same vein of reasoning, it is therefore fruitful to examine if the karmic implications of superstitious beliefs go beyond purchasing sustainable dishwasher detergent and batteries. For example, emphasizing the negative karmic consequences of being selfish may help motivate people to be more altruistic and manifest more pro-social behaviours (e.g., donation, volunteering activities). This logic can be profitably applied to the lion's share of domains, leaving intriguing questions for future research to investigate.

Second, more studies investigating karma are needed to curate a more comprehensive understanding of such irrational beliefs in the marketplace. This research identifies karmic reward seeking as the driving mechanism. However, as a complex construct, it will be naïve to assume its unidimensionality – rather, many facets jointly contribute to karmic reward seeking. For example, in an interesting inquiry of karma and donation, Kulow and Kramer (2016) found that beliefs in karma result in greater support for charities, but only when such prosocial behaviours

do not involve self-gains (e.g., reputation). Therefore, one might speculate that the self-others focus matter when considering the implications of karma – such that karma reward only occur when people have no ulterior and utilitarian motives (i.e., not for self-gains). In line with this self-others focus, prior studies associate ones' actions with their *own* karma, therefore implying a focus towards oneself. Interestingly, some karma doctrine hints at the possibility of “the transference of the accumulated good karma” (Kulow & Kramer, 2016; p. 350) – that one can undertake actions to bring good karma to a close other (Pappu, 1987). Therefore, of particular interest for future studies might be to investigate and compare the effectiveness of thinking about karma in benefit either oneself, close others, and distant others.

Furthermore, future research can investigate different moderators for the documented effect. For instance, one possibility is that in order for superstitious beliefs to affect sustainability, it requires a lay belief favouring *malleability* in life – that is, one can change the outcome by consciously investing efforts through their actions. It is therefore plausible that the documented effect will be stronger for individuals who share this mentality. One pivotal candidate worth investigating is individuals' implicit theory. Compared to entity theorists (who possess a static and fixed view on oneself), incremental theorists believe that personal qualities can be improved by devoting efforts (Dweck et al., 1995), and as such, future research should investigate the robustness of our findings to this particular individual difference factor. On a related note, another potent moderator is the types of superstitious beliefs. While this research examines superstitious beliefs in general, an additional fruitful avenue for future research might be to explore whether this effect is sensitive to either proactive (e.g., “you reap what you sow”) or passive superstitions (e.g., belief in fate and astrology). Future research ought to explore these and other boundaries of this effect.

5.15 Conclusion

Even rational, well-educated people inevitably engage in superstitions. When people seem to struggle with resisting the power of superstitions, this research hints at a road not taken: leveraging superstitious beliefs in promoting sustainability consumption. By capitalizing on

consumers' irrationality linking their present actions to future karmic rewards – instead of fighting against it – this research sheds light upon an intriguing strategy to encourage sustainability. As a preliminary investigation, this research attempts to stimulate more thought-provoking inquiries on how superstitious beliefs unfold. When facing a choice between a bio-degradable dishwasher and one not so much, reminding yourself of good luck and fortune because of the good karma might help you make the decision.

5.16 References

- Abrahamse, W., & Steg, L. (2013). Social influence approaches to encourage resource conservation: A meta-analysis. *Global Environmental Change*, 23(6), 1773-1785.
- Aggarwal, P., Block, L., Kramer, T., & McGill, A. L. (2018). The science of extraordinary beliefs: An introduction to this issue. *Journal of the Association for Consumer Research*, 3(4), 451-453.
- Auger, P., & Devinney, T. M. (2007). Do what consumers say matter? The misalignment of preferences with unconstrained ethical intentions. *Journal of Business Ethics*, 76(4), 361-383.
- Bartels, J., & Onwezen, M. C. (2014). Consumers' willingness to buy products with environmental and ethical claims: The roles of social representations and social identity. *International Journal of Consumer Studies*, 38(1), 82-89.
- Block, L., & Kramer, T. (2009). The effect of superstitious beliefs on performance expectations. *Journal of the Academy of Marketing Science*, 37(2), 161-169.
- Bolderdijk, J. W., Lehman, P. K., & Geller E. S. (2018). Encouraging pro-environmental behaviour with rewards and penalties. *Environmental Psychology: An introduction*, 273-282.
- Botti, S., & McGill, A. L. (2011). The locus of choice: Personal causality and satisfaction with hedonic and utilitarian decisions. *Journal of Consumer Research*, 37(6), 1065-1078.
- Bronkhorst, J. (2011). *Karma*. Available at: <http://muse.jhu.edu/book/1739>
- Brooks, J. L. (2012). Counterbalancing for serial order carryover effects in experimental condition orders. *Psychological Methods*, 17(4), 600.
- Brysbaert, M. (2019). How many participants do we have to include in properly powered experiments? A tutorial of power analysis with reference tables. *Journal of Cognition*, 2(1), 1-38.
- Cakanlar, A., Nikolova, H., & Nenkov G. Y. (2022). I will be green for us: When consumers compensate for their partners' unsustainable behaviour. *Journal of Marketing Research*, 1-20.
- Carroll, M. (2022). *Soft drink maker Karma Drinks wins top sustainable business award*. Last Accessed January 2, 2023. <https://www.stuff.co.nz/business/industries/130545105/soft-drink-maker-karma-drinks-wins-top-sustainable-business-award>
- Center for Sustainable Systems, University of Michigan (2021). *U.S. Environmental Footprint Factsheet*. Pub. No. CSS08-08.
- Chandler, J., Rosenzweig, C., Moss, A. J., Robinson, J., & Litman, L. (2019). Online panels in social science research: Expanding sampling methods beyond Mechanical Turk. *Behaviour Research Methods*, 51(5), 2022-2038.
- Chatterjee, P., Irmak, C., & Rose, R. L. (2013). The endowment effect as self-enhancement in response to threat. *Journal of Consumer Research*, 40(3), 460-476.
- Cho, H., & Schwarz, N. (2012). I like your product when I like my photo: Misattribution using interactive virtual mirrors. *Journal of Interactive Marketing*, 26(4), 235-243.
- Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology*, 58(6), 1015.
- Coleman, A. (2018). *Karma: The App fighting (and making headway) in the battle of food waste*. Last Accessed January 2, 2023. Forbes. <https://www.forbes.com/sites/alisoncoleman/2018/09/04/karma-the-app-fighting-and-making-headway-in-the-battle-of-food-waste/?sh=15b9bd53ad98>
- Converse, B. A., Risen, J. L., & Carter, T. J. (2012). Investing in karma: When wanting promotes helping. *Psychological Science*, 23(8), 923-930.
- Daniel, S. B. (1983). The tool box approach of the Tamil to the issues of moral responsibility and human destiny. In C. F. Keyes & E. V. Daniel (Eds.), *Karma: An anthropological inquiry* (pp. 27-62). Berkeley, CA: University of California Press.
- Donald, I. J., Cooper, S. R., & Conchie, S. M. (2014). An extended theory of planned behaviour model of the psychological factors affecting commuters' transport mode use. *Journal of Environmental Psychology*, 40, 39-48.

- Dunlap, R. E., & Van Liere, K. D. (1978). A proposed measuring instrument and preliminary results: The "new environmental paradigm. *Journal of Environmental Education*, 9(1), 10–19.
- Dweck, C. S., Chiu, C. Y., & Hong, Y. Y. (1995). Implicit theories and their role in judgments and reactions: A word from two perspectives. *Psychological Inquiry*, 6(4), 267–285.
- Frederiks, E. R., Stenner, K., & Hobman, E. V. (2015). Household energy use: Applying behavioural economics to understand consumer decision-making and behaviour. *Renewable and Sustainable Energy Reviews*, 41, 1385–1394.
- Garvey, A. M., & Bolton, L. E. (2017). Eco-product choice cuts both ways: How proenvironmental licensing versus reinforcement is contingent on environmental consciousness. *Journal of Public Policy & Marketing*, 36(2), 284–298.
- Giebelhausen, M., Chun, H. H., Cronin Jr, J. J., & Hult, G. T. M. (2016). Adjusting the warm-glow thermostat: How incentivizing participation in voluntary green programs moderates their impact on service satisfaction. *Journal of Marketing*, 80(4), 56–71.
- Green, T., & Peloza, J. (2014). Finding the right shade of green: The effect of advertising appeal type on environmentally friendly consumption. *Journal of Advertising*, 43(2), 128–141.
- Griskevicius, V., Tybur, J. M., & Van den Bergh, B. (2010). Going green to be seen: Status, reputation, and conspicuous conservation. *Journal of Personality and Social Psychology*, 98(3), 392.
- Hamerman, E. J., & Morewedge, C. K. (2015). Reliance on luck: Identifying which achievement goals elicit superstitious behaviour. *Personality and Social Psychology Bulletin*, 41(3), 323–335.
- Hamerman, E. J., & Johar, G. V. (2013). Conditioned superstition: Desire for control and consumer brand preferences. *Journal of Consumer Research*, 40(3), 428–443.
- Hauser, D. J., & Schwarz, N. (2016). Attentive Turkers: MTurk participants perform better on online attention checks than do subject pool participants. *Behaviour Research Methods*, 48(1), 400–407.
- Helin, K. (2012). *Obama spent part of election day playing hoops with Pippen*. Last Accessed January 2, 2023, NBC. <https://nba.nbcsports.com/2012/11/06/obama-spent-part-of-election-day-playing-hoops-with-pippen/>
- Jachimowicz, J. M., Hauser, O. P., O'Brien, J. D., Sherman, E., & Galinsky, A. D. (2018). The critical role of second-order normative beliefs in predicting energy conservation. *Nature Human Behaviour*, 2(10), 757–764.
- Kang, J., Park, J. K., & Kim, H. (2018). The influence of implicit self-theories on causal inferences about superstitions and consequences on subsequent tasks. *Journal of the Association for Consumer Research*, 3(4), 477–489.
- Karremans, J. C., Stroebe, W., & Claus, J. (2006). Beyond Vicary's fantasies: The impact of subliminal priming and brand choice. *Journal of Experimental Social Psychology*, 42(6), 792–798.
- Keinan, G. (2002). The effects of stress and desire for control on superstitious behaviour. *Personality and Social Psychology Bulletin*, 28(1), 102–108.
- Kelley, H. H. (1973). The processes of causal attribution. *American Psychologist*, 28(2), 107.
- Kramer, T., & Block, L. (2008). Conscious and nonconscious components of superstitious beliefs in judgment and decision making. *Journal of Consumer Research*, 34(6), 783–793.
- Kramer, T., & Block, L. (2011). Nonconscious effects of peculiar beliefs on consumer psychology and choice. *Journal of Consumer Psychology*, 21(1), 101–111.
- Kramer, T., & Block L. G. (2014). "Like Mike: Ability contagion through touched objects increases confidence and improves performance. *Organizational Behaviour and Human Decision Processes*, 124(2), 215–228.
- Kruglanski, A. W., Fishbach, A., Woolley, K., Bélanger, J. J., Chernikova, M., Molinario, E., & Pierro, A. (2018). A structural model of intrinsic motivation: On the psychology of means-ends fusion. *Psychological Review*, 125(2), 165.
- Kulow, K., & Kramer, T. (2016). In pursuit of good karma: When charitable appeals to do right go wrong. *Journal of Consumer Research*, 43(2), 334–353.
- Kurz, T., Gardner, B., Verplanken, B., & Abraham, C. (2015). Habitual behaviours or patterns of practice? Explaining and changing repetitive climate-relevant actions. *Wiley Interdisciplinary Reviews: Climate Change*, 6(1), 113–128.

- Lee, J. S., Kim, J., Hwang, J., & Cui, Y. (2021). Does love become hate or forgiveness after a double deviation? The case of hotel loyalty program members. *Tourism Management*, 84, 104279.
- Lin, Y. C., & Chang, C. C. A. (2012). Double standard: The role of environmental consciousness in green product usage. *Journal of Marketing*, 76(5), 125-134.
- Litman, L., Robinson, J., & Abberbock, T. (2017). TurkPrime.com: A versatile crowdsourcing data acquisition platform for the behavioural sciences. *Behaviour Research Methods*, 49(2), 433-442. <https://link.springer.com/article/10.3758/s13428-016-0727-z>
- Luchs, M. G., & Kumar, M. (2017). "Yes, but this other one looks better/works better": How do consumers respond to trade-offs between sustainability and other valued attributes? *Journal of Business Ethics*, 140(3), 567-584.
- Luo, X., & Bhattacharya, C. B. (2006). Corporate social responsibility, customer satisfaction, and market value. *Journal of Marketing*, 70(4), 1-18.
- Ma, H., Bradshaw, H. K., Janakiraman, N., & Hill, S. E. (2019). Spending as protection: The need for safety increases preference for luxury products. *Marketing Letters*, 30(1), 45-56.
- McKenzie-Mohr, D. (2000). New ways to promote proenvironmental behaviour: Promoting sustainable behaviour: An introduction to community-based social marketing. *Journal of Social Issues*, 56(3), 543-554.
- McShane, B. B., & Böckenholt, U. (2017). Single-paper meta-analysis: Benefits for study summary, theory testing, and replicability. *Journal of Consumer Research*, 43(6), 1048-1063.
- Nosek, B. A., Ebersole, C. R., DeHaven, A. C., & Mellor, D. T. (2018). The preregistration revolution. *Proceedings of the National Academy of Sciences*, 115(11), 2600-2606.
- Olsen, M. C., Slotegraaf, R. J., & Chandukala, S. R. (2014). Green claims and message frames: How green new products change brand attitude. *Journal of Marketing*, 78(5), 119-137.
- Ong, H. H., Evans, A. M., Nelissen, R., & van Beest, I. (2022). Belief in karma is associated with perceived (but not actual) trustworthiness. *Judgment & Decision Making*, 17(2).
- Simmons, P. J., Nelson, L. D., & Simonsohn, U. (2021). Pre-registration: Why and how. *Journal of Consumer Psychology*, 31(1), 151-162.
- Pancer, E., McShane, L., & Noseworthy, T. J. (2017). Isolated environmental cues and product efficacy penalties: The colour green and eco-labels. *Journal of Business Ethics*, 143(1), 159-177.
- Pappu, S. R. R. (1987). *The dimensions of karma*, Delhi: Chanakya Publications.
- Payne, B. K., Cheng, C. M., Govorun, O., & Stewart, B. D. (2005). An inkblot for attitudes: Affect misattribution as implicit measurement. *Journal of Personality and Social Psychology*, 89(3), 277.
- Ratliff, K. A., Howell, J. L., & Redford, L. (2017). Attitudes toward the prototypical environmentalist predict environmentally friendly behaviour. *Journal of Environmental Psychology*, 51, 132-140.
- Risen, J. L., & Gilovich, T. (2008). Why people are reluctant to tempt fate. *Journal of Personality and Social Psychology*, 95(2), 293.
- Robinson, J., Rosenzweig, C., Moss, A. J., & Litman, L. (2019). Tapped out or barely tapped? Recommendations for how to harness the vast and largely unused potential of the Mechanical Turk participant pool. *PloS One*, 14(12), e0226394.
- Rudski, J. M., & Edwards, A. (2007). Malinowski goes to college: Factors influencing students' use of ritual and superstition. *The Journal of General Psychology*, 134 (4), 389-403.
- Sachdeva, S., Jordan, J., & Mazar, N. (2015). Green consumerism: Moral motivations to a sustainable future. *Current Opinion in Psychology*, 6, 60-65.
- Schippers, M. C., & Van Lange, P. A. (2006). The psychological benefits of superstitious rituals in top sport: A study among top sportspersons. *Journal of Applied Social Psychology*, 36(10), 2532-2553.
- Schultz, P. W., Nolan, J. M., Cialdini, R. B., Goldstein, N. J., & Griskevicius, V. (2007). The constructive, destructive, and reconstructive power of social norms. *Psychological Science*, 18(5), 429-434.
- Shah, J., Higgins, T., & Friedman, R. S. (1998). Performance incentives and means: How regulatory focus influences goal attainment. *Journal of Personality and Social Psychology*, 74(2), 285.

- Sierra, J. J., Hyman, M. R., & Turri, A. M. (2018). Determinants and outcomes of superstitious beliefs: A multi-study approach. *Journal of Marketing Management*, 34(15-16), 1397-1417.
- Spencer, S. J., Zanna, M. P., & Fong, G. T. (2005). Establishing a causal chain: Why experiments are often more effective than mediational analyses in examining psychological processes. *Journal of Personality and Social Psychology*, 89(6), 845.
- Sun, J. J., Bellezza, S., & Paharia, N. (2021). Buy less, buy luxury: Understanding and overcoming product durability neglect for sustainable consumption. *Journal of Marketing*, 85(3), 28-43.
- The Recycling Partnership (2020), *2020 State of Curbside Recycling Report*.
- Theotokis, A., & Manganari, E. (2015). The impact of choice architecture on sustainable consumer behaviour: The role of guilt. *Journal of Business Ethics*, 131(2), 423-437.
- Thøgersen, J. (2014). Unsustainable consumption: Basic causes and implications for policy. *European Psychologist*, 19(2), 84.
- Tiefenbeck, V., Goette, L., Degen, K., Tasic, V., Fleisch, E., Lalive, E., & Staake, T. (2018). Overcoming salience bias: How real-time feedback fosters resource conservation. *Management Science*, 64(3), 1458-1476.
- Trudel, R. (2019). Sustainable consumer behaviour. *Consumer Psychology Review*, 2(1), 85-96.
- U.S. Department of Transportation, Federal Highway Administration (2022), *Highway Statistics 2020*.
- U.S. EIA (2022), *State Energy Data 2020: Prices and Expenditures*.
- U.S. Environmental Protection Agency (EPA) (2022). *United States 2030 Food Loss and Waste Reduction Goal*.
- USA Spending (2022). *Environmental Protection Agency (EPA)*. Last Accessed January 2, 2023, <https://www.usaspending.gov/agency/environmental-protection-agency?fy=2022>
- Van't Veer, A. E., & Giner-Sorolla, R. (2016). Pre-registration in social psychology—A discussion and suggested template. *Journal of Experimental Social Psychology*, 67, 2-12.
- Verplanken, B. (2012). Old habits and new routes to sustainable behaviour. In *Engaging the Public with Climate Change* (pp. 43-56). Routledge.
- Verplanken, B., & Roy, D. (2016). Empowering interventions to promote sustainable lifestyles: Testing the habit discontinuity hypothesis in a field experiment. *Journal of Environmental Psychology*, 45, 127-134.
- Wadley, S. S. (1983). Vrats: Transformers of destiny. In C. F. Keyes & E. V. Daniel (Eds.), *Karma: An anthropological inquiry* (pp. 147-162). Berkeley, CA: University of California Press.
- Warde, A., & Southerton, D. (2012). The habits of consumption (Vol. 12). *Helsinki: Helsinki Collegium in the Humanities and Social Sciences*.
- White, C. J., Willard, A. K., Baimel, A., & Norenzayan, A. (2021). Cognitive pathways to belief in karma and belief in God. *Cognitive Science*, 45(1), e12935.
- White, C. J., Kelly, J. M., Shariff, A. F., & Norenzayan, A. (2019). Supernatural norm enforcement: Thinking about karma and God reduces selfishness among believers. *Journal of Experimental Social Psychology*, 84, 103797.
- White, K., & Simpson, B. (2013). When do (and don't) normative appeals influence sustainable consumer behaviours? *Journal of Marketing*, 77(2), 78-95.
- White, K., Simpson, B., & Argo, J. J. (2014). The motivating role of dissociative out-groups in encouraging positive consumer behaviours. *Journal of Marketing Research*, 51(4), 433-447.
- White, K., MacDonnell, R., & Dahl, D. W. (2011). It's the mind-set that matters: The role of construal level and message framing in influencing consumer efficacy and conservation behaviours. *Journal of Marketing Research*, 48(3), 472-485.
- Womack, M. (1992). Why athletes need ritual: A study of magic among professional athletes. *Sport and Religion*, 191-202.
- Zizzo, D. J. (2010). Experimenter demand effects in economic experiments. *Experimental Economics*, 13(1), 75-98.

5.17 Web Appendices

5.17.1 Web Appendix A: The Operationalization of Superstitious Beliefs (Study 1)

All participants were instructed to engage in reportedly a visualization task, in which they were made to believe that the researchers were interested in their ability of recalling a particular incident and were asked to describe the situation, as shown below.

Control condition:

Visualization Task

In the following task, we are interested in your ability of recalling a particular incident in your life, immersing yourself in it, and describing this situation **as detailed as possible**.

---- Page break ----

Please briefly describe your yesterday.

Superstitious beliefs condition:

Visualization Task

In the following task, we are interested in your ability of recalling a particular incident in your life, immersing yourself in it, and describing this situation **as detailed as possible**.

---- Page break ----

Please recall a particular incident in which **your superstitious beliefs affect the outcome of a situation**.

By superstition, we mean a belief that **an object, action, or circumstance that is not logically related to a course of events influence the outcome**, for example, karma, knock on wood, fingers crossed, and/or walking under a ladder.

Please describe the above situation in a detailed and vivid manner — *what happened*, how you **felt**, etc.

5.17.2 Web Appendix B: Measurement Scales Used (Study 1)

Superstitious beliefs (Manipulation checks of the independent variable; Sierra, Hyman, & Turri, 2018; *1 = Strongly disagree, 7 = Strongly agree*)

1. I believe it is possible to jinx things or situations.
2. Good chi attracts propensity.
3. I believe in karma.
4. I believe in fan rituals, like wearing lucky shirts during a game can influence game outcomes.

Product sustainability (Manipulation checks of the dependent variable; Garvey & Bolton, 2017; *1 = Not at all environmentally sustainable, 7 = Extremely environmentally sustainable*)

To which extent do you believe that the [PRODUCT] you chose is environmentally sustainable?

Sustainability consumption (The dependent variable; Griskevicius, Tybur, & Van den Bergh, 2010; *1 = Definitely [PRODUCT] A, 7 = Definitely [PRODUCT] B*)

1. Dishwasher

Please imagine that you are out shopping for a dishwasher, which of these two products would you buy?

Dishwasher A	Dishwasher B
Sub-Zero ED40 Elite Dishwasher (\$1,100) • Comes in choice of stainless steel or white exterior with black chrome trim • Features a revolutionary heated drying system that eliminates water spots • Has powerful water sprays but produces no sound	Sub-Zero Eco-Trend Dishwasher (\$1,100) • Has a standard 40-minute running cycle • Uses a recirculating water system to save water • Is made with recycled components

FIGURE 5.6 EXPERIMENTAL STIMULI USED IN STUDY 1 (DISHWASHER)

2. Cleaner

Please imagine that you are out shopping for a cleaner, which of these two products would you buy?

Cleaner A	Cleaner B
Lysol Industrial Strength Household Cleaner (\$7) • Awarded most effective cleaner on the market award • Chemically engineered to cut through the toughest grease, rust, and mold • Kills 99.9% of germs on contact	Lysol Natural Household Cleaner (\$7) • Made from biodegradable nontoxic materials • Contains no acids, dyes, or harsh chemicals • Not tested on animals

FIGURE 5.7 EXPERIMENTAL STIMULI USED IN STUDY 1 (CLEANER)

3. Lamp

Please imagine that you are out shopping for a lamp, which of these two products would you buy?

Lamp A	Lamp B
Target brand Chromium-Plated Lamp with Silk Shade (\$60) • Lamp frame is plated with Chromium that is resistant to dulling • Uses an adjustable 150-watt incandescent bulb with four brightness settings • Silk shade produces optimal ambient light filtering	Target brand Efficiency Low-Wattage Lamp with Organic Cloth Shade (\$60) • Lamp frame is constructed in a clean and waste-friendly facility that does not produce toxic waste • Comes with a single-setting fluorescent bulb that uses only 15% of the electricity of conventional bulbs • Cloth shade made from recycled organic cotton fibers

FIGURE 5.8 EXPERIMENTAL STIMULI USED IN STUDY 1 (LAMP)

4. Backpack

Please imagine that you are out shopping for a backpack, which of these two products would you buy?

Backpack A	Backpack B
North Face KD100 Ultra-Strength Backpack (\$64) • Contains eight different storage compartments for maximum versatility • Stylish design crafted with water-resistant coating • Solid construction lasts twice as long as the next leading brand on the market	North Face Eco-Life Backpack (\$64) • Made from 100% organic fibers • Utilitarian design minimizes waste in the construction process • Comes with instructions on how to recycle the backpack when you are done with it

FIGURE 5.9 EXPERIMENTAL STIMULI USED IN STUDY 1 (BACKPACK)

5. Batteries

Please imagine that you are out shopping for batteries, which of these two products would you buy?

Batteries A	Batteries B
Energizer e2 Lithium AAA Batteries (\$8) • Last almost twice as long as conventional alkaline batteries • Weigh 1/3 less than standard alkaline batteries • Perform in even the most extreme temperatures from – 40 to 140 degrees F	Energizer Enviromax AAA Batteries (\$8) • Contain zero amounts of lead, mercury, and cadmium • Easiest battery to recycle • Awarded “Most Environmentally Friendly” battery

FIGURE 5.10 EXPERIMENTAL STIMULI USED IN STUDY 1 (BATTERIES)

Note. The measurement of five product categories were counterbalanced.

Attention check question

What color is Grass?

The fresh, uncut grass, not leaves or hay.

Make sure to select *purple* as an answer so that we know you are paying attention.

A: Green

B: Purple

Environmental consciousness (Dunlap & Van Liere, 1978; Lin & Chang, 2012; 1 = *Strongly disagree*, 6 = *Strongly agree*)

Please indicate to what extent do you feel the following statements are applicable to you?

1. We are approaching the limit of the number of people the earth can support.
2. The balance of nature is very delicate and easily upset.
3. Humans have the right to modify the natural environment to suit their needs. (*r*)
4. Mankind was created to rule over the rest of nature. (*r*)
5. When humans interfere with nature it often produces disastrous consequences.
6. Plants and animals exist primarily to be used by humans. (*r*)
7. To maintain a healthy economy we will have to develop a “stead-state” economy where industrial growth is controlled.
8. Humans must live in harmony with nature in order to survive.
9. The earth is like a spaceship with only limited room and resources.
10. Humans need not adapt to the natural environment because they can remake it to suit their needs. (*r*)
11. There are limits to growth beyond which our industrialized society cannot expand.
12. Mankind is severely abusing the environment.

Experimental realism (Preliminary analysis; Lee, Kim, Hwang, & Cui, 2021)

1. How realistic do you find the experience in the task above? (1 = *Very unrealistic*, 7 = *Very realistic*)

How likely is it that an experience like this may occur? (1 = *Very unlikely*, 7 = *Very likely*)

Demographic information

What is your ethnicity?

1. White/Caucasian
2. African American
3. Hispanic
4. Asian

5. Native American
6. Pacific Islander
7. Other

About how much is your yearly family income? (if more than one person working, add all).

1. \$140,001 or above
2. \$130,001 - \$140,000
3. \$120,001 - \$130,000
4. \$110,001 - \$120,000
5. \$100,001 - \$110,000
6. \$90,001 - \$100,000
7. \$80,001 - \$90,000
8. \$70,001 - \$80,000
9. \$60,001 - \$70,000
10. \$50,001 - \$60,000
11. \$40,001 - \$50,000
12. \$30,001 - \$40,000
13. \$20,001 - \$30,000
14. \$10,001 - \$20,000
15. \$0 - \$10,000

What is the highest level of education you have completed?

1. Did not complete high school
2. High school graduate or some college
3. College graduate (4 years)
4. Postgraduate degree

Please indicate your gender:

1. Female

2. Male
3. Gender diverse
4. Prefer not to answer

What is your age?

1. Under 18
2. 18 – 24
3. 25 – 34
4. 35 – 44
5. 45 – 54
6. 55 – 64
7. 65 – 74
8. 75 – 84
9. 85 and older

What is your exact age?

Is English your native language?

1. Yes
2. No

5.17.3 Web Appendix C: The Operationalisation of Superstitious Beliefs (Study 2)

All participants were instructed to engage in reportedly a visualization task, in which they were made to believe that the researchers were interested in their ability of recalling a particular incident and were asked to describe the situation, as shown below.

Control condition:

Visualization Task

In the following task, we are interested in your ability of recalling a particular incident in your life, immersing yourself in it, and describing this situation **as detailed as possible**.

---- Page break ----

Please list, in as much detail as you can, everything that you have eaten or drank in the past 48 hours.

* Not to worry about those things you find yourself unable to remember.

Superstitious beliefs condition:

Visualization Task

In the following task, we are interested in your ability of recalling a particular incident in your life, immersing yourself in it, and describing this situation **as detailed as possible**.

---- Page break ----

Please recall a particular incident in which **your superstitious beliefs affect the outcome of a situation**.

By superstition, we mean a belief that **an object, action, or circumstance that is not logically related to a course of events influence the outcome**, for example, karma, knock on wood, fingers crossed, and/or walking under a ladder.

Please describe the above situation in a detailed and vivid manner — *what happened, how you felt*, etc.

5.17.4 Web Appendix D: Measurement Scales Used (Study 2)

Superstitious beliefs (Manipulation checks of the independent variable; *1 = Strongly disagree, 7 = Strongly agree*)

1. I believe it is possible to jinx things or situations.
2. Good chi attracts propensity.
3. I believe in karma.
4. I believe in fan rituals, like wearing lucky shirts during a game can influence game outcomes.

Product sustainability (Manipulation checks of the dependent variable; *1 = Not at all environmentally sustainable, 7 = Extremely environmentally sustainable*)

To which extent do you believe that the lamp you chose is environmentally sustainable?

Sustainability consumption (The dependent variable; Garvey & Bolton, 2017; *1 = Definitely Lamp A, 7 = Definitely Lamp B*)

Please imagine that you are out shopping for a lamp, which of these two products would you buy?

Lamp A	Lamp B
Target brand Chromium-Plated Lamp with Silk Shade (\$60) • Lamp frame is plated with Chromium that is resistant to dulling • Uses an adjustable 150-watt incandescent bulb with four brightness settings • Silk shade produces optimal ambient light filtering	Target brand Efficiency Low-Wattage Lamp with Organic Cloth Shade (\$60) • Lamp frame is constructed in a clean and waste-friendly facility that does not produce toxic waste • Comes with a single-setting fluorescent bulb that uses only 15% of the electricity of conventional bulbs • Cloth shade made from recycled organic cotton fibers

FIGURE 5.11 EXPERIMENTAL STIMULI USED IN STUDY 2 (LAMP)

Karmic reward seeking (Mediator; Ong et al., 2022)

In this task, we are investigating the role of beliefs in decision-making. Please indicate the extent to which you agree with each statement based on your beliefs.

Karma refers to the idea that good actions cause good things to happen and bad actions cause bad things to happen, either at a later time in one's life or in a future lifetime.

1. I believe in karma. (*1 = Not at all, 7 = Very much*)
2. Good actions in the present - such as purchasing sustainable products - lead to good outcomes in the future either in this life or in the hereafter. (*1 = Strongly disagree, 7 = Strongly agree*)
3. Bad actions in the present - such as failing to purchase sustainable products - lead to bad outcomes in the future either in this life or in the hereafter. (*1 = Strongly disagree, 7 = Strongly agree*)

Self-efficacy (Alternative mediator; White et al., 2011; *1 = Strongly disagree, 7 = Strongly agree*)

1. I feel that I know how to go about sustainable consumption.
2. I believe that I know what steps I will take to engage in sustainable consumption.

Attention check question

What color is Grass?

The fresh, uncut grass, not leaves or hay.

Make sure to select *purple* as an answer so that we know you are paying attention.

A: Green

B: Purple

Environmental consciousness (Bohlen et al., 1993; *1 = Would never do, 6 = Do often*)

How often do you engage in the following activities?

1. Recycling water
2. Recycling glass
3. Recycling plastics
4. Recycling metals

Experimental realism (Preliminary analysis; Lee, Kim, Hwang, & Cui, 2021)

1. How realistic do you find the experience in the task above? (*1 = Very unrealistic, 7 = Very realistic*)

How likely is it that an experience like this may occur? (*1 = Very unlikely, 7 = Very likely*)

5.17.5 Web Appendix E: The Operationalisation of Superstitious Beliefs (Study 3)

Self-affirmation condition:

Personal Recall Exercise

In the following task, we are interested in your memory ability - your ability to recall a particular incident in your life, immerse yourself in it, and describe this situation.

Based on the instructions on the following page, please recall a few experiences from your personal life in a brief essay, **as detailed as possible**.

---- Page break ----

Personal Recall Exercise

Please describe three or four personal experiences in which **your actions have benefited other people, and/or society in general, and made you feel good about yourself**.

Please pick one of these experiences and write a short story describing the event and your feelings at the time.

Control condition:

Personal Recall Exercise

In the following task, we are interested in your memory ability - your ability to recall a particular incident in your life, immerse yourself in it, and describe this situation.

Based on the instructions on the following page, please recall a few experiences from your personal life in a brief essay, **as detailed as possible**.

---- Page break ----

Personal Recall Exercise

Please list, in as much detail as you can, everything that you have eaten or drank in the past 48 hours.

* Not to worry about those things you find yourself unable to remember.

5.17.6 Web Appendix F: Measurement Scales Used (Study 3)

Sustainability consumption (The dependent variable; Garvey & Bolton, 2017; 1 = *Cleaner A*, 2 = *Cleaner B*)

Please imagine that you are out shopping for a lamp, which of these two products would you buy?

Cleaner A	Cleaner B
Lysol Industrial Strength Household Cleaner (\$7) • Awarded most effective cleaner on the market award • Chemically engineered to cut through the toughest grease, rust, and mold • Kills 99.9% of germs on contact	Lysol Natural Household Cleaner (\$7) • Made from biodegradable nontoxic materials • Contains no acids, dyes, or harsh chemicals • Not tested on animals

FIGURE 5.12 EXPERIMENTAL STIMULI USED IN STUDY 3 (CLEANER)

5.17.7 Web Appendix G: Multiple Contrast Standardized Meta-Analysis (MCSM)

Due to concerns in relation to the measurement scales used across studies, we conducted another meta-analysis by using the multiple contrast standardized meta-analysis (MCSM) methodology (McShane & Böckenholt, 2017).

Supporting the robustness of the findings, the analysis showed a significant effect of superstitious beliefs on sustainability consumption preference (see Appendix H). The results of the MCSM revealed an estimate of contrast of .31 ($SE = .09$; $z = 3.37$, $p < .001$). Moreover, the results exerted a size of contrast vector of 1.41. Taken together, the reported effect of superstitious beliefs entails sufficient veracity.

5.17.8 Web Appendix H: The Plot of the Multiple Contrast Standardized Meta-Analysis (MCSM)

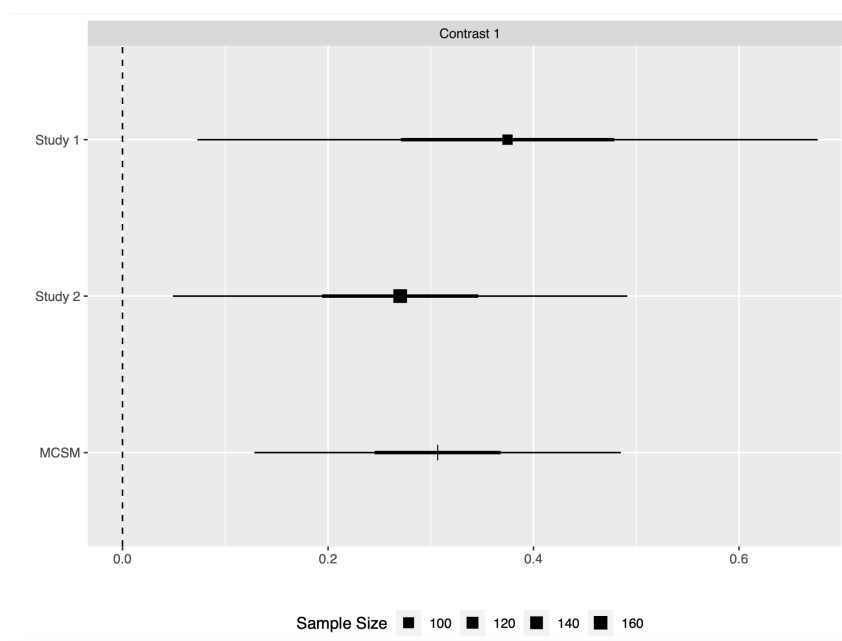


FIGURE 5.13 SINGLE-PAPER META-ANALYSIS USING MULTIPLE CONTRAST STANDARDIZED META-ANALYSIS (MCSM) APPROACH (STUDY 4)

Chapter 6: Prelude to Manuscript 2

“Research is to see what everybody else has seen, and to think what nobody else has thought.”

---- Albert Szent-Györgyi (Nobel Prize-winning biochemist)

The ensuing chapter attempt to address research questions *RQ4* and *RQ5*, and aims to examine how salient superstitious beliefs affect consumer impulsivity; and if so, how. This research has been submitted to the *Journal of Consumer Research* and is currently under review for the considerations of publication.

Consumers' impulsive behaviours have been extensively studied in marketing, where four schools of thought surface: individual traits (e.g., sensation-seeking), motives (e.g., hedonic motives), consumers' resources (e.g., time), and marketing stimuli (e.g., store layout and price discounts). Despite considerable efforts devoted to external marketing stimuli, scholars assert that dispositional individual traits remain to be the most critical antecedent factor in predicting such behaviours (Iyer et al., 2020). As a prominent individual difference factor (Vyse, 2018), the impact of superstitious beliefs has unfortunately, not been examined in relation to consumer impulsivity.

To close this research gap, this following research explores the effect of the activation of salient superstitious beliefs on consumer impulsivity, and the underlying mechanisms explaining this effect. Across five studies, including a correlational study, three experimental studies (with one being incentive compatible and one conducted in the field setting), and a single-paper meta-analysis, the resulting findings indicate that salient superstitious beliefs enacted consumers to prioritise future, long-term rewards more than immediate, short-term ones. This shift in temporal focus therefore subsequently helped consumers to resist the temptation of impulses, and curbed their impulsive behaviours. Chapter 7 concludes by discussing the theoretical, managerial, regulatory and consumer implications, followed by outlining a set of interesting questions for future inquiries.

Chapter 7: It Is A Marathon Not A Sprint: Superstitious Beliefs Curb Consumer Impulsivity (Manuscript 2)

"Social science research can help us make better decisions, understand how societies function, and address social challenges. Ultimately, our goal as social scientists is to create knowledge that can be used to promote the greater good."

---- National Science Foundation (NSF)

7.1 Consumer Relevance and Contribution Statement

Consumers often find themselves succumbed to scenarios where they make unplanned, unnecessary purchases they end up regretting. Understanding ways to curb such behaviours is of great significance – both theoretically and practically – given that impulsive consumption equates to a whopping annual spend of \$18 billion in U.S. alone. To address this gap, this research investigates how salient superstitious beliefs affect consumer impulsivity. Although the relationship between superstitious beliefs and impulsivity is theoretically unclear a priori, a case can be made that because high levels of impulsivity might predispose consumers to various cognitive errors in reasoning, there ought to be a positive relationship thereof. However, in a departure from conventional wisdom and cognitive error-based predictions, this research argues and documents, counterintuitively, that thinking about superstitious beliefs decreases consumer impulsivity via long-term orientation. Five pre-registered studies, featuring online and field experiments with measured and manipulated superstitious beliefs, lend robust support for the hypotheses. First, Studies 1 and 2 establish the phenomenon: thinking about superstitious beliefs tends to decrease consumer impulsivity. Second, Study 3 depicts long-term orientation as the underlying mechanism: long-term orientation induced by superstitious beliefs enacts consumers to favour future, long-term rewards over immediate, short-term gratifications, thereby inhibiting impulsivity. Moreover, this research excludes alternative explanations including affect, self-control and awe. Study 4 employs an open-science online grocery store emulating a realistic shopping experience and offer incentive-compatible examination of the hypotheses. The results confirm that superstitious beliefs indeed significantly decrease consumer impulsivity, in terms of dollar amount spent, the number of items, and calories (during online grocery shopping). Finally, a single-paper meta-analysis (MCSM) further cements the veracity of the findings. This research, to the best of my knowledge, is the first to empirically examine the relationship between superstitious beliefs and consumer impulsivity, and reveals a benign consequence of superstitious beliefs in consumer behaviour.

7.2 Abstract

Consumers often turn to superstitions in impulsive consumption (e.g., gambling), including wearing lucky charms, carrying lucky coins, blowing on a dice before rolling it, and blaming their losses on bad luck. However, research has been limited in examining such relationships. In a departure from conventional wisdom and cognitive error-based predictions hinting at the positive correlation between superstitions and impulsivity, five studies featuring a correlational study, three experiments, and a single-paper meta-analysis (SPM) demonstrate, counterintuitively, that superstitious beliefs can significantly curb consumer impulsivity. The author further suggests that this effect arises because superstitious beliefs activate consumers' long-term orientation, thereby inhibiting consumer impulsivity. The effect emerges in an online crowdsourcing panel and in the field with measured and manipulated superstitious beliefs. This research suggests that marketers and consumers can harness superstitious beliefs to regulate and deter consumers from engaging in consumption behaviours focusing on immediate gratification.

Keywords: *Superstition, Superstitious beliefs, Impulsivity, Long-term orientation, Karma.*

7.3 Introduction

Imagine a consumer walks in a casino, planning on placing one bet only. Although this consumer does not regard himself as a particularly superstitious person, he still carries a lucky coin and blows on the dice before rolling it, hoping that doing so will increase the chance of winning. Now imagine the same consumer. Despite performing this ritual, he is not able to resist the impulse of gambling even when losing, ends up leaving the casino empty-handed, and blaming his losses on bad luck that day. Now instead, imagine the same scenario, without the superstitious rituals. In this case, would this consumer still act in an impulsive manner?

Like in the scenario above, consumers often find themselves fall prey to spending more than they intended and/or making purchases failing to resist impulses. For instance, in U.S. alone, impulsive consumption equates to a whopping annual spend of approximately \$18 billion (Khait, 2020) – an average consumer spends more than US \$300 on impulsive spending each month, among whom 20% have spent at least \$1,000 (Statista, 2022). On the post-consumption side, nearly half of consumers express regret after an impulsive purchase (McDermott, 2021).

Which brings us to superstitions. Just as consumer impulsivity is of an irrational nature, superstitious beliefs – defined as erroneous associations between intertemporal events that are not supported by scientific reasoning – often involve pseudoscientific, supernatural, and paranormal forces (Damisch et al., 2010). Marketers ubiquitously exploit such irrationality among consumers to encourage sales in the marketplace – for one, products/services capitalizing on superstitious beliefs, including online astrology, healing crystals and spell kits on Amazon.com, remain a perilous enterprise (Vyse, 2018); for another, more marketers are devising their strategies and marketing stimuli to encourage increasingly impulsive and emotionally-driven purchases.

Despite the urgency of curbing consumers' impulsive behaviours, along with the joint implications for consumer well-being, there is, *surprisingly*, no research insight as to the interplay between superstitious beliefs and consumer impulsivity. That is, how might thinking about superstitious beliefs before shopping influence consumer impulsivity? Although the relationship between superstitious beliefs and impulsivity is unclear a priori, a theoretical case can be made that because high levels of impulsivity might predispose consumers to various cognitive errors in reasoning, such as superstitions (Michalczuk et al., 2011), there ought to be a positive relationship

between superstitious beliefs and impulsivity. However, we conceptually argue and empirically demonstrate that, counter to consumer expectations, conventional wisdom, and cognitive error-based predictions, salient superstitious beliefs decrease consumer impulsivity.

Understanding *how* and *why* superstitious beliefs influence consumer impulsivity is critical because, seemingly inane beliefs – such as superstitions – are ubiquitous among diverse populations worldwide. From believing in (un)lucky numbers (e.g., Asian cultures), carrying a rabbit's foot or horseshoe (e.g., European cultures), sweeping at night (e.g., Latin American cultures), to certain religious rituals among subscribers of Christianity or Islam, superstitions are prevalent across different cultures, be it cultural ones, socially learned from upbringings, and personal experiences. In essence, a high portion of consumers around the world are influenced by superstitions.

Although research in psychology, anthropology, sociology, and neurology has investigated different aspects of superstitions (Gallagher & Lewis, 2001; Singhal & Khadilkar, 2014; Skinner, 1948), only a handful of studies has examined the implications of superstitions in marketing-related consequences. Extant literature in this stream of research predominantly focuses on how superstitions induce greater confidence, along with its consequence on better performance; other studies, alternatively, highlight how superstitious beliefs enhance consumers' expectations towards luck-related products (Block & Kramer, 2009; Damisch et al., 2010; Hamerman & Morewedge, 2015).

The remainder of this research proceeds as follows. We begin by outlining key findings surrounding superstitious beliefs. Next, we establish the conceptual case that salient superstitious beliefs lead to decreased consumer impulsivity through long-term orientation, followed by five studies lending support for the proposed conceptual model. Notably, all studies were pre-registered (links are presented in each study accordingly), featuring diverse consumption scenarios, different facets of consumer impulsivity, distinct response formats and different levels

of incentive compatibility, and two individual difference factors (as covariates) carried consistently across studies¹¹.

7.4 Theoretical Development and Hypotheses

7.4.1 Superstitious Beliefs and Long-Term Orientation

Superstitious beliefs, like people who subscribe to them, vary substantially. From culturally held superstitions (e.g., lucky numbers such as 6 and 8 in Asian cultures; Block & Kramer, 2009) to idiosyncratic ones, such as athletes' and fans' rituals, superstitious beliefs might be manifested in diverse forms. However, one common theme surfacing from the extant literature suggests that, regardless of its manifestations, superstitious beliefs often involve *fallacious intertemporal associations*, such that peoples' actions and the outcome are connected along the temporal spectrum. That is, if one behaves in accordance with superstitious beliefs in the present, it will likely affect the outcome in the future, either in the current lifetime, or the ones to come. Congenially, a consumer might attribute their present (mis)fortune to their past actions.

Considering the intertemporal connotation imbedded in superstitious beliefs, it is important to understand how people consider and view time – evaluating the past, present, and future (Shipp & Aeon, 2019), and attributing importance to events in relation to succession and duration (Spear, Lin, & Mowen, 2001). Following the seminal work by Hofstede (1980), scholars have been dedicated to the ways in which consumers regard the passage of time. For instance, consumers in general share the propensity to value short-term, immediate outcomes over ones that are delayed; however, under specific circumstances, consumers are likely to savour future over present consumption (Ramanathan & Menon, 2006).

In particular, an important construct in this stream of literature surfaces: long-term orientation. Originally rooted in and labelled as the “Confucian dynamic” (Hofstede & Bond, 1988), long-term orientation concerns respecting hard work for future benefits, perseverance, and saving for the future. In alignment with the Confucian values, long-term orientation was later

¹¹ In the manuscript, we mainly report the results controlling for gender and income. However, the results were consistent with and without including the covariates (e.g., gender and income). Please see the Web Appendices for detailed results without including covariates.

conceptualized as a forward-looking perspective in viewing time holistically – rather than only deeming “here and now” or short-term actions important; put differently, a “future” (long-term) versus a “now” (short-term) view (Hofstede, 1991). In this regard, we forward the following definition: *long-term orientation* refers to ones’ tendency to value future and long-term rewards, even at the expense of immediate and short-term gains (Bearden et al., 2006). It implies a virtues-oriented, pragmatic approach, such that individuals scoring high on long-term orientation tend to prioritize planning (Bearden et al. 2006), invest time and efforts in future opportunities (e.g., education; Miller & Xu, 2020), build and maintain relationships (Srite & Karahanna, 2006), and be more self-disciplined for future goals (Nevins et al., 2007).

Different research streams suggest that superstitious beliefs exert long-term orientation, and these insights can be integrated in two regards. For one, as mentioned previously, superstitious beliefs often involve inter-temporal exchanges, such that the belief in mystical forces can influence the courses of future events. That is, consumers endorsing superstitions tend to make offerings with the supernatural forces and perform rituals, with the belief that doing so will guarantee desirable outcomes, or ward off undesirable situations in the future (Converse, Risen, & Carter, 2012). In this sense, the possession of superstitious beliefs can be regarded as a strategic manoeuvre that re-directs consumers’ focus from the past, present to the future. Consequently, with the shift towards a more forward-looking lens, consumers are more prone to plan and prepare for the future, thereby facilitating a more long-term orientation.

For another, prominent in culturally held superstitious beliefs, such beliefs often are passed down from generation to generation, whereby it is deeply ingrained in and interwoven with normative cultural norms and traditions. For example, some superstitious beliefs encourage people to be thriftier and favour saving for the future (e.g., “A penny saved is a penny earned, but a penny hoarded brings good fortune;” “Tight purse strings, tight grip on fortune”); while others promote hardworking over temporary indulgence (e.g., “The harder I work, the luckier I get”). Accordingly, given its role in shaping cultural norms and values, consumers with salient superstitious beliefs are more likely to be more attuned to the importance of pursuing long-term – rather than short-term – rewards, success, and well-being. Thus, superstitious beliefs help curate a more long-term orientation.

7.4.2 Consumer Impulsivity

Consumers often find themselves succumbed to consumption scenarios where they make unplanned, unnecessary purchases they end up regretting – buying clothes on sale, purchasing electronics without doing research, buying products following celebrities' endorsement or the influence of social media, and retailing therapy. For marketers and retailers alike, impulsive consumption can improve their performance, in terms of both sales and profit; and this is especially the case for high-margin products (Iyer et al., 2020). Nevertheless, in their attempt to encourage impulsive buying, its pervasiveness poses several challenges for consumers. Experiencing post-purchase dissatisfaction (i.e., regret and guilt) to say the least, impulsive spending is often associated with financial problems, diminished savings, and lowered self-esteem. Some even suggest that the remarkably high debt-to-income ratios in the United States might at least in part stem from impulsive buying (Zhang & Shrum, 2009; Vohs & Faver, 2007).

As a multi-faceted construct, scholars have not yet reached a common ground in conceptualizing consumer impulsivity; there are several approaches to and definitions of impulsivity, including *conative*, *visceral*, and *cognitive* approaches (Amos et al., 2014; Mandolfo & Lamberti, 2021). Taking a conative perspective, researchers focus on the unplanned nature of impulsive behaviours, and define it as consumption behaviours that often involve rapid, on-the-spot decision-making (Lades, 2014; Piron, 1991). In contrast, the visceral-oriented conceptualization highlights the emotional processes imbedded in impulsivity, such as the psychological urge to buy, emotional charge, and post-purchase emotional conflicts (e.g., regret; Baumeister, 2002). Third, with respect to its cognitive facet, impulsive behaviours entail consumers' active seeking of immediate gratification, often due to the desire to possess a product without being conscious about its long-term consequences (Dholakia, 2000; Rook, 1985).

Taken together, it is imperative to differentiate impulsive purchase behaviours from unplanned ones. Although both conceptualizations emphasize the disparity between actual and planned purchases, not all unplanned purchases are impulsive. Rather, impulsive purchase is inherently accompanied by the urge to buy without considering its long-term consequences. In this sense, if a consumer makes an unplanned purchase upon encountering the product in store

that is running low at home, it is more appropriate to define such behaviours as unplanned, instead of impulsive behaviours. In this research, we define *consumer impulsivity* as consumption episodes where consumers make unplanned purchases driven by the urge to purchase something for immediate gratification. As consumer impulsivity vary across products, services, and contexts (e.g., Amos et al., 2014; Iyer et al., 2020), this research approaches and assesses consumer impulsivity in terms of individuals' chronic impulsivity tendencies (Study 1), the monetary amount spent on impulsive spending, the number of products purchased (Studies 3 and 4), and finally, the type of products chosen (e.g., calories in the context of online grocery shopping; Study 4).

Given the pervasive nature of consumer impulsivity, not surprisingly, extensive research has examined factors triggering such behaviours. In a recent meta-analysis of impulsive consumption, Iyer and his colleagues (2020) offer four schools of thought, including traits (e.g., sensation-seeking, deficits in self-identity), motives (e.g., hedonic motives and norms), consumers' resources (e.g., time, money), and external marketing stimuli (e.g., store layout, music, lighting, and price discounts). Interestingly, Iyer and colleagues (2020) claim that dispositional individual traits remain to be the most prominent antecedent factor in predicting consumers' impulsive purchase behaviours. Despite of considerable efforts devoted to external marketing stimuli, impulsive behaviour is significantly associated with consumers' interdependents self-construal (vs. independents; Chen, Ng, & Rao, 2005), low power distance beliefs (vs. high-PDB; Zhang, Winterich, & Mittal, 2010), and more abstract, high-level construals (vs. more concrete, low-level construals; Fujita et al., 2006).

However, even though Vyse (2018) stressed that superstitious beliefs might influence impulsive purchasing decisions, to the best of our knowledge, there is virtually no research conducted exploring how superstitious beliefs might affect consumer impulsivity. Therefore, this research expands the scant literature by bridging these research streams and establishing this seemingly non-existing relationship. Next, we discuss how long-term orientation induced by superstitious beliefs can lead to decreased consumer impulsivity.

7.4.3 Long-Term Orientation as An Inhibitor of Consumer Impulsivity

Long-term orientation, as a temporal orientation shifting one's temporal focus from the myopic present to the future, tends to alter the weight people assign to future gains and the proximate returns (Lin et al., 2015). Moreover, iterating our preceding discussion, consumer impulsivity is deemed as "instantaneous-gratification and unplanned purchase behaviour" (Beatty & Ferrell, 1998, p. 172). That is, it often involves decisions without careful consideration of the long-term utility of the products (Rook & Fisher, 1995). In this sense, consumer impulsivity is inherently more short-term (vs. long-term) oriented.

This conceptual assertion (that long-term orientation decreases consumers' impulsive purchase behaviours) is also concurred by literature in other disciplines; research in different realms suggests that long-term orientation inhibits impulse behaviours. Figlio and colleagues (2019) found that long-term orientation predicted significantly greater investment in education (for future benefits) by both students and their parents, manifested by fewer absences and greater enrolment in advanced education opportunities. Stillman, Medvedev, and Ferguson (2017) demonstrated that, when participants were manipulated to think about future gains rather than immediate returns (through generating reasons for choosing delayed reward; Study 3a), they manifested significantly less conflicts in resisting temptations. Congenially, Cosentino, McCarroll, and Micharlian (2022) found that mental time travel – defined as ones' capacity to project and immerse oneself into future scenarios – allows people to *pre-experience* future consequences, which subsequently increases resistance to the temptation of opting for immediate rewards.

Pertaining closely to the present research, long-term orientation has been shown to be associated with higher self-control (Bearden, Money, & Nevins, 2006), a greater focus on utilitarian (vs. hedonic) values (Joshani et al., 2021; Lin & Hou, 2015), and consumption controllability (Nepomuceno & Laroche, 2017). Consumers scoring high on long-term orientation are more likely to be less involved in everyday shopping activities (Hofstede, 2001); *interestingly*, in making purchase decisions, they often prioritize product attributes such as product quality and user experience over others (Joshani et al., 2021). In this regard, greater long-term orientation tends to foster purchases aligning better with consumers' long-term goals.

In the present research, we predict that salient superstitious beliefs will likely induce an elevated long-term orientation, which in turn will result in decreased consumer impulsivity. With respect to consumer impulsivity, we operationalize it in terms of greater preference for unnecessary, hedonic-oriented products in various consumption scenarios, a higher number of products purchased, greater spending. Therefore, this research anticipates that consumer impulsivity will be significantly reduced when salient superstitious beliefs are present (vs. absent), and this occurs due to temporarily induced greater long-term orientation.

The hypotheses, stated formally,

H₁: Engaging in superstitious beliefs (vs. not) will result in reduced consumer impulsivity.

H₂: The effect of engaging in superstitious beliefs (vs. not) on consumer impulsivity is mediated by elevated long-term orientation.

The conceptual model is depicted in *Figure 7.1*.

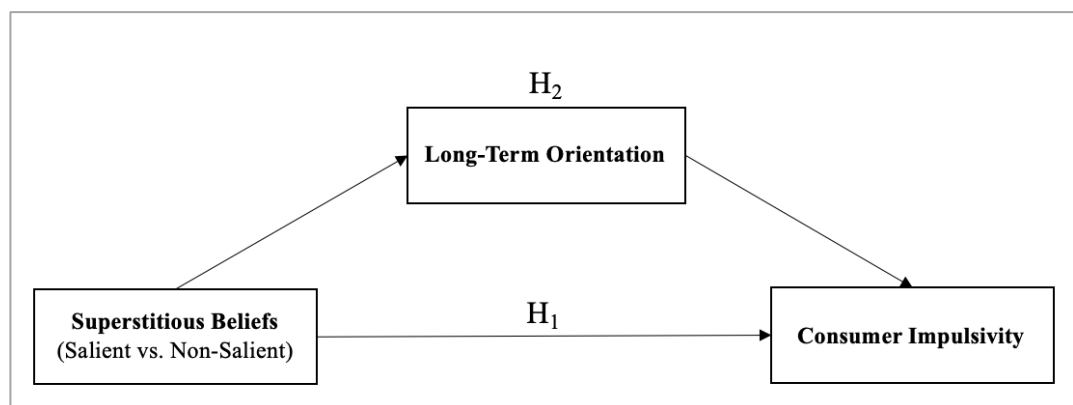


FIGURE 7.1 CONCEPTUAL FRAMEWORK

7.5 The Present Research

To examine the proposed conceptual framework (*Figure 7.1*), we next present five studies featuring both 1) correlational (Study 1) and causal evidence (Studies 2, 3 & 4), 2) trait/chronic as well as superstitious beliefs and impulsivity, and 3) hypothetical (Study 2) and actual

behavioural outcomes (Studies 3 & 4; see *Figure 7.2* for the visual demonstration of studies). Specifically, Study 1 establishes the basic main effect by assessing consumers' trait/chronic superstitious beliefs and trait impulsivity – that engaging in superstitious beliefs (vs. not) leads to significantly decreased consumer impulsivity tendency. In Study 2, the findings replicated the effect by experimentally manipulating superstitious beliefs, and additionally, excluded affect as an alternative explanation. Furthermore, Study 3 examines whether the effect of activating superstitious beliefs on impulsivity is concordant with the findings of Studies 1 and 2, and additionally tests the underlying mechanism and verifies the effect of long-term orientation. Moreover, Study 3 also rules out the alternative explanations of self-control and awe. Study 4 then employs an open-science online grocery store (<https://openscience-onlinegrocery.com>) emulating a realistic shopping experience and offer incentive-compatible examination of our hypotheses. Additionally, Study 4 captures consumer impulsivity via the dollar amount spent (total price), the number of items, and calories in grocery shopping. Finally, to cement the robustness of our findings (H_1), we present a single-paper meta-analysis (SPM) using a novel methodology (MCSM), consolidating the effect of superstitious beliefs across studies.

To ensure sufficient power in the empirical examination, all sample size has been determined in advance (Brysbaert 2019). Stimuli, manipulations, and measures appear in the Web Appendices, and data for all studies are available on Open Science Framework (OSF) (*Link masked to remain anonymous during the review process, and anonymous view-only pre-registration links were provided in each study*). We also report effect sizes when applicable to facilitate more meaningful interpretations of our findings. Across four studies, we confirmed the robustness and generalizability of the findings to pivotal individual difference factors (e.g., participants' gender and income; Iyer et al., 2020) and across different settings (e.g., hypothetical and incentive-compatible scenarios).

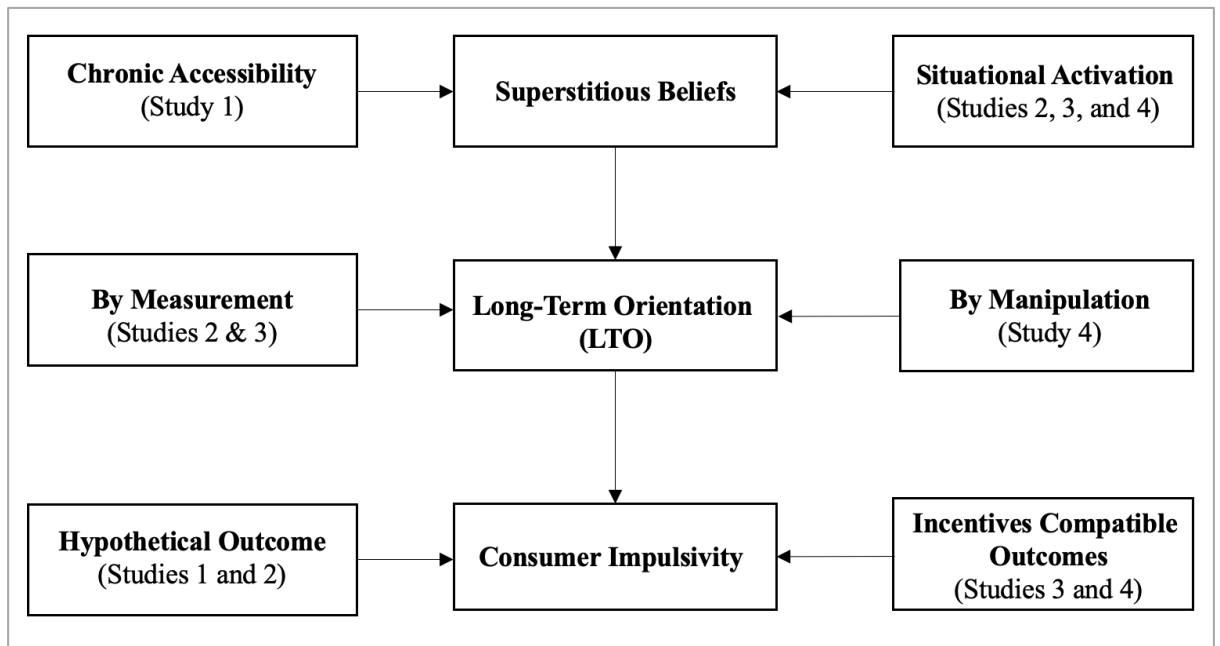


FIGURE 7.2 VISUAL DEMONSTRATION OF STUDIES

Note. Figure 7.2 depicts how five studies examine the proposed conceptual model. Note that the operationalization of consumer impulsivity varies across studies, including a chronic individual difference (Study 1), consumption preference across different scenarios (Study 2), total dollar amount spent (total price) and the number of items (Studies 3 and 4), and calories in grocery shopping (Study 4).

7.6 Study 1: Trait Superstitious Beliefs and Impulsivity: A Correlational Study

Study 1 attempts to establish the main effect of superstitious beliefs on consumer impulsivity (H₁; Anonymous pre-registration DOI: https://osf.io/52tes/?view_only=f78b08bda51f47d2819bfc113f275a4d).

7.6.1 Study Design, Procedures and Measurement

Study 1 examines the correlational relationship between superstitious beliefs and trait impulsivity. A total of 110 participants were recruited through a research agency in the United States (Cloud Research, also known as Turk Prime), who reside in the United States and are at least 18 years old (55.5% Female, $M_{Age} = 41.88$, $SD = 13.66$).

All participants were given a participant information sheet and provided a cover story to address the experimenters demand effect (Zizzo, 2010), such that they were made to believe that

they were about to report their attitudes towards commercial activities. To eliminate potential carry-over effect, participants were made to believe that they were about to engage in multiple unrelated tasks.

Participants were first instructed to indicate their superstitious beliefs using a four-item, seven-point Likert scale (e.g., “I believe it is possible to jinx things or situations;” anchored by “1” [Strongly disagree] and “7” [Strongly agree]; Sierra, Hyman, & Turri, 2018; $\alpha = .89$; see Web Appendix A for measurement scales used). They also reported their trait impulsivity using a four-item, seven-point Likert scale (“Just do it’ describes the way I buy things;” anchored by “1” [Strongly agree] and “7” [Strongly disagree]; Rook & Fisher, 1995; $\alpha = .95$). Participants indicated their demographic information, including ethnicity, income, education background, gender, and age. Finally, participants speculated the purpose of the study, were debriefed, and thanked for their participation.

7.6.2 Findings and Discussion

The Main Effect. To examine H_1 , we have conducted a regression analysis with superstitious beliefs as the independent variable, trait impulsivity as the dependent variable, and gender and income as covariates.

As expected, trait superstitious beliefs led to significantly lower impulsivity ($B = .39$, $SE = .09$, $\beta = .40$, $t = 4.49$, $p < .001$; $CI_{95\%} = .22, .57$; *Adjusted R^2* = .14, $F(1, 106) = 6.85$, $p < .001$; see the results of all studies in *Table 7.1*), lending support for H_1 . With respect to covariates (i.e., gender and income), none of tested covariates was significant (gender: $B = .11$, $SE = .27$, $\beta = .04$, $t = .42$, $p = .675$; $CI_{95\%} = -.42, .65$; income: $B = -.01$, $SE = .04$, $\beta = -.03$, $t = -.31$, $p = .760$; $CI_{95\%} = -.10, .07$). Therefore, the findings support our hypothesis (H_1) and cannot be explained by potential covariates, such as gender and income (please see results without covariates in Web Appendix B).

TABLE 7.1 SUMMARY OF STUDY DESCRIPTIVES AND RESULTS

Studies	Domain (N)	IV	DV(s)	Conditions	Results
<i>Study 1</i>					
Trait superstitious beliefs on trait consumer impulsivity	N/A (110)	Trait superstitious beliefs (measurement)	trait consumer impulsivity		
				Weak superstitious beliefs	
Superstitious beliefs strength					$B = .39, SE = .09, \beta = .40, t = 4.49, p < .001; CI_{95\%} = .22, .57$
				Strong superstitious beliefs	
<i>Study 2</i>					
Preference for impulsive consumption	Different scenarios of consumption featuring both impulsive and non-impulsive options (106)	Salient superstitious beliefs vs. Control	Consumption preference		

Superstitious beliefs prime				Superstitious beliefs prime absent	4.50 ^a (1.30)	
				Superstitious beliefs prime present	4.95 ^b (1.01)	
<i>Study 3</i>						
Total price and the number of items in impulsive consumption	Selecting snacks (168)	Salient superstitious beliefs vs. Control	The total price & the number of items		<i>Total price</i>	<i>The number of items</i>
Superstitious beliefs prime				Superstitious beliefs prime absent	1.85 ^a (2.02)	1.80 ^a (1.92)
				Superstitious beliefs prime present	1.26 ^b (1.59)	1.24 ^b (1.51)
<i>Study 4</i>						
Total price, number of items, and calories during online grocery shopping	Online grocery shopping (261)	Salient superstitious beliefs vs. Control I (routine activities) vs. Control II	Total price, the number of items, & calories		<i>Total price</i>	<i>The number of items</i> <i>Calories</i>

	(priming long-term orientation) vs. Control III (priming beliefs in karma)				
		Superstitious beliefs prime absent (routine activities)	10.46 ^a (4.86)	3.64 ^a (1.09)	695.47 ^a (700.59)
Superstitious beliefs prime		Superstitious beliefs prime absent (long-term orientation)	8.61 (4.18)	2.82 (1.52)	396.20 (456.59)
		Superstitious beliefs prime absent (beliefs in karma)	8.30 (3.82)	2.83 (1.82)	355.92 (400.83)

Superstitious beliefs prime present	7.56 ^b (4.41)	2.62 ^b (1.64)	356.22 ^b (376.89)
---	-----------------------------	-----------------------------	---------------------------------

Note. Means with different superscripts within each study are different at $p < .05$. In Study 4, we focus on the comparison between control condition I and the superstitious beliefs condition.

7.7 Study 2: An Experiment Manipulating the Salience of Superstitious Beliefs

Study 2 attempts to replicate the main effect of superstitious beliefs on impulsivity. Specifically, unlike in Study 1 where both superstitious beliefs and impulsivity are both operationalized as chronic/trait variables, Study 2 manipulates the salience of superstitious beliefs. Moreover, Study 2 also examines the role of affect (Iyer, Blut, Xiao, & Grewal, 2020;

Anonymous

pre-registration

DOI:

https://osf.io/fauec/?view_only=edc8a15646984e21ae4dde250bd64163).

7.7.1 Study Design, Procedures and Measurement

Study 2 features a one-factor, full-factorial between-subjects design of 2 (superstitious beliefs: control vs. superstitious). A total of 106 participants were recruited through a research agency in the United States (Cloud Research), who reside in the United States and are at least 18 years old (51.9% Female, $M_{Age} = 41.13$, $SD = 13.57$).

After being exposed to a cover story and obtaining their consent, participants were directed to the first task. Participants were made to believe that they were about to engage in a visualization task that reportedly assesses their ability of recalling and describing an incident, which, in fact, manipulates the salience of superstitious beliefs. Specifically, participants in the treatment condition (i.e., salient superstitious beliefs vs. control condition) were asked to recall and describe a situation where superstitious beliefs affect the outcome (vs. asked to write down everything that they have eaten and drank in the past 48 hours; Chatterjee, Irmak, and Rose 2013; see Web Appendix C). The effectiveness of the superstitious belief operationalization was assessed using the same scale used in Study 1 ($\alpha = .90$).

Next, participants were instructed to engage in the reportedly second study involving impulsive consumption behaviours. Notably, as “impulsive” might entail undesirable semantic connotations, Study 2 employed the word “spontaneous” instead of “impulsive” to operationalize a more neutral scenario, consistent with the seminal conceptualization of impulsivity (O’Guinn & Faber, 1989; Kacen & Lee, 2002). Participants were exposed to multiple consumption

scenarios, imagining that they can afford both options, and reported their impulsivity (e.g., purchasing a laptop; higher scores indicate lower consumer impulsivity; $\alpha = .85$; Nepomuceno & Laroche, 2017; see Web Appendix D for measurement scales used). Moreover, it is plausible that inducing salient superstitious beliefs might result in distinct affect, which in turn temporarily influences consumer impulsivity (Iyer, Blut, Xiao, & Grewal, 2020). Therefore, Study 2 additionally measured participants' affect with a ten-item scale ("The spontaneous purchasing scenarios made me feel happy;" anchored by "1" [Not at all] and "7" [Very strongly]; $\alpha = .85$) adapted from Pham and colleagues (2001). Finally, participants provided demographic information, speculated the purpose of this study, were debriefed, and thanked for their participation.

7.7.2 Findings and Discussion

Manipulation Check. A one-way ANOVA showed that the superstitious belief manipulation performed as intended ($M_{Control} = 3.39$, $SD = 1.85$ vs. $M_{Superstitious\ Beliefs} = 5.03$, $SD = 1.43$; $F(1, 104) = 25.31$, $p < .001$; $\eta^2 = .20$).

The Main Effect. The results replicated the findings of Study 1. Superstitious beliefs led to significantly reduced consumer impulsivity ($M_{Control} = 4.50$, $SD = 1.30$ vs. $M_{Superstitious\ Beliefs} = 4.95$, $SD = 1.01$; $F(1, 102) = 4.81$, $p = .031$; $\eta^2 = .05$; higher scores indicate lower consumer impulsivity; *Figure 7.3*). Of the covariates, none of tested variables were significant (gender: $F(1, 102) = 1.85$, $p = .177$; $\eta^2 = .02$; income: $F(1, 102) = 3.52$, $p = .064$; $\eta^2 = .03$). Moreover, when removing covariates from the analysis, the effect of superstitious beliefs remained significant ($M_{Control} = 4.50$, $SD = 1.30$ vs. $M_{Superstitious\ Beliefs} = 4.95$, $SD = 1.01$; $F(1, 104) = 3.95$, $p = .049$; $\eta^2 = .04$).

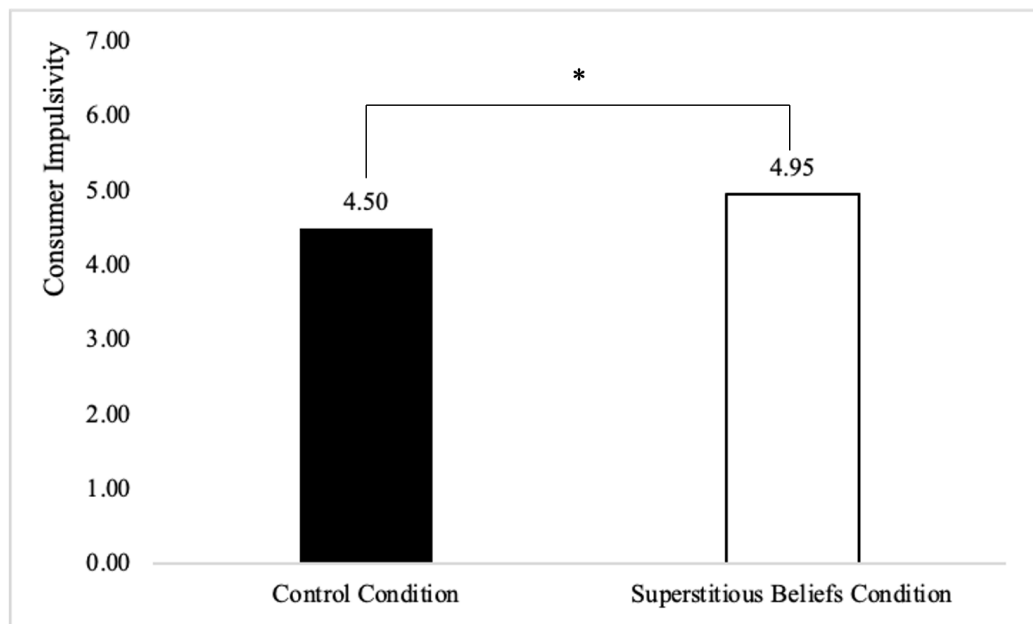


FIGURE 7.3 EFFECTS OF SUPERSTITIOUS BELIEFS ON IMPULSIVE CONSUMPTION PREFERENCE (STUDY 2)

Note. $*p < 0.05$.

Affect. Activating superstitious beliefs might result in distinct affect, which might cause participants to act more or less impulsively (Iyer et al., 2020). However, the operationalization of superstitious beliefs did not influence affect ($M_{Control} = 3.28$, $SD = 1.19$ vs. $M_{Superstitious\ Beliefs} = 3.21$, $SD = 1.05$; $F(1, 104) = .12$, $p = .730$; $\eta^2 < .01$). Furthermore, when the analysis included affect as an additional covariate in the model, the results remained significant ($M_{Control} = 4.50$, $SD = 1.30$ vs. $M_{Superstitious\ Beliefs} = 4.95$, $SD = 1.01$; $F(1, 101) = 5.22$, $p = .024$; $\eta^2 = .05$; gender: $F(1, 101) = 1.46$, $p = .229$; $\eta^2 = .01$; income: $F(1, 101) = 3.44$, $p = .067$; $\eta^2 = .03$), although affect was also significant ($F(1, 101) = 4.50$, $p = .036$; $\eta^2 = .04$). Therefore, the observed effect of superstitious beliefs supports our hypotheses and goes above and beyond the influence of affect.

7.8 Study 3: An Experiment To Rule Out Alternative Explanations

Study 3 focuses on understanding the process by which salient superstitious beliefs lead to reduced consumer impulsivity. That is, we examine the underlying mechanism explaining the effect of superstitious beliefs on reduced consumer impulsivity. Specifically, this study

empirically verifies whether superstitious beliefs likely induce a greater long-term orientation, thereby leading to less impulsivity.

Furthermore, one might argue that salient superstitious beliefs might entail supernatural forces, thereby eliciting feelings of awe and/or alter consumers' self-control, and eventually influencing their impulsivity (Nepomuceno & Laroche, 2017; Zhang et al., 2021). Accordingly, Study 3 tests these two alternative explanations. Notably, Study 3 employed an experimental paradigm with greater ecological validity by not only incorporating actual behaviours, but also examining the effect of superstitious beliefs on both *the total price* of their chosen items and *the number of items* (Anonymous pre-registration DOI: https://osf.io/wh2qn/?view_only=73368eab236f4eb588af8b8d20a74fdf).

7.8.1 Study Design, Procedures and Measurement

Study 3 features a one-factor, full-factorial between-subjects design of 2 (superstitious beliefs: control vs. superstitious beliefs) and additionally measures participants' long-term orientation (Bearden, Money, & Nevins, 2006). A total of 168 participants were recruited through a research agency in the United States (Cloud Research), who reside in the United States and are at least 18 years old (54.8% Female, $M_{Age} = 39.87$, $SD = 12.15$).

The experimental design and procedures of Study 3 mirrored those of Study 2, except for few modifications. After participants were told that they would participate in three unrelated studies, they engaged in either the superstitious beliefs condition, or the control condition (the effectiveness of superstitious beliefs manipulation was assessed; $\alpha = .90$; see Web Appendix E for measurement scales used). Next, participants were informed that the researcher would randomly select one participant in each session, and they would receive an additional bonus of US \$10. They were then exposed to a scenario where they can purchase items from a serving of Oreo cookies, a bag of potato chips. A bag of gummy candies, a serving of Cheetos, a Snickers bar, and a bottle of Cola (see Web Appendix F for experimental material). To assess consumer impulsivity, this study employed both *the total price*, and *the number of items* participants indicated they wanted to purchase as the focal dependent variables.

Subsequently, to examine H₂, participants indicated their long-term orientation (e.g., “I plan for the long term;” anchored by “1” [Strongly disagree] and “7” [Strongly agree]; $\alpha = .93$; Bearden, Money, & Nevins, 2006), self-control (“I am good at resisting temptation;” anchored by “1” [Strongly disagree] and “7” [Strongly agree]; $\alpha = .89$; Maloney, Grawitch, & Barber, 2012) and awe (“I often feel awe;” anchored by “1” [Strongly disagree] and “7” [Strongly agree]; $\alpha = .88$; Shiota, Keltner, & John, 2006), and the order has been counterbalanced. Finally, participant provided demographic information, speculated the purpose of the study, were debriefed and thanked for their participation.

7.8.2 Findings and Discussion

Manipulation Check. A one-way ANOVA showed that the superstitious belief manipulation performed as intended ($M_{Control} = 3.82$, $SD = 1.68$ vs. $M_{Superstitious\ Beliefs} = 4.67$, $SD = 1.69$; $F(1, 166) = 10.66$, $p = .001$; $\eta^2 = .06$).

The Main effect (The Total Price). The results confirmed the significant main effect of superstitious beliefs ($M_{Control} = 1.85$, $SD = 2.02$ vs. $M_{Superstitious\ Beliefs} = 1.26$, $SD = 1.59$; $F(1, 164) = 4.58$, $p = .034$; $\eta^2 = .03$; *Figure 7.4*). None of the tested covariates were significant (gender: $F(1, 164) = 1.63$, $p = .203$; $\eta^2 = .01$; income: $F(1, 164) = 1.82$, $p = .179$; $\eta^2 = .01$), implying that the results cannot be explained by potential covariates such as gender and income (see results without covariates in Web Appendix G).

The Main effect (The Number of Items). The results replicated the findings of Studies 1 and 2: superstitious beliefs led to significantly reduced impulsivity ($M_{Control} = 1.80$, $SD = 1.92$ vs. $M_{Superstitious\ Beliefs} = 1.24$, $SD = 1.51$; $F(1, 164) = 4.45$, $p = .036$; $\eta^2 = .03$; *Figure 7.4*). Again, neither gender ($F(1, 164) = 1.96$, $p = .164$; $\eta^2 = .01$), nor income ($F(1, 164) = 1.85$, $p = .176$; $\eta^2 = .01$) was significant as covariates.

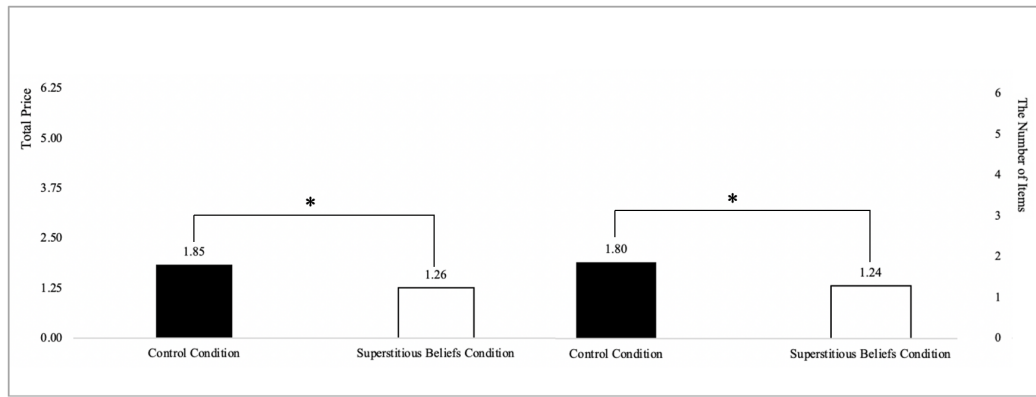


FIGURE 7.4 EFFECTS OF SUPERSTITIOUS BELIEFS ON PURCHASING SNACKS (STUDY 3)

Note. $*p < 0.05$.

Mediation (Total Price). A mediation analysis (Model 4, 10,000 bootstrapped samples; SPSS PROCESS Macro; Hayes, 2017), with superstitious beliefs as the independent variable, the total price as the dependent variable, long-term orientation, self-control, and awe as parallel mediators, and gender and income as covariates.

Confirming H_2 , long-term orientation significantly mediated the relationship between superstitious beliefs and the total price ($\beta = -.38$, $SE = .18$, $CI_{95\%}: -.79, -.07$), and both covariates were insignificant (gender: $\beta = .34$, $SE = .27$, $t = 1.28$, $p = .203$, $CI_{95\%}: -.18, .86$; income: $\beta = .05$, $SE = .04$, $t = 1.35$, $p = .179$, $CI_{95\%}: -.02, .12$). Specifically, superstitious beliefs led to significantly greater long-term orientation (*a path*: $\beta = .59$, $SE = .23$, $t = 2.57$, $p = .011$, $CI_{95\%}: .14, 1.03$), which further resulted in reduced total price (*b path*: $\beta = -.60$, $SE = .10$, $t = -6.10$, $p < .001$, $CI_{95\%}: -.80, -.41$). The direct effect became insignificant once the mediator was introduced ($\beta = -.23$, $SE = .27$, $t = -.86$, $p = .389$, $CI_{95\%}: -.76, .30$), suggesting a full mediation model via long-term orientation. Importantly, neither self-control ($\beta = .03$, $SE = .04$, $CI_{95\%}: -.05, .12$), nor awe ($\beta = -.05$, $SE = .06$, $CI_{95\%}: -.19, .07$) was significant, thereby excluding them as alternative explanations.

Mediation (The Number of Items). Another mediation analysis was conducted with the number of items as the dependent variable (Model 4, 10,000 bootstrapped samples; SPSS PROCESS Macro). Replicating the results above, long-term orientation significantly mediated

the effect of superstitious beliefs ($\beta = -.33$, $SE = .17$, $CI_{95\%}: -.73, -.06$). Superstitious beliefs resulted in greater long-term orientation (*a path*: $\beta = .59$, $SE = .23$, $t = 2.57$, $p = .010$, $CI_{95\%}: .14, 1.03$), resulting in a reduced number of items (*b path*: $\beta = -.56$, $SE = .09$, $t = -5.96$, $p < .001$, $CI_{95\%}: -.75, -.38$). Again, the direct effect was insignificant once the mediator was introduced ($\beta = -.23$, $SE = .26$, $t = -.89$, $p = .374$, $CI_{95\%}: -.74, .28$), and none of tested covariates were significant (gender: $\beta = .35$, $SE = .25$, $t = 1.40$, $p = .164$, $CI_{95\%}: -.14, .85$; income: $\beta = .05$, $SE = .04$, $t = 1.36$, $p = .176$, $CI_{95\%}: -.02, .12$). Moreover, this study ruled out self-control ($\beta = .03$, $SE = .04$, $CI_{95\%}: -.05, .12$) and awe ($\beta = -.04$, $SE = .05$, $CI_{95\%}: -.16, .06$) as alternative explanations.

7.9 Study 4: Online Grocery Shopping: A Field Experiment

The purpose of Study 4 is to focus on the essential aspect of the proposed theorization: the extent to which consumers can resist impulsive purchases is driven by their temporal focus prioritizing future, long-term gains after being exposed to salient (vs. non-salient) superstitious beliefs. Additionally, Study 3 examines the effect of superstitious beliefs in a field experiment setting via an open-source online grocery store tool (Howe, Ubel, & Fitzsimons, 2022), and assesses consumer impulsivity through *the total price*, *the number of items*, and *total calories*

(Anonymous

pre-registration

DOI:

https://osf.io/bdqwy/?view_only=f025137a4d12421a94f272fcedba4d8).

Whereas Study 2 and 3 provided process-by-mediation evidence for the proposed mechanism, Study 4 attempts to verify the role of long-term orientation more directly by manipulating it. In particular, if the proposed theorization holds, then participants instructed to think about the importance of long-term implications in life should be able to resist impulses better than those who in the control condition. In accord, we primed (made more salient) participants' long-term orientation and superstitious beliefs (see Web Appendix H) to examine their impact on consumer impulsivity, and again, verify whether long-term orientation mediates of effect of superstitious beliefs. Furthermore, Study 4 introduces a closely related construct – consumers' belief in karma. Given the conceptual overlap between superstitious beliefs and the belief in karma, the distinguishment is important as it: *a*) strengthens the robustness of the

proposed underlying mechanism, and implies that the effect of superstitious beliefs on impulsivity cannot be accounted for via karma (Converse et al., 2012), and *b*) helps distinguish between the nuances in relation to the superstition-karma spectrum. Specifically, in a different control condition (control condition II), we primed participants' belief in karma.

7.9.1 Study Design, Procedures and Measurement

Study 4 features a one-factor, full-factorial between-subjects design of 4 (superstitious beliefs: control I vs. control II vs. control III vs. superstitious beliefs). A total of 261 participants were recruited through a research agency in the United States (Cloud Research), who reside in the United States and are at least 18 years old (57.9% Female, $M_{Age} = 40.40$, $SD = 12.69$).

After being informed that they were about to be engaged in three unrelated studies, participants were directed to the first task, in which we reportedly examine their comprehension ability (see Web Appendix H). Among all participants, they were randomly assigned to one of four conditions – control condition I featuring a true control condition without any manipulation, control condition II increasing the salience of long-term orientation through a prime, control condition III featuring a belief in karma prime, and finally, the superstitious beliefs condition. Note that only two conditions are needed to examine the effect of superstitious beliefs (control condition I and superstitious beliefs condition). Study 4 additionally included the control condition II (priming long-term orientation) and III (priming beliefs in karma) to grasp whether long-term orientation and beliefs in karma produce compatible effects to that of superstitious beliefs. The results will further consolidate the robustness of our findings that long-term orientation mediates the effect.

The primes used in this study were obtained and developed from Small, Lerner, and Fischhoff 2006). First, participants in all conditions were presented a paragraph corresponding to the focal condition with similar number of words and reading difficulty. Participants in the control I condition read about how people engage in routine activities in life. In the control condition II, the paragraph emphasizes the importance of thinking about the future, instead of the present, and the long-term consequences. The paragraph in control condition III explains the definition of karma and its implications for day-to-day life. Finally, participants in the superstitious beliefs

condition read about the concept of superstitious beliefs and its key aspects. They were then instructed to write about three things related to the paragraph they read about and select one and describe it in more details.

Participants next responded to multi-item scales that measured their superstitious beliefs ($\alpha = .91$; Sierra et al., 2018), long-term orientation ($\alpha = .92$; Bearden et al., 2006), beliefs in karma ($\alpha = .83$; Kopalle et al., 2010; with the measurement order counterbalanced; Web Appendix I), and attention paid to the survey. To assess consumer impulsivity, we employed an open-source online grocery store tool (<https://openscience-onlinegrocery.com>) – introduced by Howe, Ubel, and Fitzsimons (2022) – that allows researchers to examine a wide range of intervention in grocery shopping that emulates a real-life grocery shopping experience, and lends rich insights, such as items added to the cart and browsing history. Given that the pandemic has substantially accelerated the growth of online grocery shopping (Verdon, 2022), this open science online grocery store offers a realistic testing of our hypothesis with greater ecological validity (see the participant interface of the open science online grocery [OSOG] store in *Figure 7.5*). Participants are able to browse products by categories, food labelling (e.g., healthiness) and sorting (e.g., calories per serving), access products' size and nutrition facts, add them to shopping cart and check out.

After the researcher familiarized participants about using the site, participants were directed to the online grocery store, where they were instructed to purchase products for themselves corresponding to the budget of \$15 set by the researcher. To capture consumer impulsivity, participants' checkout baskets were assessed in terms of *the total price, the number of items, and calories*. A code was randomly generated and assigned to each participant to match their checkout data with their survey responses. Participants did not spend any money, nor receive the products they chose during their participation; however, they were informed that one participant would be randomly selected and receive an additional bonus of US \$15 for incentive-compatible behaviours. After completing the online shopping task (please refer to experimental materials, procedures, and stimuli in Web Appendix J), participants were directed to report their demographic information and were debriefed.

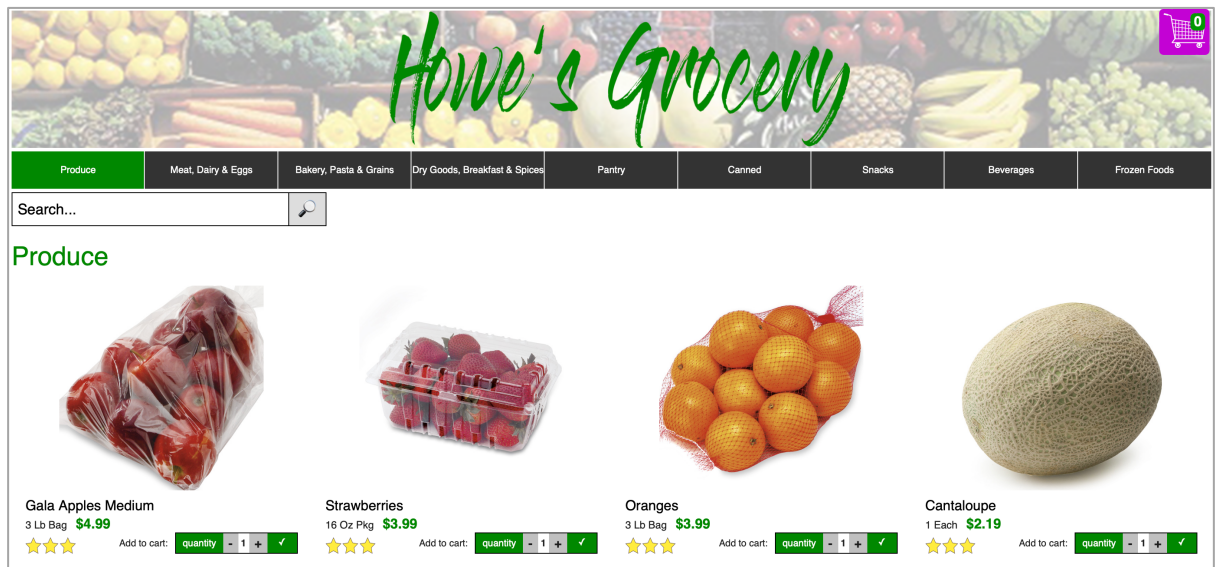


FIGURE 7.5 THE PARTICIPANT INTERFACE OF THE OPEN SCIENCE ONLINE GROCERY (OSOG)

7.9.2 Findings and Discussion

Manipulation Check. A one-way ANOVA showed that the superstitious belief manipulation performed as intended ($M_{Control\ I} = 3.47$, $SD = 1.75$ vs. $M_{Control\ II} = 3.45$, $SD = 1.63$ vs. $M_{Control\ III} = 4.56$, $SD = 1.96$ vs. $M_{Superstitious\ Beliefs} = 4.54$, $SD = 1.86$; $F(3, 257) = 7.88$, $p < .001$; $\eta^2 = .08$). So did the manipulation of long-term orientation ($M_{Control\ I} = 4.84$, $SD = 1.88$ vs. $M_{Control\ II} = 6.04$, $SD = .91$ vs. $M_{Control\ III} = 5.51$, $SD = 1.37$ vs. $M_{Superstitious\ Beliefs} = 6.02$, $SD = .84$; $F(3, 257) = 12.14$, $p < .001$; $\eta^2 = .12$) and beliefs in karma ($M_{Control\ I} = 3.84$, $SD = 1.68$ vs. $M_{Control\ II} = 4.13$, $SD = 1.66$ vs. $M_{Control\ III} = 4.71$, $SD = 1.70$ vs. $M_{Superstitious\ Beliefs} = 4.15$, $SD = 1.71$; $F(3, 257) = 3.17$, $p = .025$; $\eta^2 = .04$; see Web Appendix K for the detailed results of post-hoc analysis).

The Main Effect (The Total Price). Confirming our hypotheses (H_1), total price significantly differed across conditions ($M_{Control\ I} = 10.46$, $SD = 4.86$ vs. $M_{Control\ II} = 8.61$, $SD = 4.18$ vs. $M_{Control\ III} = 8.30$, $SD = 3.82$ vs. $M_{Superstitious\ Beliefs} = 7.56$, $SD = 4.41$; $F(3, 255) = 5.75$, $p = .001$; $\eta^2 = .06$). Neither gender ($F(1, 255) = 2.47$, $p = .117$; $\eta^2 = .01$) nor income ($F(1, 255) = .78$, $p = .377$; $\eta^2 < .01$) was significant.

Specifically, participants in control condition I indicated significantly higher total price on the products they chose ($M_{Control\ I} = 10.46$, $SD = 4.86$) compared to those in superstitious beliefs

condition ($M_{\text{Superstitious Beliefs}} = 7.56, SD = 4.41; F(1, 143) = 14.35, p < .001; \eta^2 = .09$), hence supporting H₁. Again, none of tested covariates were significant (gender: $F(1, 143) = .13, p = .721; \eta^2 < .01$; income: $F(1, 143) = 3.48, p = .064; \eta^2 = .02$; see results without covariates in Web Appendix L).

Furthermore, the total price did not vary between control condition II ($M_{\text{Control II}} = 8.61, SD = 4.18$) and superstitious beliefs condition ($M_{\text{Superstitious Beliefs}} = 7.56, SD = 4.41; F(1, 111) = 1.66, p = .200; \eta^2 = .02$; gender: $F(1, 111) = 2.56, p = .113; \eta^2 = .02$; income: $F(1, 111) = .02, p = .888; \eta^2 < .01$), nor between control condition III ($M_{\text{Control III}} = 8.30, SD = 3.82$) and superstitious beliefs condition ($M_{\text{Superstitious Beliefs}} = 7.56, SD = 4.41; F(1, 115) = .55, p = .458; \eta^2 = .01$; gender: $F(1, 115) = 5.04, p = .027; \eta^2 = .04$; income: $F(1, 115) = .88, p = .350; \eta^2 = .01$).

The Main Effect (The Number of Items). Again, the number of items significantly differed across conditions ($M_{\text{Control I}} = 3.64, SD = 1.09$ vs. $M_{\text{Control II}} = 2.82, SD = 1.52$ vs. $M_{\text{Control III}} = 2.83, SD = 1.82$ vs. $M_{\text{Superstitious Beliefs}} = 2.62, SD = 1.64; F(3, 255) = 4.54, p = .004; \eta^2 = .05$), and none of covariates were significant (gender: $F(1, 255) = 3.63, p = .058; \eta^2 = .01$; income: $F(1, 255) = .38, p = .540; \eta^2 < .01$).

Specifically, participants in control condition I reported a significantly greater number of items ($M_{\text{Control I}} = 3.64, SD = 2.09$) compared to those in superstitious beliefs condition ($M_{\text{Superstitious Beliefs}} = 2.62, SD = 1.64; F(1, 143) = 9.75, p = .002; \eta^2 = .06$). None of covariates were significant (gender: $F(1, 143) = .40, p = .528; \eta^2 < .01$; income: $F(1, 143) = .05, p = .827; \eta^2 < .01$).

Furthermore, there was no significant differences of the number of items between control condition II ($M_{\text{Control II}} = 2.82, SD = 1.52$) and superstitious beliefs condition ($M_{\text{Superstitious Beliefs}} = 2.62, SD = 1.64; F(1, 111) = .40, p = .527; \eta^2 < .01$; gender: $F(1, 111) = 6.80, p = .010; \eta^2 = .06$; income: $F(1, 111) = 1.44, p = .233; \eta^2 = .01$), or between control condition III ($M_{\text{Control III}} = 2.83, SD = 1.82$) and superstitious beliefs condition ($M_{\text{Superstitious Beliefs}} = 2.62, SD = 1.64; F(1, 115) = .09, p = .770; \eta^2 < .01$; gender: $F(1, 115) = 3.46, p = .065; \eta^2 = .03$; income: $F(1, 115) = 3.99, p = .048; \eta^2 = .03$).

The Main Effect (Calories). Replicating previous findings, calories were significantly different across conditions ($M_{Control\ I} = 695.47$, $SD = 700.59$ vs. $M_{Control\ II} = 396.20$, $SD = 456.59$ vs. $M_{Control\ III} = 355.92$, $SD = 400.83$ vs. $M_{Superstitious\ Beliefs} = 356.22$, $SD = 376.89$; $F(3, 255) = 7.44$, $p < .001$; $\eta^2 = .08$). Of the covariates, neither gender ($F(1, 255) = .01$, $p = .945$; $\eta^2 < .01$) nor income ($F(1, 255) = .27$, $p = .601$; $\eta^2 < .01$) was significant.

Participants in the control condition I chose products with significantly higher calories ($M_{Control\ I} = 695.47$, $SD = 700.59$) compared to those in superstitious beliefs condition ($M_{Superstitious\ Beliefs} = 356.22$, $SD = 376.89$; $F(1, 143) = 12.73$, $p < .001$; $\eta^2 = .08$; gender: $F(1, 143) = .52$, $p = .472$; $\eta^2 < .01$; income: $F(1, 143) = 2.01$, $p = .159$; $\eta^2 = .01$).

Again, there was no significant difference in calories between control condition II ($M_{Control\ II} = 396.20$, $SD = 456.59$) and superstitious beliefs condition ($M_{Superstitious\ Beliefs} = 356.22$, $SD = 376.89$; $F(1, 111) = .22$, $p = .641$; $\eta^2 < .01$; gender: $F(1, 111) = 1.50$, $p = .223$; $\eta^2 = .01$; income: $F(1, 111) = 1.07$, $p = .304$; $\eta^2 = .01$), or between control condition III ($M_{Control\ III} = 355.92$, $SD = 400.83$) and superstitious beliefs condition ($M_{Superstitious\ Beliefs} = 356.22$, $SD = 376.89$; $F(1, 115) = .19$, $p = .663$; $\eta^2 < .01$; gender: $F(1, 115) = .15$, $p = .696$; $\eta^2 < .01$; income: $F(1, 115) = 6.73$, $p = .011$; $\eta^2 = .06$).

Mediation (Control Condition I & Superstitious Beliefs Condition). We conducted mediation analyses (Model 4, 10,000 bootstrapped samples; SPSS PROCESS Macro) with superstitious beliefs as the independent variable, long-term orientation and beliefs in karma as parallel mediators, total price as the dependent variable, and gender and income as covariates.

Supporting H₂, long-term orientation significantly mediated the impact of superstitious beliefs ($\beta = -.32$, $SE = .16$, $CI_{95\%}: -.68, -.06$). Superstitious beliefs caused significantly greater long-term orientation (*a path*: $\beta = .41$, $SE = .09$, $t = 4.73$, $p < .001$, $CI_{95\%}: .24, .58$), leading to curbed total price (*b path*: $\beta = -.78$, $SE = .26$, $t = -3.00$, $p = .003$, $CI_{95\%}: -1.29, -.27$). Moreover, beliefs in karma failed to mediate the relationship ($\beta = .04$, $SE = .05$, $CI_{95\%}: -.04, .15$). Again, neither gender ($\beta = -.27$, $SE = .74$, $t = -.36$, $p = .721$, $CI_{95\%}: -1.74, 1.21$) nor income ($\beta = .19$, $SE = .10$, $t = 1.87$, $p = .064$, $CI_{95\%}: -.01, .40$) was significant as covariates.

Additionally, an analysis with the number of items as the dependent variable replicated the results with regards to total price: superstitious beliefs increased long-term orientation (*a path*: $\beta = .41$, $SE = .09$, $t = 4.73$, $p < .001$, $CI_{95\%}$: .24, .58), which in turn decreased the number of items chosen (*b path*: $\beta = -.23$, $SE = .11$, $t = -2.11$, $p = .036$, $CI_{95\%}$: -.45, -.01). However, we found a directional, yet insignificant mediational effect of long-term orientation ($\beta = -.09$, $SE = .06$, $CI_{95\%}$: -.22, .01), and beliefs in karma failed to account for the effect ($\beta = .00$, $SE = .01$, $CI_{95\%}$: -.03, .03). In addition, gender ($\beta = -.20$, $SE = .31$, $t = -.63$, $p = .528$, $CI_{95\%}$: -.81, .41) and income ($\beta = .01$, $SE = .04$, $t = .22$, $p = .827$, $CI_{95\%}$: -.08, .09) were insignificant as covariates.

With respect to calories as the focal dependent variable, as predicted, long-term orientation significantly mediated the effect of superstitious beliefs ($\beta = -64.10$, $SE = 21.78$, $CI_{95\%}$: -110.47, -25.94; *a path*: $\beta = .41$, $SE = .09$, $t = 4.73$, $p < .001$, $CI_{95\%}$: .24, .58; *b path*: $\beta = -156.74$, $SE = 30.64$, $t = -5.12$, $p < .001$, $CI_{95\%}$: -217.31, -96.18), yet beliefs in karma failed to mediate the relationship ($\beta = -1.93$, $SE = 4.11$, $CI_{95\%}$: -11.40, 5.95). As in prior studies, gender ($\beta = -68.01$, $SE = 94.22$, $t = .72$, $p = .472$, $CI_{95\%}$: -118.23, 254.24) and income ($\beta = 18.48$, $SE = 13.04$, $t = 1.42$, $p = .159$, $CI_{95\%}$: -7.30, 44.25) were insignificant as covariates.

Discussion. Interestingly, the results of another mediation analysis focusing on control conditions I and III (featuring a karma prime) yielded similar results to those focusing on control conditions I and superstitious beliefs condition (see selected results presented below), suggesting that salient beliefs in karma (through priming) function in a similar manner as superstitious beliefs, instead of superstitious beliefs driving greater karmic beliefs.

Taking total price as the dependent variable, a mediation analysis (Model 4, 10,000 bootstrapped samples; SPSS PROCESS Macro) with long-term orientation as the mediator, and gender and income as covariates (see results without covariates in Web Appendix M). Supporting the theorization that beliefs in karma operate via elevated long-term orientation; priming salient beliefs in karma led to significantly greater long-term orientation (*a path*: $\beta = .33$, $SE = .14$, $t = 2.29$, $p = .023$, $CI_{95\%}$: .04, .61), resulting in lowered total price (*b path*: $\beta = -.76$, $SE = .21$, $t = -3.56$, $p < .001$, $CI_{95\%}$: -1.19, -.34). Taken together, long-term orientation significantly mediated the effect of karma ($\beta = -.25$, $SE = .15$, $CI_{95\%}$: -.60, -.03). Again, neither gender ($\beta = -.59$, $SE =$

.68, $t = -.86$, $p = .392$, $CI_{95\%}$: -1.94, .77) nor income ($\beta = .13$, $SE = .10$, $t = 1.23$, $p = .220$, $CI_{95\%}$: -.08, .33) was significant as covariates (for results on the number of items and calories, please refer to Web Appendix N).

7.10 Study 5: A Single-Paper Meta-Analysis

Thus far, we find that thinking about superstitious beliefs help curb consumer impulsivity. To cement the robustness of the findings (H_1), Study 5 features a single-paper meta-analysis (SPM) using the multiple contrast standardized meta-analysis approach (MCSM), integrating all results of Studies 2 – 4 (McShane & Böckenholt, 2017, 2022).

Compared to the conventional approach to meta-analysis (e.g., single contrast standardized meta-analysis [SCSM]), MCSM, as a novel methodology, allows researcher to accommodate an arbitrary number of effect (e.g., main effects and interaction effects), and more importantly, it adjusts for differences in the dependent measures across studies. Pertaining closely to the latter, this research employs diverse measures capturing consumer impulsivity, including responses along a Likert scale (Study 2), total price and number of items (Studies 3 and 4), and calories during grocery shopping (Study 4). Therefore, using MCSM is deemed to be more accurate and appropriate.

Across three experiments, consumers with salient superstitious beliefs displayed less impulsivity than those in the control condition I. To consolidate the robustness of our findings, we conducted three separate SPMs with different dependent variables in each study, such that *analysis #1* focuses on consumer impulsivity measure in Study 2, and total price in Studies 3 and 4, while *analysis #2* emphasizes the same measure in Study 2, and number of items in Studies 3 and 4, and *analysis #3* features the same measure in Study 2, total price in Study 3, and calories in Study 4. The results across three sets of analyses were largely consistent, and we therefore only present the results of analysis #1 below (for detailed results, please refer to Web Appendix O).

A MCSM analysis of our studies shows that relative to the control condition, salient superstitious beliefs indeed reduce consumer impulsivity by .44 ($SE = .09$, $z = -4.46$, $p < .001$). I^2 was estimated at .00% ($CI_{95\%}$: .00%, 88.59%), suggesting that heterogeneity is low but could

range from zero to high; the estimate, along with the visual convergence of effects demonstrate in *Figure 7.6*, is particularly encouraging, as it depicts not only the robustness, but the generalizability of our findings.

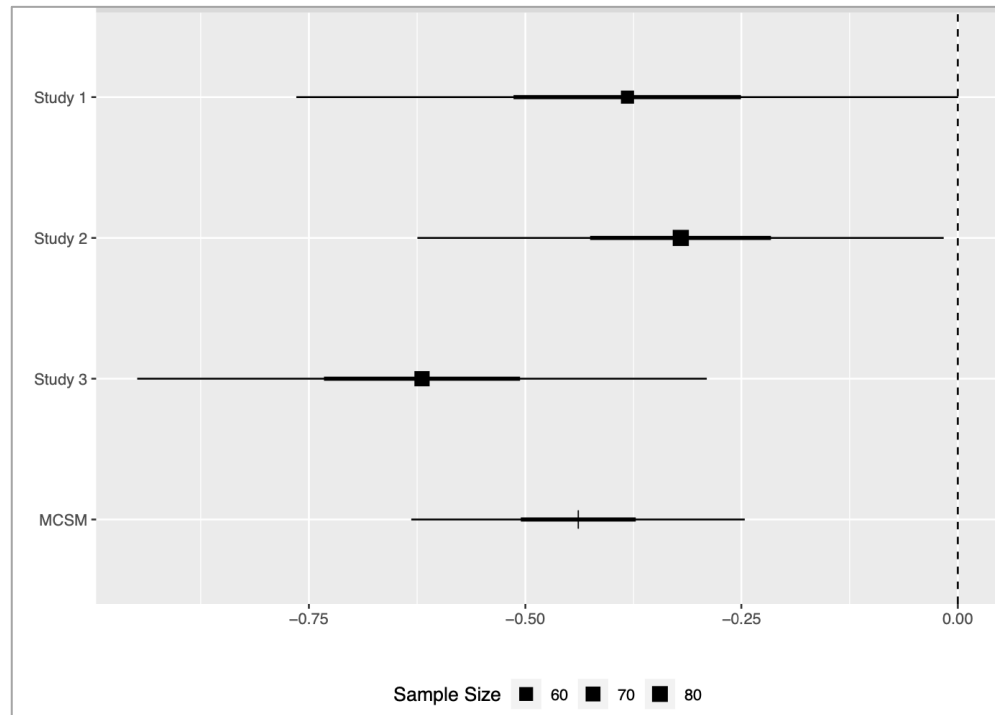


FIGURE 7.6 PLOTTING THE MULTIPLE CONTRAST STANDARDIZED META-ANALYSIS (MCSM; ANALYSIS #1)

7.11 General Discussion

The modern society seems to become increasingly impulsive: the skyrocketing debt-to-income ratio accompanied by an annual spending of approximate \$18 billion in the United States alone (Khait, 2020). Considering that mindless spontaneity, the surging impulsivity can lead to unprecedented challenges, such as environmental threats, impaired consumer well-being, and society's financial vulnerability (i.e., debt-to-income ratios). Yet, some questions remain underexplored: What might be an effective intervention for curbing consumer impulsivity? Does long-term orientation affect people suffering from impulsivity? In this research, we examine these core questions by harnessing consumers' superstitious beliefs.

This research hypothesizes and reveals that, across a series of studies involving both hypothetical and actual behaviours, the salience of superstitious beliefs influences consumers' impulsivity, in terms of the number of products chosen, total money spent, and calories during grocery shopping. In essence, by simply activating salient superstitious beliefs (vs. not activated) – such as knocking on wood, saying “bless you,” wearing lucky charms, or recalling how superstition has affected a previous incident in their lives, people are less likely to engage in impulsive behaviours. Additionally, this research also yielded support for the proposed underlying mechanism: consumers with more salient superstitious beliefs are less prone to behave impulsively because such individuals are more long-term oriented.

Methodologically, this research features diverse operationalizations of both impulsivity and superstitious beliefs, which produces convergent results. Specifically, we have observed compatible findings of salient superstitious beliefs on consumer impulsivity, regardless of whether superstitious beliefs were captured as a chronic individual difference factor (i.e., trait; Study 1), manipulated through a visualization task (Studies 2 and 3), or operationalized as a task interested in their comprehension ability (Study 4). It is also worthwhile to be noted that the effect of superstitious beliefs on consumers' impulsivity is a robust phenomenon, as evident in the effect sizes reported across studies (ranging from .03 to .09). This effect occurs consistently across different operationalizations of consumer impulsivity, and emerges regardless of income and gender. Even if this effect might be weaker in the field, it still has the potential to translate to an effective intervention strategy, when applied by consumers, marketers, and policy makers alike.

7.12 Theoretical Contributions

In a departure from conventional wisdom and cognitive error-based predictions hinting at the positive correlation between superstitions and impulsivity, this research points to a nascent area of research by investigating the influence of a broadly popular, yet irrational, belief on people's behaviours. Across psychology, anthropology, sociology, and neurology literatures, superstitious beliefs are often thought to be positively associated with greater impulsivity (Michalczuk et al., 2011). Yet, by exploring both trait (Study 1) and situational consumer

impulsivity, through both hypothetical (Study 2) and actual behaviours (Studies 3 and 4), we counterintuitively argue and document novel insights: thinking about superstitious beliefs significantly decreases consumer impulsivity via long-term orientation. This relationship implies a positive, benign role that irrationality can play to cultivate a more future-oriented temporal focus and foster more mindful consumer behaviours. Particularly, rather than constructing an illusional sense of reality, superstitious beliefs allow people to identify and utilize resources that are already present in their lives; by shifting the way one views the passage of time (i.e., from the present to the future), people can resist the temptation of their impulse, without depleting resources such as self-control.

Even more important contributions arise from the key findings of the work – namely, that salient (vs. not salient) superstitious beliefs enact consumers to curate a more long-term orientation. Complementing the literature investigating the way people value time, this research examines and documents a unique condition under which people’s temporal orientation can be altered, and in turn their consumption behaviours. By introducing the salience of superstitious beliefs as an important driver elucidating consumers’ long-term orientation, we depart from the extant framework explaining individuals’ long-term (vs. short-term) temporal focus, such as cultural background (e.g., people from eastern [vs. western] cultures tend to focus more on the future [present]; Gao, 2016), personality traits (e.g., conscientiousness, neuroticism; Park et al., 2017), and socio-economic status (Wood, 1998). Therefore, the findings imply that the salience of superstitious beliefs is an important, yet hitherto overlooked driver altering the way individuals view the passage of time, above and beyond the accounts documented in prior literature.

Finally, this research examines several alternative mediators (e.g., affect [indirectly in Study 2], self-control and awe), in addition to the main effects and the proposed mediator. The scrutiny of underlying mechanisms allows us to verify other theory-based relationships of the independent variable on consumer impulsivity. Accordingly, the resulting insights contribute to a more fine-grained understanding of consumer impulsivity, in comparison to approaches focusing on only one theoretical perspective.

7.13 Managerial, Consumer, and Regulatory Implications

Impulsivity entails one of many ongoing battles between companies and consumers – for companies, consumer buying on impulse has long been an area of interest, and companies who cater to this tendency are vying for more unplanned, impulsive, and spontaneous purchases, whereas consumers in general attempt to curb impulsivity and practice more mindful consumption behaviours.

The findings of this research hint at a managerially significant implications of superstitious beliefs in relation to its impact on consumer behaviour. Specifically, we find that thinking about superstitious beliefs effectively decreases consumer impulsivity, whereby consumers purchase a smaller number of products, spend less money, and are likely to be more mindful in grocery shopping (e.g., reduced calories intake; Study 4). This is important for marketers because our findings shed light upon new, unique insights on identifying factors discourage purchases on impulse. Indeed, Iyer et al. (2020) highlight that, despite of retailers' continuous and considerable efforts and investments in devising marketing stimuli, including store ambience, merchandise, pricing strategies, and communication, not all of them were equally effective. Specifically, the results of the meta-analysis demonstrate that investing in and devising communication tend to have a stronger impact on impulsive spending. In this regard, our findings echo with and builds upon Iyer and colleagues (2020) that, the use of superstitious beliefs in marketing communication and advertising might backfire and inhibit impulsive spending.

Although thinking about superstitious beliefs hampers marketers, consumers alike ought to benefit from our findings. While consumers are becoming increasingly aware of and familiar with companies' tactics to persuade impulsive behaviours, consumers in U.S. alone still splurge about \$18 billion annually on unplanned purchases, with an average U.S. consumer spending more than \$300. For consumers, these findings may be somewhat comforting: although the emotional charges and marketing stimuli can be tempting, simply thinking about superstitious beliefs may curb impulsivity. Accordingly, consumers ought to be informed of the unintended consequences of superstitious beliefs and such resources to combat impulsivity, perhaps through social media. After all, it is up to the consumers to decide whether or not to think about superstitious beliefs before shopping.

Last but not least, our findings should be of interest to regulators, policy makers and non-for-profit organizations. Regulators alike, for example, can capitalize on this research and educate consumers in relation to the impact of thinking about superstitious beliefs on consumer purchase behaviours, especially the ones that are unplanned, spontaneous, and made for immediate gratification.

7.14 Is Highlighting Superstitious Beliefs A Self-Control Strategy?

Thus far, the findings showcase how highlighting superstitious beliefs can help people inhibit impulsive consumption behaviours. Yet, a remaining question surfaces: should this be considered as a self-control strategy?

Specifically, self-control captures individuals' ability to inhibit, suppress, and override undesirable thoughts, feelings, and events (e.g., temptations and impulses) in the pursuit of long-term goals (Nepomuceno & Laroche, 2017). In studying the ways to resist temptations, mainstream self-control strategies predominantly focus on either highlighting benefits of achieving long-term goals, or undermining benefits of indulging in the immediate, short-term temptation. Interestingly, reviewing extant literature, the possession of long-term goals seems to remain as the prerequisite in self-control research. For instance, in examining self-control interventions induced by construal levels, Fujita and colleagues (2006) found that such interventions are only effective for those who hold long-term goals. In this sense, one might construe self-control as one's ability to resolve the conflicts between long-term goal and short-term temptation (Vosgerau et al., 2020). Relatedly, Fujita (2011) devised the conventional conceptualization of self-control, and advocates for a novel, more holistic perspective. Instead of regarding self-control as people's deliberate and conscious efforts in inhibiting impulses, Fujita describes self-control as a process involving the resolution of a dual-motive conflict: when people encounter trade-offs between long-term goals and immediate temptations, those with self-control are capable of favouring distal (e.g., long-term) motivations over the proximal ones, whereby these two motives often compete.

On the contrary, our approach does not attempt to manipulate gains accessible in the immediate short-term, nor the long-term goal – which differentiates our findings from self-control strategies. Instead, we simply seek to shift consumers’ temporal orientation from the present to the future, thus isolating them from the appeal of short-term gratifications. Indeed, in this research, we explicitly capture participants’ self-control, which failed to account for the effect of superstitious beliefs (Study 3). This underscores the veracity of our proposed underlying mechanism: thinking about superstitious beliefs is effective in obviating impulsive consumption behaviours, beyond the influence of self-control.

On a separate note, self-control strategies tend to speak to more of a *reactionary* process, whereby people value long-term goals *after* encountering short-term temptations (Fujita, 2011). Rather, our approach of highlighting superstitious beliefs allows people to potentially engage in “mental time travel” (Cosentino et al., 2022), thereby engineering and automating the anti-impulse behaviours because of their long-term focus. In this regard, the “superstition” effect describes a rather *proactive* process by assigning greater importance to the future, even *before* facing temptations.

Taken together, the “superstition” effect seems to operate outside the scope of self-control strategies, which we deem as an important contribution of this research. Given self-control strategies often demand considerable effort, and thus can be rendered less effective due to burdens on individuals’ cognitive and regulatory resources (Baumeister & Heatherton, 1996; Wegner, 1994), our novel approach offers consumers an alternative mean to fight against impulse, rather than a reactionary, fallible self-control strategy.

7.15 Avenues for Future Research

In this research, we examine a (largely) benign consequence of superstitious beliefs in a consumption context, yet other consequences might as well be more insidious. Therefore, research is needed to explore potential negative effects of superstitious beliefs. For example, can superstitious beliefs lead to over-confidence in decision-making? Additionally, as we show that

superstitious beliefs enhance one's focus on the future (vs. the present), will it cause procrastination (Wilson & Nguyen, 2012)?

We show how salient superstitious beliefs can result in significantly reduced impulsivity, which is explained by enhanced long-term orientation experienced by consumers. However, anecdotal evidence implies that superstitions might also potentially lead to more short-term orientation (e.g., *instant karma*; Xue & Mattila, 2022). Research is therefore needed to explore conditions *when*, *where*, and *how* superstitious beliefs are associated with short-term/long-term orientations. For example, consumers' life history (LH) strategies can alter how individuals process information and approach consumptions; consumers with slow (vs. fast) LH strategies are more prone to delay gratifications, and prioritize long-term – instead of short-term – goals. In this regard, consumers' life history strategies might be a pivotal candidate worthy of scholarly investigation. Is the benign effect of superstitious beliefs only applicable for slow fast LH strategists? Will superstitious beliefs activate short-term orientation among fast LH strategists, and thus backfire on them? An interesting avenue for future inquiries would be to explore in detail the circumstances under which such effects might arise.

In light of the preceding discussion, although self-control and long-term orientation represent distinct constructs, their impacts on impulsive consumption are similar. Therefore, additional research is warranted to understand the relationship to self-control. Interestingly, in a recent investigation of anti-consumption, Nepomuceno and Laroche (2017) put forth to an intriguing distinction. Particularly, they posit an interplay between these two constructs; a long-term orientated individual who has low levels of self-control tends to value future gains over the present ones, yet lacks the ability to resist the temptations and impulses. In contrast, a short-term individual with high self-control might possess the necessary resources to resist impulses, however, they are not sufficiently motivated to pursue their future, long-term gains.

Our observed effect of superstitious beliefs can be applied in a myriad of ways. As a complex construct incorporating different elements, such as religious beliefs, paranormal and supernatural forces (Lindeman & Svedholm, 2012; Maranise, 2013), the impact of superstitious beliefs might differ from the others, thereby inviting future inquiries to explore the differences and their interplay thereof. For example, can consumers' religiosity moderate the effect of

superstitious beliefs? A high level of long-term focus, among consumers with high levels of religiosity, can potentially diminish the effect of superstitious beliefs on impulsive buying behaviours. All of these concerns merit careful examinations.

7.16 Concluding Remarks

Superstitious beliefs abound, so are consumers battling against impulsivity. When it seems impossible to resist the paranormal power of superstitions, this research suggests that leveraging superstitious beliefs – instead of resisting it – might be of help in curating more mindful consumer behaviours. By bridging consumer irrationality – for example, superstitions – with marketing-related outcomes, this research puts forth to a novel solution to tackle consumer impulsivity.

As the investigation of superstitious beliefs in the marketing discipline remains a largely uncharted territory, it presents limitless opportunities for future studies to dive into this realm and harness the superstitious effects in marketing. This is especially important because, like previously mentioned, superstitious beliefs remain one of the most ubiquitous beliefs worldwide and can be manifested differently among diverse populations across distinct cultures. In the present work, we offer an intriguing illustration: when consumers are exposed to salient superstitious beliefs, this might shift the way they weigh short-term, immediate gains versus long-term, future benefits, and ultimately, purchase decisions they make. Therefore, our investigation leaves intriguing questions for future research to explore, and we hope that this research can spur more further work in this domain.

7.17 References

- Amos, C., Holmes, G. R., & Keneson, W. C. (2014). A meta-analysis of consumer impulse buying. *Journal of Retailing and Consumer Services*, 21(2), 86-97.
- Baumeister, R. F. (2002). Yielding to temptation: Self-control failure, impulsive purchasing, and consumer behaviour. *Journal of Consumer Research*, 28(4), 670-676.
- Baumeister, R. F., & Heatherton, T. F. (1996). Self-regulation failure: An overview. *Psychological Inquiry*, 7(1), 1-15.
- Bearden, W. O., Money, R. B., & Nevins, J. L. (2006). A measure of long-term orientation: Development and validation. *Journal of the Academy of Marketing Science*, 34(3), 456-467.
- Beatty, S. E., & Ferrell, M. E. (1998). Impulse buying: Modelling its precursors. *Journal of Retailing*, 74(2), 169-191.
- Block, L., & Kramer, T. (2009). The effect of superstitious beliefs on performance expectations. *Journal of the Academy of Marketing Science*, 37, 161-169.
- Brysbaert, M. (2019). How many participants do we have to include in experiments? A tutorial of power analysis with reference tables. *Journal of Cognition*, 2(1), 1-38.
- Chandon, P., Haws, K. L., & Liu, P. J. (2022). Paths to healthier eating: Perceptions and interventions for success. *Journal of the Association for Consumer Research*, 7(4), 383-392.
- Chatterjee, P., Irmak, C., & Rose, R. L. (2013). The endowment effect as self-enhancement in response to threat. *Journal of Consumer Research*, 40(3), 460-476.
- Chen, H., Ng, S., & Rao, A. R. (2005). Cultural differences in consumer impatience. *Journal of Marketing Research*, 42(3), 291-301.
- Converse, B. A., Risen, J. L., & Carter, T. J. (2012). Investing in karma: When wanting promotes helping. *Psychological Science*, 23(8), 923-930.
- Cosentino, E., McCarroll, C.J., & Michaelian, K. (2022). Resisting temptation and overcoming procrastination: The roles of mental time travel and metacognition. *Phenomenology and the Cognitive Sciences*, 21(4), 791-811.
- Damisch, L., Stoberock, B., & Mussweiler, T. (2010). Keep your fingers crossed! How superstition improves performance. *Psychological Science*, 21(7), 1014-1020.
- Dholakia, U. M. (2000). Temptation and resistance: An integrated model of consumption impulse formation and enactment. *Psychology & Marketing*, 17(11), 955-982.
- Figlio, D., Giuliano, P., Özek, U., & Sapienza, P. (2019). Long-term orientation and educational performance. *American Economic Journal: Economic Policy*, 11(4), 272-309.
- Fujita, K. (2011). On conceptualizing self-control as more than the effortful inhibition of impulses. *Personality and Social Psychology Review*, 15(4), 352-366.
- Fujita, K., Orvell, A., & Kross, E. (2020). Smarter, not harder: A toolbox approach to enhancing self-control. *Policy Insights from the Behavioural and Brain Sciences*, 7(2), 149-156.
- Fujita, K., Trope, Y., Liberman, N., & Levin-Sagi, M. (2006). Construal levels and self-control. *Journal of Personality and Social Psychology*, 90(3), 351-367.
- Gallagher, T. J., & Lewis, J. M. (2001). Rationalists, fatalists, and the modern superstitious: Test-taking in introductory sociology. *Sociological Inquiry*, 71(1), 1-12.
- Gao, X. (2016). Cultural differences between east Asian and north American in temporal orientation. *Review of General Psychology*, 20(1), 118-127.

- Hamerman, E. J., & Morewedge, C. K. (2015). Reliance on luck: Identifying which achievement goals elicit superstitious behaviour. *Personality and Social Psychology Bulletin*, 41(3), 323-335.
- Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford publications.
- Hofstede, G. (1980). Culture and organizations. *International Studies of Management & Organization*, 10(4), 15-41.
- Hofstede, G. (1991). Empirical models of cultural differences. In *Contemporary issues in cross-cultural psychology*, eds. Bleichrodt, Nico Ed, Pieter JD Drenth, Lisse, The Netherlands: Swets & Zeitlinger, 4-20.
- Hofstede, G. (2001). *Culture's consequences: comparing values, behaviours, institutions, and organizations across nations*, Thousand Oaks, CA: Sage.
- Hofstede, G., & Bond, M. H. (1988). The Confucius connection: From cultural roots toeconomic growth. *Organizational Dynamics*, 16(4), 5-21.
- Howe, H. S., Ubel, P. A., & Fitzsimons, G. J. (2022). Open science online grocery: A tool for studying choice context and food choice. *Journal of the Association for Consumer Research*, 7(4), 393-402.
- Iyer, G. R., Blut, M., Xiao, S. H., & Grewal, D. (2020). Impulse buying: A meta-analytic review. *Journal of the Academy of Marketing Science*, 48, 384-404.
- Joshanloo, M., Jovanović, V., & Park, J. (2021). Differential relationships of hedonic and eudaimonic well-being with self-control and long-term orientation. *Japanese Psychological Research*, 63(1), 47-57.
- Kacen, J. J., & Lee, J. A. (2002). The Influence of culture on consumer impulsive buying behaviour. *Journal of Consumer Psychology*, 12(2), 163-176.
- Khait, A. (2020). *What is impulsive buying and how to avoid it*. Last Accessed March 4, 2023. <https://medium.com/all-things-fashion-fun/what-is-impulsive-buying-and-how-to-avoid-it-bd4678b88a8d>.
- Lades, L. K. (2014). Impulsive consumption and reflexive thought: Nudging ethical consumer behaviour. *Journal of Economic Psychology*, 41, 114-128.
- Lin, Y., Li, Y., & Hou, X. (2015). Utilitarian orientation, long-term orientation, and performance: Evidence from Chinese millennial-generation employees. *Social Behaviour and Personality*, 43(9), 1463-1476. <https://doi.org/10.2224/sbp.2015.43.9.1463>.
- Maloney, P. W., Grawitch, M. J., & Barber, L. K. (2012). The multi-factor structure of the brief self-control scale: discriminant validity of restraint and impulsivity. *Journal of Research in Personality*, 46(1), 111-115.
- Mandolfo, M., & Lamberti, L. (2021). Past, present, and future of impulse buying research methods: A systematic literature review. *Frontiers in Psychology*, 12, 687404. <https://doi.org/10.3389/fpsyg.2021.687404>
- McDermott, J. (2021). *The problem with impulsive spending*. Last Accessed March 4, 2023. <https://www.finder.com/impulse-buying-stats>.
- McShane, B. B., & Böckenholt, U. (2017). Single-paper meta-analysis: Benefits for study summary, theory testing, and replicability. *Journal of Consumer Research*, 43(6), 1048-1063.

- McShane, Blakeley B., and Ulf Böckenholt (2022). Meta-analysis of studies with multiple contrasts and differences in measurement scales. *Journal of Consumer Psychology*, 32(1), 23-40.
- Michalczuk, R., Bowden-Jones, H., Verdejo-Garcia, A., & Clark, L. (2011). Impulsivity and cognitive distortions in pathological gamblers attending the UK national problem gambling clinic: A preliminary report. *Psychological Medicine*, 41(12), 2625-2635.
- Miller, D., & Xu, X. (2020). CEO Long-term orientation and elite university education. *Strategic Organization*, 18(4), 520-546.
- Nepomuceno, M. V., & Laroche, M. (2017). When Materialists intend to resist consumption: The moderating role of self-control and long-term orientation. *Journal of Business Ethics*, 143(3), 467-483.
- Nevins, J. L., Bearden, W. O., & Money, B. (2007). Ethical values and long-term orientation. *Journal of Business Ethics*, 71(3), 261-274.
- O'Guinn, T. C., & Faber, R. J. (1989). Compulsive buying: A phenomenological exploration. *Journal of Consumer Research*, 16(2), 147-157.
- Park, G., H. Schwartz, A., Sap, M., Kern, M. L., Weingarten, E., Eichstaedt, J. C., Berger, J. et al. (2017). Living in the past, present, and future: Measuring temporal orientation with language. *Journal of Personality*, 85(2), 270-280.
- Pham, M. T., Cohen, J. B., Pracejus, J. W., & Hughes, G. D. (2001). Affect monitoring and the primacy of feelings in judgment. *Journal of Consumer Research*, 28(2), 167-188.
- Piron, F. (1991). Defining impulse purchasing. In advances in consumer research, Vol. 18, eds. Rebecca H. Holman, Michael R. Solomon, Provo, UT: Association for Consumer Research, 509-514.
- Praveen K. K., Lehmann, D. R., & Farley, J. U. (2010). Consumer expectations and culture: The effect of belief in karma in India. *Journal of Consumer Research*, 37(2), 251-263.
- Ramanathan, S., & Menon, G. (2006). Time-varying effects of chronic hedonic goals on impulsive behaviour. *Journal of Marketing Research*, 43(4), 628-641.
- Rook, D. W. (1985). The ritual dimension of consumer behaviour. *Journal of Consumer Research*, 12(3), 251-264.
- Rook, D. W., & Fisher, R. (1995). Normative influences on impulsive buying behaviour. *Journal of Consumer Research*, 22(3), 305-313.
- Shiota, M. N., Keltner, D., & John, O. P. (2006). Positive emotion dispositions differentially associated with big five personality and attachment style. *The Journal of Positive Psychology*, 1(2), 61-71.
- Shipp, A. J., & Aeon, B. (2019). Temporal focus: Thinking about the past, present, and future. *Current Opinion in Psychology*, 26, 37-43.
- Sierra, J. J., Hyman, M. R., & Turri, A. M. (2018). Determinants and outcomes of superstitious beliefs: A multi-study approach. *Journal of Marketing Management*, 34(15-16), 1397-1417.
- Singhal, B. S., & Khadilkar, S. V. (2014). Neurology in the developing world. *Handbook of Clinical Neurology*, 121, 1773-1782.
- Skinner, S. F. (1948). "Superstition" in the pigeon. *Journal of Experimental Psychology*, 38(2), 168-172.
- Srite, M., & Karahanna, E. (2006). The role of espoused national cultural values in technology acceptance. *MIS Quarterly*, 30(3), 679-704.

- Statista. (2023). *Average monthly amount consumers spent while making impulse purchases in the United States in 2022*. Last Accessed May 4, 2023. <https://www.statista.com/statistics/1330467/per-month-spending-on-impulse-purchases-usa/>.
- Stillman, P. E., Medvedev, D., & Ferguson, M. J. (2017). Resisting temptation: Tracking how self-control conflicts are successfully resolved in real time. *Psychological Science*, 28(9), 1240-1258.
- Verdon, J. (2022). *The pandemic changed how we shop for groceries, adobe report shows*. Last Accessed May 4, 2023. <https://www.forbes.com/sites/joanverdon/2022/03/15/the-pandemic-changed-how-we-shop-for-groceries-adobe-report-shows/?sh=3e56f1464bb1>.
- Vohs, K. D., & Faber, E. J. (2007). Spent Resources: Self-regulatory resource availability affects impulse buying. *Journal of Consumer Research*, 33(4), 537-547.
- Vyse, S. (2018). Superstition, ethics, and transformative consumer research. *Journal of the Association for Consumer Research*, 3(4), 582-590.
- Wegner, D. M. (1994). Ironic processes of mental control. *Psychological Review*, 101(1), 34-52.
- Wilson, B. A., & Nguyen, T. D. (2012). Belonging to tomorrow: An overview of procrastination. *International Journal of Psychological Studies*, 4(1), 211-217.
- Wood, M. (1998). Socio-economic status, delay of gratification, and impulse buying. *Journal of Economic Psychology*, 19(3), 295-320.
- Xue, J., & Mattila, A. S. (2022). Instant karma: How the karmic-investment mindset affects customer engagement with corporate charitable giving requests. *Journal of Hospitality & Tourism Research*, 1-13. <https://doi.org/10.1177/10963480221137779>.
- Zhang, M., Li, L., Ye, J., Yu, S., & Zhong, J. (2021). The effects of feelings of awe on the relationship between consumers' narcissism and impulsive consumption behaviours: A mediated moderation model. *Current Psychology*, 1-18.
- Zhang, Y., & Shrum, L. J. (2009). The influence of self-construal on impulsive consumption. *Journal of Consumer Research*, 35(5), 838-850.
- Zhang, Y., Winterich, K. P., & Mittal, V. (2010). Power distance belief and impulsive buying. *Journal of Marketing Research*, 47(5), 945-954.
- Zizzo, D. J. (2010). Experimenter demand effects in economic experiments. *Experimental Economics*, 13(1), 75-98.

7.18 Web Appendices

7.18.1 Web Appendix A: Measurement Scales Used (Study 1)

TABLE 7.2 MEASUREMENT SCALES USED IN STUDY 1

Constructs	Sources	Items	Anchors
Superstitious Beliefs	Sierra, Hyman, & Turri, 2018	I believe in karma.	
		I believe it is possible to jinx things or situations.	
		Good chi attracts propensity.	<i>1 =Strongly disagree, 7 = Strongly agree</i>
Trait Impulsivity	Rook & Fisher, 1995	I believe in fan rituals, like wearing lucky shirts during a game can influence game outcomes.	
		"Just do it" describes the way I buy things.	<i>1 =Strongly agree, 7 = Strongly disagree (higher scores indicate lower consumers' trait impulsivity)</i>
		"I see it, I buy it" describes me.	
		"Buy now, think about it later" describes me.	
		I often buy things without thinking.	

Attention Check	N/A	What color is Grass?	A: Green
		The fresh, uncut grass, not leaves or hay. <u>Make sure to select <i>purple</i> as an answer so that we know you are paying attention.</u>	B: Purple
Demographic Data		Questions	
Ethnicity		What is your ethnicity?	
Income		About how much is your <u>yearly family</u> income? (If more than one person working, add all).	
Education Background		What is the highest level of education <u>you</u> have completed?	
Gender		Please indicate your gender:	
Age		What is your age?	

7.18.2 Web Appendix B: Results without Gender and Income as Covariates (Study 1)

After excluding covariates, the analysis yielded consistent results. trait superstitious beliefs led to significantly lower impulsivity ($B = .39$, $SE = .09$, $\beta = .40$, $t = 4.49$, $p < .001$; $CI_{95\%} = .22, .57$; *Adjusted $R^2 = .14$* , $F(1, 106) = 6.85$, $p < .001$).

7.18.3 Web Appendix C: The Operationalisation of Superstitious Beliefs (Study 2)

All participants were instructed to engage in reportedly a visualization task, in which they were made to believe that the researchers were interested in their ability of recalling a particular incident and were asked to describe the situation, as shown below.

Visualization Task

In the following task, we are interested in your ability of recalling a particular incident in your life, immersing yourself in it, and describing this situation **as detailed as possible**.

---- Page break ----

Control condition:

Please list, in as much detail as you can, everything that you have eaten or drank in the past 48 hours.

* Not to worry about those things you find yourself unable to remember.

Superstitious beliefs condition:

Please recall a particular incident in which **your superstitious beliefs affect the outcome of a situation**.

By superstition, we mean a belief that **an object, action, or circumstance that is not logically related to a course if events influence the outcome**, for example, karma, knock on wood, fingers crossed, and/or walking under a ladder.

Please describe the above situation in a detailed and vivid manner — *what happened, how you felt*, etc.

7.18.4 Web Appendix D: Measurement Scales Used (Study 2)

TABLE 7.3 MEASUREMENT SCALES USED IN STUDY 2

Constructs	Sources	Items	Anchors
Manipulation Check	Sierra, Hyman, & Turri, 2018	I believe in karma.	
		I believe it is possible to jinx things or situations.	
		Good chi attracts propensity.	
		I believe in fan rituals, like wearing lucky shirts during a game can influence game outcomes.	
Impulsivity	Nepomuceno & Laroche, 2017	Below you will see several spontaneous purchasing scenarios. Please answer the questions imagining that you can afford both options.	
		You bought your laptop last year and it has been working perfectly since then. However, you notice a promotion of a laptop of the same maker twice as fast for \$500. What do you do? (<i>1 = “Buy the new laptop” and 7 = “Ignore the promotion”</i>)	N/A

Imagine that you are renting an apartment. You can choose apartment A, with rent at \$810 per month, an excellent view (cityscape and a river), and a bright and sunny atmosphere; or you can choose apartment B, with rent at \$490 per month, a poor view (the back of another building), and a somewhat dark and dreary atmosphere. Which apartment would you choose? (*1 = “Definitely Apartment A” and 7 = “Definitely Apartment B”*)

You live alone and have a very generous income. Where would you live? (*1 = “In a large and luxury place” and 7 = “In a nice, but modest place”*)

You are walking downtown when you noticed that the thing you always wanted is 50% off. You have two options. You can enter the store and buy it, or you can ignore the promotion. What would you do? (*1 = “Buy the item” and 7 = “Ignore the promotion”*)

You enter a mall and notice that everything is at least half price. How would you react? (*1 = “Buy as much as possible” and 7 = “Avoid spending”*)

You decided to go out for dinner with a friend. You can go to a fancy restaurant and spend \$50 on your meal; or you can go to another restaurant and spend \$20 on your meal. Which restaurant would you go? (*1 = “Go to the fancy one” and 7 = “Go to the other restaurant”*)

		You have unexpectedly won \$500. How do you react? (<i>1 = “Go on a shopping spree” and 7 = “Avoid spending”</i>)	
		You have decided to buy a new unlocked cell phone. Which cell phone do you buy? (<i>1 = “One priced above \$500” and 7 = “One priced at \$500 maximum”</i>)	
		You have decided to buy a new pair of sunglasses. Which one would you choose? (<i>1 = “One priced at \$399” and 7 = “One priced at \$99”</i>)	
		You received \$100 in cash under the condition that you cannot save the amount. What do you do? (<i>1 = “Spend it in superfluous items” and 7 = “Spend it in necessities”</i>)	
		You unexpectedly became a millionaire. How will you live? (<i>1 = “Definitely live extravagantly” and 7 = “Definitely live a simple life”</i>)	
		I had unpleasant feelings thinking about the spontaneous purchasing scenarios.	
Affect	Pham et al., 2001	The spontaneous purchasing scenarios made me feel happy. (<i>r</i>)	<i>1 =Strongly disagree, 7 = Strongly agree</i>
		I was disgusted by the spontaneous purchasing scenarios.	

		The spontaneous purchasing scenarios made me feel good. (r)		
		I was fearful thinking about the spontaneous purchasing scenarios.		
		The spontaneous purchasing scenarios made me feel bad.		
		The spontaneous purchasing scenarios made me feel angry.		
		The spontaneous purchasing scenarios made me feel joyful. (r)		
		I had pleasant feelings thinking about the spontaneous purchasing scenarios. (r)		
		The spontaneous purchasing scenarios made me feel sad.		
Attention Check	N/A	What color is Grass?	A: Green	
		The fresh, uncut grass, not leaves or hay.		
		<u>Make sure to select <i>purple</i> as an answer so that we know you are paying attention.</u>	B: Purple	
Demographic Data		Questions		
Ethnicity		What is your ethnicity?		

Income	About how much is your <u>yearly family</u> income? (If more than one person working, add all).
Education Background	What is the highest level of education <u>you</u> have completed?
Gender	Please indicate your gender:
Age	What is your age?

Note. r denotes that the item is reversely coded.

7.18.5 Web Appendix E: Measurement Scales Used (Study 3)

TABLE 7.4 MEASUREMENT SCALES USED IN STUDY 3

Constructs	Sources	Items	Anchors
Manipulation Check	Sierra, Hyman, & Turri, 2018	I believe in karma.	
		I believe it is possible to jinx things or situations.	
		Good chi attracts propensity.	1 = <i>Strongly disagree</i> , 7 = <i>Strongly agree</i>
		I believe in fan rituals, like wearing lucky shirts during a game can influence game outcomes.	
Long-Term Orientation	Bearden, Money, & Nevins, 2006	Respect for tradition is important to me.	
		I plan for the long term.	1 = <i>Strongly disagree</i> , 7 = <i>Strongly agree</i>
		Family heritage is important to me.	
		I value a strong link to my past.	

		I work hard for success in the future.	
		I don't mind giving up today's fun for success in the future.	
		Traditional values are important to me.	
		Persistence is important to me.	
		I am good at resisting temptation.	
		I have a hard time breaking bad habits. (<i>r</i>)	
		I am lazy. (<i>r</i>)	
Self-Control	Maloney, Grawitch, & Barber, 2012	I say inappropriate things. (<i>r</i>)	<i>1 =Strongly disagree, 7 = Strongly agree</i>
		I do certain things that are bad for me, if they are fun. (<i>r</i>)	
		I refuse things that are bad for me.	
		I wish I had more self-discipline. (<i>r</i>)	

		People would say that I have iron self-discipline.	
		Pleasure and fun sometimes keep me from getting work done. (<i>r</i>)	
		I have trouble concentrating. (<i>r</i>)	
		I am able to work effectively toward long-term goals.	
		Sometimes I can't stop myself from doing something, even if I know it is wrong. (<i>r</i>)	
		I often act without thinking through all the alternatives. (<i>r</i>)	
		I often feel awe.	
		I see beauty all around me.	
Awe	Shiota, Keltner, & John, 2006	I feel wonder almost every day.	<i>1 =Strongly disagree, 7 = Strongly agree</i>
		I often look for patterns in the objects around me.	
		I have many opportunities to see the beauty of nature.	

		I seek out experiences that challenge my understanding of the world.	
Attention Check	N/A	What color is Grass?	A: Green
		The fresh, uncut grass, not leaves or hay.	
		<u>Make sure to select <i>purple</i> as an answer so that we know you are paying attention.</u>	B: Purple
Demographic Data		Questions	
	Ethnicity	What is your ethnicity?	
	Income	About how much is your <u>yearly family</u> income? (If more than one person working, add all).	
	Education Background	What is the highest level of education <u>you</u> have completed?	
	Gender	Please indicate your gender:	
	Age	What is your age?	

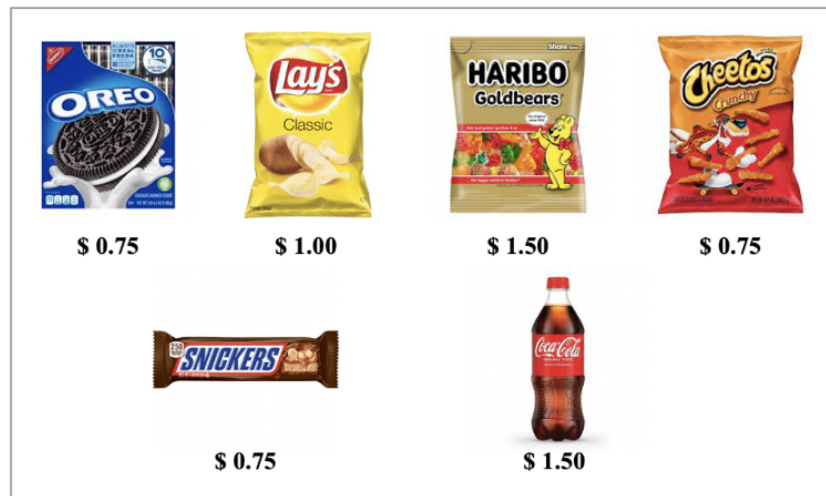
Note. r denotes that the item is reversely coded.

7.18.6 Web Appendix F: Experimental Material (Study 3)

Imagine that you are at a store and have **\$10 cash**. You can buy as many or as few of the products listed below, or none at all.

After the study is completed, one participant in each session will be randomly selected and the participants will receive whatever they have chosen in this study.

If you are selected and you decide to buy nothing, you will get \$10. If you are selected and decide to purchase something, you will get those items and the remaining money, totaling \$10.



Please select all the items you've decided to purchase.

- ☐ A serving of Oreo cookies (\$ 0.75)
- ☐ A bag of potato chips (\$ 1.00)
- ☐ A bag of gummy candies (\$ 1.50)
- ☐ A serving of Cheetos (\$ 0.75)
- ☐ A Snickers bar (\$ 0.75)
- ☐ A bottle of cola (\$ 1.50)
- ☐ Nothing

FIGURE 7.7 EXPERIMENTAL PROCEDURE IN STUDY 3

7.18.7 Web Appendix G: Results without Gender and Income as Covariates (Study 3)

The Main Effect

Total Price. After removing gender and income as covariates in the analysis, the model remained unchanged ($M_{Control} = 1.85$, $SD = 2.02$ vs. $M_{Superstitious\ Beliefs} = 1.26$, $SD = 1.59$; $F(1, 166) = 4.31$, $p = .039$; $\eta^2 = .03$).

The Number of Items. Again, the results replicated those of the total price; superstitious beliefs significantly curbed the number of items chosen ($M_{Control} = 1.80$, $SD = 1.92$ vs. $M_{Superstitious\ Beliefs} = 1.24$, $SD = 1.51$; $F(1, 166) = 4.18$, $p = .042$; $\eta^2 = .03$).

The Mediation Effect

Total Price. We have conducted another mediation analysis without any covariates (Model 4, 10,000 bootstrapped samples; SPSS PROCESS Macro; Hayes, 2018) with superstitious beliefs as the independent variable, the total price as the dependent variable, long-term orientation, self-control, and awe as parallel mediators.

The analysis yielded consistent results, in that long-term orientation significantly mediated the effect of superstitious beliefs on the total price ($\beta = -.35$, $SE = .18$, $CI_{95\%}: -.77, -.06$). Specifically, superstitious beliefs led to significantly greater long-term orientation (*a path*: $\beta = .59$, $SE = .23$, $t = 2.62$, $p = .010$, $CI_{95\%}: .15, 1.04$), which in turn resulted in reduced total price (*b path*: $\beta = -.59$, $SE = .10$, $t = -5.92$, $p < .001$, $CI_{95\%}: -.79, -.39$). Additionally, the direct effect became insignificant once the mediator was introduced ($\beta = -.22$, $SE = .27$, $t = -.81$, $p = .418$, $CI_{95\%}: -.76, .32$), supporting a full mediation model.

Again, the study excluded self-control ($\beta = .02$, $SE = .04$, $CI_{95\%}: -.05, .12$), and awe ($\beta = -.05$, $SE = .06$, $CI_{95\%}: -.18, .07$) as viable alternative explanations.

The Number of Items. A mediation analysis was then conducted (Model 4, 10,000 bootstrapped samples; SPSS PROCESS Macro) by removing the covariates, with the number of items as the dependent variable.

Supporting a significant mediation model, long-term orientation significantly mediated the effect of superstitious beliefs on the number of items ($\beta = -.33$, $SE = .17$, $CI_{95\%}: -.72, -.06$). Specifically, superstitious beliefs led to significantly greater long-term orientation (*a path*: $\beta = .59$, $SE = .23$, $t = 2.62$, $p = .010$, $CI_{95\%}: .15, 1.04$), and elevated long-term orientation subsequently caused reduced number of items (*b path*: $\beta = -.55$, $SE = .10$, $t = -5.78$, $p < .001$, $CI_{95\%}: -.74, -.36$). In addition to an insignificant direct effect once the mediator was introduced ($\beta = -.22$, $SE = .26$, $t = -.84$, $p = .403$, $CI_{95\%}: -.73, .29$), neither self-control ($\beta = .03$, $SE = .04$, $CI_{95\%}: -.05, .12$), nor awe ($\beta = -.04$, $SE = .05$, $CI_{95\%}: -.15, .06$) significantly mediated the effect of superstitious beliefs.

7.18.8 Web Appendix H: The Operationalisation of Superstitious Beliefs (Study 4)

In Study 4, all participants were made to believe that researchers were interested in their ability of comprehending textual content, recall and describe related previous incidents, as shown below.

Control condition I (Routine activities):

“Life is full of routine activities”

In our day to day life, we engage in many routine activities. This section is about regular events in your normal everyday life. In particular, think about how you typically spend your evenings on an ordinary day. Think of three regular activities that you normally do in a typical evening. Do you normally work, read, watch television, or just relax? Are there any other activities that you often do early in the evening or later on? Do you generally talk to other family members, call friends, or use a computer? Other routine things include eating dinner, doing household chores, watching television, etc.

Please think about **three of your common evening activities and the time you spend on each of them.**

Please describe each one in a sentence. Now **pick one activity from above and describe it in more detail.**

Control condition II (Long-term orientation):

“A dollar saved today can grow to 10 dollars in the future”

Many people get in trouble by focusing on immediate pleasures without regard to long-term consequences. Such people often spend money on expensive cars and clothes, or engage in risky behaviours (e.g., drug use) without regard to their long-term financial situation or future health. On the other hand, many people who have sacrificed immediate pleasure by saving money or working multiple jobs have ended up wealthy and happy. Thinking about the future has frequently led to better results for them. For example, compared to others, a long-term oriented student who postpones some activities to study for the university entrance exam is more likely to secure his/her admission, graduate with honors, and have a good job leading to a successful career and comfortable lifestyle.

Please think about **three instances in your life where you took actions that involved sacrifice at the time but proved to be beneficial in the long term.**

Please describe each one in a sentence. Now pick one instance from above and describe it in more detail.

As the belief in karma speaks to a more long-term (vs. short-term) orientation, priming the belief in karma, therefore, is expected to enhance a more long-term orientation as well.

Control condition III (Beliefs in karma):

“As you have planted, so do you harvest; such is the belief in karma”

According to the concept of karma in the Indian culture, the universe is a continuous cycle. A key part of the philosophy of karma is that your current actions lead to corresponding results in the future. The effects of present deeds create future results, not just in our present life but in future lives, through reincarnation. This makes you responsible for your actions in life. Belief in karma means one believes that if we sow goodness, we will reap goodness; if we sow evil, we will reap evil. For example, if you behave appropriately (e.g., being truthful) in the present, something good typically happens to you in the future. On the other hand, doing something bad (e.g., being untruthful) in the present, will generally lead to bad results in the future.

Please think about three instances in your life where a belief in karma caused you to act in a particular way.

Please describe each one in a sentence. Now pick one instance from above and describe it in more detail.

Superstitious beliefs condition:

“What goes around comes around”

Although most of us make our way through life with scientific advancement and education, we still engage in many superstitious activities, such as “knocking on wood,” saying “bless you” after sneezing, and wearing lucky charms. A key philosophy in superstitious beliefs is that an object, action, or circumstance at one point in time will influence other events at another point in time. For example, the origin of superstition lies in the Latin context. If you spend all day praying to God and sacrificing, it will likely guarantee a better life for their upbrings compared to themselves. On the other hand, failing to uphold superstitious beliefs (e.g., cross my fingers) in the present or in the past, will lead to misfortunes and bad luck in the present and in the future.

Please think about three instances in your life where a superstitious belief caused you to act in a particular way.

Please describe each one in a sentence. Now **pick one instance from above and describe it in more detail.**

7.18.9 Web Appendix I: Measurement Scales Used (Study 4)

TABLE 7.5 MEASUREMENT SCALES USED IN STUDY 4

Constructs	Sources	Items	Anchors
Manipulation Check (Superstitious Beliefs)	Sierra, Hyman, & Turri, 2018	I believe in karma.	<i>1 =Strongly disagree, 7 = Strongly agree</i>
		I believe it is possible to jinx things or situations.	
		Good chi attracts propensity.	
		I believe in fan rituals, like wearing lucky shirts during a game can influence game outcomes.	
Manipulation Check (Long- Term Orientation)	Bearden, Money, & Nevins, 2006	I plan for the long term.	<i>1 =Strongly disagree, 7 = Strongly agree</i>
		I work hard for success in the future.	
		I don't mind giving up today's fun for success in the future.	
		The universe is a continuous cycle.	

Manipulation Check (Belief in Karma)	Kopalle et al., 2010	I believe in reincarnation where one becomes better (worse) due to good (bad) actions.	1 =Strongly disagree, 7 = Strongly agree
		I believe in karma.	
		The world was not formed by a once-for-all act of creation.	
Attention Check	N/A	What color is Grass? The fresh, uncut grass, not leaves or hay.	A: Green
		<u>Make sure to select <i>purple</i> as an answer so that we know you are paying attention.</u>	B: Purple
Demographic Data		Questions	
Ethnicity		What is your ethnicity?	
Income		About how much is your <u>yearly family</u> income? (If more than one person working, add all).	
Education Background		What is the highest level of education <u>you</u> have completed?	
Gender		Please indicate your gender:	

Age

What is your age?

7.18.10 Web Appendix J: Experimental Materials, Procedures and Stimuli (Study 4)

In the following task, you will be asked to shop in **an online grocery store to purchase some snacks for yourself**. You will be given a code after checking out. Please remember the code to continue the survey.

When you enter the grocery store, please imagine that you have US \$15, and you can buy as many or as few snacks as you want. Please buy only what you would buy for yourself.

After the study is completed, one participant will be randomly selected and the participants will receive US \$15 for whatever they have chosen in this study.



The store has a couple of functions you should know about:

1. Click on an item to learn more about it.

2. Add an item to your cart by clicking the grocery cart button that appears under the item's name. Using the +/- box on the right, you can choose how many of each item you would like to add. It looks like this.

Add to cart: quantity - 1 + ✓

3. To navigate through the store, use the menu on the top. Specifically, hover over a category you're interested in to see subheadings, and click the subheading you're interested in browsing. It looks like this.



4. To check out, click the purple cart in the upper righthand corner of the screen. Then click "checkout". It looks like this.



To access the grocery store, please click on the link below.

Enter this code onto the first page of the online grocery store: R_UmbqV1RzhQi3ckN

[Click this link](#) to open the store in a new tab.

Please DO NOT refresh the page while in the online grocery store.

FIGURE 7.8 EXPERIMENTAL PROCEDURE IN STUDY 4

7.18.11 Web Appendix K: Results of Post-Hoc Analysis (Manipulation Check; Study 4)

TABLE 7.6 RESULTS OF POST-HOC ANALYSIS OF MANIPULATION CHECK IN STUDY 4

Constructs		Control condition I	Control condition II	Control condition III	Superstitious beliefs condition
<i>Superstitious Beliefs</i>	Control condition I	—	.01 (.31)	-1.09 (.30) *	-1.07 (.30) *
	Control condition II	-.01 (.31)	—	-1.10 (.34) *	-1.08 (.34) *
	Control condition III	1.09 (.30) *	1.10 (.34) *	—	.02 (.33)
	Superstitious beliefs condition	1.07 (.30) *	1.08 (.34) *	-.02 (.33)	—
		Control condition I	Control condition II	Control condition III	Superstitious beliefs condition
<i>Long-term Orientation</i>	Control condition I	—	-1.21 (.24) **	-.68 (.24) *	-1.19 (.23) **
	Control condition II	1.21 (.24) **	—	.53 (.26)	.02 (.26)
	Control condition III	.68 (.24) *	-.53 (.26)	—	-.51 (.26)
	Superstitious beliefs condition	1.19 (.23) **	-.02 (.26)	.51 (.26)	—
		Control condition I	Control condition II	Control condition III	Superstitious beliefs condition
<i>Beliefs in Karma</i>	Control condition I	—	-.30 (.29)	-.88 (.28) *	-.32 (.28)
	Control condition II	.30 (.29)	—	-.58 (.32)	-.02 (.32)
	Control condition III	.88 (.28) *	.58 (.32)	—	.56 (.31)

Superstitious beliefs condition	.32 (.28)	.02 (.32)	-.56 (.31)	—
------------------------------------	-----------	-----------	------------	---

Note. * indicates a significance at the .05 level, and ** indicates a significance at the .001 level.

7.18.12 Web Appendix L: Results without Gender and Income as Covariates (Study 4)

The Main Effect

Total Price. Confirming H_1 , the results remained unchanged after the exclusion of covariates; total price still significantly varied across conditions ($M_{Control\ I} = 10.46$, $SD = 4.86$ vs. $M_{Control\ II} = 8.61$, $SD = 4.18$ vs. $M_{Control\ III} = 8.30$, $SD = 3.82$ vs. $M_{Superstitious\ Beliefs} = 7.56$, $SD = 4.41$; $F(3, 257) = 5.95$, $p = .001$; $\eta^2 = .07$).

Specifically, participants in control condition I indicated significantly higher total price spent on the products they chose ($M_{Control\ I} = 10.46$, $SD = 4.86$) compared to those in superstitious beliefs condition ($M_{Superstitious\ Beliefs} = 7.56$, $SD = 4.41$; $F(1, 145) = 13.61$, $p < .001$; $\eta^2 = .09$). Moreover, excluding gender and income as covariates did not vary the results between control condition II and superstitious beliefs condition ($F(1, 113) = 1.71$, $p = .194$; $\eta^2 = .02$) nor between control condition III and superstitious beliefs condition ($F(1, 117) = .94$, $p = .333$; $\eta^2 = .01$).

The Number of Items. The results did not change the model after removing the covariates ($M_{Control\ I} = 3.64$, $SD = 1.09$ vs. $M_{Control\ II} = 2.82$, $SD = 1.52$ vs. $M_{Control\ III} = 2.83$, $SD = 1.82$ vs. $M_{Superstitious\ Beliefs} = 2.62$, $SD = 1.64$; $F(3, 257) = 4.81$, $p = .003$; $\eta^2 = .05$).

Participants in the control condition I reported a significantly greater number of items ($F(1, 145) = 10.17$, $p = .002$; $\eta^2 = .07$), even after excluding covariates. Moreover, the number of items did not differ between control condition II and superstitious beliefs condition ($F(1, 113) = .47$, $p = .496$; $\eta^2 < .01$), or between control condition III and superstitious beliefs condition ($F(1, 117) = .45$, $p = .502$; $\eta^2 < .01$).

Calories. Replicating the findings above, after removing covariates, the results remained consistent; calories differed significantly across conditions ($M_{Control\ I} = 695.47$, $SD = 700.59$ vs. $M_{Control\ II} = 396.20$, $SD = 456.59$ vs. $M_{Control\ III} = 355.92$, $SD = 400.83$ vs. $M_{Superstitious\ Beliefs} = 356.22$, $SD = 376.89$; $F(3, 257) = 7.53$, $p < .001$; $\eta^2 = .08$).

In particular, the exclusion of covariates did not vary the results, in that those in the control condition I chose products with greater calories ($F(1, 145) = 11.71$, $p = .001$; $\eta^2 = .08$). Moreover, there was still no significant difference between the control condition II and superstitious beliefs condition ($F(1, 113) = .26$, $p = .608$; $\eta^2 < .01$), or between the control condition III and superstitious beliefs condition ($F(1, 117) < .01$, $p = .997$; $\eta^2 < .01$), consistent with the findings with the covariates.

The Mediation Effect (Control Condition I & Superstitious Beliefs Condition)

To cement whether long-term orientation mediates the effect of superstitious beliefs, we conducted mediation analyses (Model 4, 10,000 bootstrapped samples; SPSS PROCESS Macro) with total price, number of items and calories as the dependent variables, as well as long-term orientation and beliefs in karma as multiple parallel mediators.

Supporting our hypothesis (H₂), superstitious beliefs led to significantly greater long-term orientation (*a path*: $\beta = .40$, SE = .09, $t = 4.58$, $p < .001$, CI_{95%}: .22, .57), resulting in reduced total price (*b path*: $\beta = -.81$, SE = .26, $t = -3.14$, $p = .002$, CI_{95%}: -1.33, -.30), number of items (*b path*: $\beta = -.23$, SE = .11, $t = -2.12$, $p = .036$, CI_{95%}: -.44, -.02), and calories (*b path*: $\beta = -159.05$, SE = 30.41, $t = -5.23$, $p < .001$, CI_{95%}: -219.16, -98.94).

Taken together, long-term orientation significantly mediated the effects of superstitious beliefs (*total price*: $\beta = -.32$, SE = .16, CI_{95%}: -.67, -.07; *the number of items*: $\beta = -.09$, SE = .06, CI_{95%}: -.22, .01 [*n.s.*]; *calories*: $\beta = -62.93$, SE = 21.64, CI_{95%}: -109.51, -24.97), but beliefs in karma failed to account for this effect (*total price*: $\beta = .03$, SE = .04, CI_{95%}: -.04, .11; *the number of items*: $\beta = .00$, SE = .01, CI_{95%}: -.02, .03; *calories*: $\beta = -2.04$, SE = 3.93, CI_{95%}: -11.93, 4.51).

7.18.13 Web Appendix M: Results without gender and income as covariates (Discussion; Study 4)

After removing gender and income as covariates, the results remained unchanged: priming salient beliefs in karma led to significantly greater long-term orientation (*a path*: $\beta = .34$, $SE = .14$, $t = 2.38$, $p = .019$, $CI_{95\%}: .06, .62$), resulting in reduced consumer impulsivity (*b path*; *total price*: $\beta = -.76$, $SE = .21$, $t = -3.58$, $p < .001$, $CI_{95\%}: -1.18, -.34$; *the number of items*: $\beta = -.21$, $SE = .10$, $t = -2.19$, $p = .030$, $CI_{95\%}: -.40, -.02$; *calories*: $\beta = -140.62$, $SE = 27.07$, $t = -5.19$, $p < .001$, $CI_{95\%}: -194.13, -87.10$). Taken together, long-term orientation significantly mediated the effect of karma (*total price*: $\beta = -.26$, $SE = .16$, $CI_{95\%}: -.65, -.03$; *the number of items*: $\beta = -.07$, $SE = .06$, $CI_{95\%}: -.21, .01$; *calories*: $\beta = -47.73$, $SE = 25.73$, $CI_{95\%}: -105.89, -6.70$).

7.18.14 Web Appendix N: Additional Results with Covariates (Discussion; Study 4)

The Number of items. Priming salient beliefs in karma led to significantly greater long-term orientation (*a path*: $\beta = .33$, $SE = .14$, $t = 2.29$, $p = .023$, $CI_{95\%}: .04, .61$), resulting in lowered number of items (*b path*: $\beta = -.22$, $SE = .10$, $t = -2.29$, $p = .023$, $CI_{95\%}: -.42, -.03$). Taken together, however, we found that there was directional, but not significant, mediation effect of long-term orientation ($\beta = -.07$, $SE = .05$, $CI_{95\%}: -.20, .00$). Of the covariates, neither gender ($\beta = -.20$, $SE = .31$, $t = -.65$, $p = .519$, $CI_{95\%}: -.80, .41$) nor income ($\beta = -.00$, $SE = .05$, $t = -.04$, $p = .965$, $CI_{95\%}: -.09, .09$) was significant.

Calories. Confirming our prediction, long-term orientation significantly mediated the effect of beliefs in karma ($\beta = -45.15$, $SE = 23.95$, $CI_{95\%}: -100.10, -7.66$). Specifically, priming salient beliefs in karma led to significantly greater long-term orientation (*a path*: $\beta = .33$, $SE = .14$, $t = 2.29$, $p = .023$, $CI_{95\%}: .04, .61$), resulting in lowered calories (*b path*: $\beta = -137.82$, $SE = 27.55$, $t = -5.00$, $p < .001$, $CI_{95\%}: -192.27, -83.36$). Neither gender ($\beta = 39.55$, $SE = 91.52$, $t = .43$, $p = .666$, $CI_{95\%}: -141.36, 220.46$) nor income ($\beta = 16.21$, $SE = 13.75$, $t = 1.18$, $p = .240$, $CI_{95\%}: -10.97, 43.40$) was significant as covariates.

7.18.15 Web Appendix O: Additional Single-paper meta-analyses (Study 5)

TABLE 7.7 ADDITIONAL SINGLE-PAPER META-ANALYSES IN STUDY 5

MCSM contrast and heterogeneity estimates	Analysis #1	Analysis #2	Analysis #3
Effect			
Estimate	-0.44	-0.49	-0.42
Standard Error	0.10	0.14	0.10
<i>z</i>	-4.46	-3.44	-4.30
<i>p</i>	< 0.001	< 0.001	< 0.001
Heterogeneity			
Estimate [95% CI]	0.00 [0.00, 0.69]	0.12 [0.00, 1.05]	0.00 [0.00, 0.58]
<i>I</i> ² [95% CI]	0.00 [0.00,88.59]	51.22 [0.00, 85.93]	0.00 [0.00, 83.91]
<i>Q</i> (<i>df</i> ; <i>p</i>)	1.82 (2; 0.40)	4.10 (2; 0.13)	1.29 (2; 0.52)

In what follows, we present the results for analysis #2 and #3, along with plots accordingly.

Analysis #2. A MCSM analysis of our studies shows that relative to the control condition, superstitious beliefs indeed reduce consumer impulsivity by .49 (SE = .14, $z = -3.44$, $p < .001$). I^2 was estimated at 51.22% (CI_{95%}: .00%, 85.93%), suggesting that heterogeneity is medium but could range from zero to high (Panel a; *Figure 7.9*).

Analysis #3. A MCSM analysis of our studies shows that relative to the control condition, superstitious beliefs indeed reduce consumer impulsivity by .42 (SE = .10, $z = -4.30$, $p < .001$). I^2 was estimated at .00% (CI_{95%}: .00%, 83.91%), suggesting that heterogeneity is low but could range from zero to high (Panel b; *Figure 7.9*).

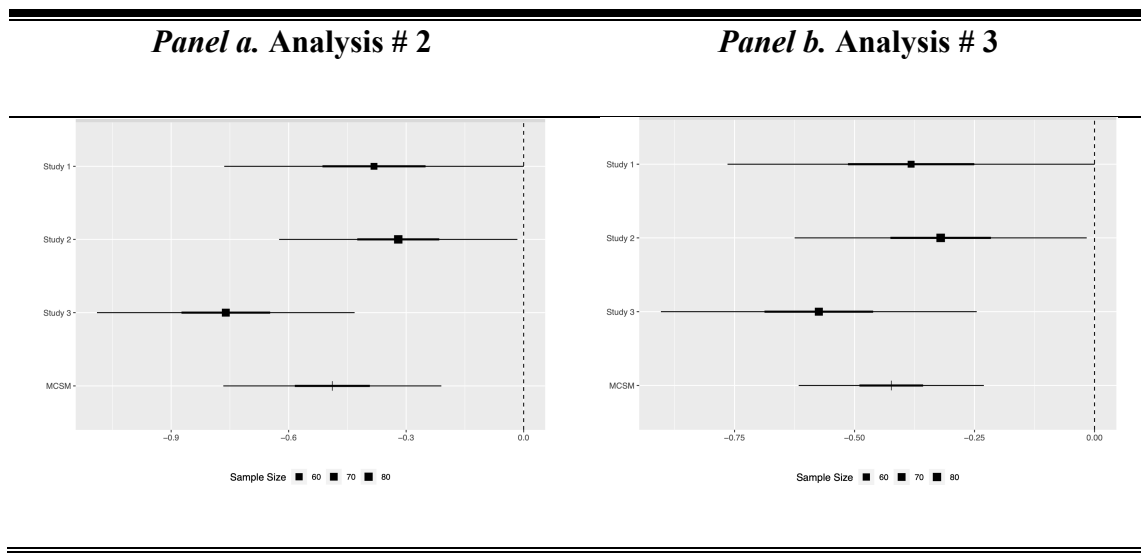


FIGURE 7.9 THE PLOTS OF THE MULTIPLE CONTRAST STANDARDIZED META-ANALYSIS (MCSM; ANALYSES #2 AND #3)

Chapter 8: General Discussion

Your assumptions are your windows to the world. Scrub them off every once on a while, or the light won't come in.

---- Isaac Asimov

8.1 Introduction to Chapter 8

To reiterate, the overarching objective of this research is to foster a more fine-grained understanding of how simply activating superstitious beliefs can influence consumers' normative behaviours, specifically in the realms of their *sustainability* and *impulsivity*. In the preceding Chapters, the researcher has set the scene by elucidating the research background and introducing the research objectives and questions (Chapter 1). Chapter 2 proceeded to offer a comprehensive review of relevant literature in relation to superstitious beliefs, its antecedents, and consequences thereof. Upon which, an important research gap surfaced, thereby motivating the present work – *that to date, there is virtually no empirical inquiries investigating the normative consequences of salient superstitious beliefs on consumer behaviours*. To address the identified research void, the researcher reviewed the key literature needed to address the focal research questions, including studies investigating sustainability and impulsivity in consumer research, and synthesised prominent determinants thereof. The selection of the research methodology, along with the justifications based on the researcher's ontological and epistemological assumptions, was discussed in Chapter 3. In addition, Chapter 3 also detailed the research design deployed in this research, as well as the corresponding ethical considerations.

Chapters 4 and 5 attempted to address *RQ2* and *RQ3* across four pre-registered studies. Drawing upon the theoretical notion of consumers' tendency of *karmic reward seeking* (defined as *individuals' inclination to engage in behaviours that are considered to accumulate good karma, in exchange for favourable outcomes in the future*; White et al., 2021; Chapter 5), this research found that the activation of salient superstitious beliefs among consumers led to significantly stronger preference for sustainable products in their consumption. Furthermore, in

Chapters 6 and 7, the research progressed to another domain of investigation that is closely pertaining to consumer' normative behaviours, i.e., consumer impulsivity. Specifically, Chapter 7 presented five pre-registered studies, featuring a relational/correlational study, three experimental studies (including one with hypothetical outcomes, one with elevated incentive compatibility, and a field experiment using an open science online grocery store; <https://openscience-onlinegrocery.com>), and last but not least, a single-paper meta-analysis (McShane and Böckenholt 2017, 2022). Across these five studies, the researcher documented that, salient superstitious beliefs temporarily activated consumers' *long-term orientation* (LTO; defined as *a temporal orientation in which individuals tend to assign greater weight to future, long-term gains rather than immediate, short-term returns*; Lin et al., 2015; Chapter 7), which in turn, motivated consumers to prioritize future gains over immediate, short-term ones. This shift in consumers' temporal focus, subsequently, caused them to behave in a less impulsive manner, both in terms of the types of products/services they favoured, the monetary dollar amount spent, and the types of groceries they decided to purchase (e.g., calories count).

In what follows, Chapter 8 aims to synthesize the findings across nine studies (four studies in Manuscript #1 [Chapter 5; Section 8.3.1] and five studies in Manuscript #2 [Chapter 7; Section 8.3.2]). Moreover, this Chapter also summaries the theoretical (Section 8.4.1), managerial (Section 8.4.2), policy, and consumer (Section 8.4.3), as well as methodological contributions (Section 8.4.4) of this thesis. Through an experimental design, the robust, rich insights derived from this thesis extend not only the scholarly understanding of superstitious beliefs, and its pivotal, yet unfortunately underexamined consequences in consumer behaviour. More importantly, it also shed light upon novel ways in which marketing scholars and industry practitioners can systematically predict, influence, and shift consumer behaviours to be more

mindful, more sustainable, and less impulsive. Furthermore, the causal relationships identified through rigorous empirical examination also provide marketers with valuable insights and feasible strategies in relation to optimizing the effectiveness of their marketing communications. Last but not least, the influential effects of salient superstitious beliefs (on consumer sustainability consumption and impulsivity) cement the basis for the policy and consumer. Finally, Section 8.5 acknowledges the limitations of this thesis, followed by discussions in relation to future opportunities and avenues for future inquiries. In sum, Chapter 8 synthesizes this thesis by elaborating on the contributions to knowledge, practice, research methodology, policy, and consumer well-being, followed by its limitations and suggestions for future inquiries.

8.2 Re-Visiting the Research Objectives

Prior to the commencement of this research, the scholarly investigations regarding the effects of superstitious beliefs have been largely scarce in marketing, especially in consumer research (see few exceptions in Block & Kramer, 2009; Damisch, Stoberock, & Mussweiler, 2010; Kramer & Block, 2008, 2009, 2014). Among these exceptions, researchers predominantly focus on luck related connotations – for example, by examining whether consumers are willing to pay more for lucky products (Block & Kramer, 2009), and/or whether wearing lucky charms boosts individuals' confidence and subsequently, their performance (Kramer & Block, 2014) – resulting in such investigations remain at a rudimentary level. Recall that the overarching research objective of this thesis (Chapter 1) is to:

Explore to what extent the activation of salient superstitious beliefs can affect consumers' normative behaviours – specifically in terms of their sustainability

and impulsivity, and furthermore, what psychological processes contribute to such influences.

In a departure from extant literature, this thesis proposes a novel theoretical account by looking into the impact of superstitious beliefs, and empirically examines whether the activation of superstitious beliefs can influence consumers' normative behaviours. Specifically, normative behaviour is investigated and operationalized through consumer sustainability, and their impulsivity in consumption scenarios. In addition, the psychological processes by which salient superstitious beliefs, versus a baseline control condition, influence consumer sustainability and impulsivity are explored.

The answers to address the overarching research objective and corresponding research questions were sought in nine studies. The resulting findings highlight that, confirming the proposed hypotheses, salient superstitious beliefs do indeed significantly affect consumers' sustainability and impulsivity. These findings will be explicated in greater details in the subsequent section, wherein the specifics of each study will be succinctly summarized.

8.3 Synthesis of Findings

In this section, the findings will be synthesized and elaborated with respect to answering distinct research questions, which are integrated into two parts, namely the impact of superstitious beliefs on consumer sustainability, and its impact on consumer impulsivity.

8.3.1 Impact of Superstitious Beliefs on Consumer Sustainability

Across four studies, including three experimental studies and a single-paper meta-analysis, the investigation featured in Manuscript #1 found robust empirical support

demonstrating that, by activating salient superstitious beliefs, consumers were more likely to manifest greater preference for sustainable consumption behaviours. Each study, building upon the previous study, endeavors to examine the effectiveness of superstitious beliefs in different ways.

Study 1 attempted to explore the effect of superstitious beliefs by examining whether simply activating its salience will lead to significantly increased consumers' sustainability. To manipulate the independent variable, the researcher employed a common approach in marketing by introducing a writing task (Small, Lerner, & Fischhoff, 2006). The participants were instructed to engage in reportedly a visualization task, in which they were made to believe that the researcher was interested in their ability of recalling a particular incident and were asked to describe the situation; however, this task was intended to temporarily elevate the salience of superstitious beliefs. Specifically, participants recalled a particular incident in which superstitious beliefs affected the outcome of a situation, and described it in a detailed manner. In contrast, participants in the control condition were asked to write about their commute to work yesterday.

To assess consumers' sustainability preference, Study 1, instead of using one singular category, which might limit the generalizability of the findings, selected five products categories, namely a dishwasher, a cleaner, a lamp, a backpack, and batteries. The order of exposure and measurement were counterbalanced in order to eliminate the response order effect; Brooks, 2012). For each category, there are both sustainable and conventional, non-sustainable options in the marketplace, therefore enhancing the ecological validity of the experimental design. Additionally, factors such as the brand and price have been kept identical across two options to alleviate other influences. The results of experiment 1 indicated that, as hypothesized, salient superstitious

beliefs indeed led to significantly greater preference for sustainable products (see example of experimental design and procedure in Appendix C).

The purpose of Study 2 was two-fold. First of all, this study examined the effect of superstitious beliefs by using a different control intervention. While describing one's commuting to work has been commonly adopted in previous empirical research, Study 2 altered this manipulation to improve participants' engagement during the experiment (e.g., writing about everything that they have eaten and drank in the past 48 hours; Chatterjee et al., 2013). Second, building on the findings of Study 1, Study 2 aimed to shed light upon the underlying mechanisms contributing to consumers' enhanced preference for sustainable products. Specifically, using mediation analysis, Study 2 verified whether superstitious beliefs indeed encourage consumers to experience greater desire to engage in karmic reward seeking, which in turn leads to greater patronize preference for protecting the environment (by favouring sustainable options).

The resulting findings of Study 2, reassuringly, confirmed those of Study 1, such that salient superstitious beliefs caused participants to prefer sustainable options over non-sustainable ones. More importantly, the results of the path analysis revealed that, the activation of salient superstitious beliefs enacted participants to experience a stronger tendency of karmic reward seeking, where they were motivated to invest in sustainability consumption in exchange for future good karma. Subsequently, the elevated karmic reward seeking tendency, in turn, increased the preference for sustainable options. Furthermore, Study 2 also successfully ruled out a viable alternative explanation (i.e., self-efficacy). Specifically, one theoretical account can be made that as superstitious beliefs are frequently collated with the lucky connotation, one might feel luckier, and therefore more capable of being sustainable. Therefore, the findings of Study 2 provided robust insights supporting the theorization via karmic reward seeking.

In Study 3, the objective is to further cement the process evidence supporting karmic reward seeking by introducing a self-affirmation task (see example of experimental design and procedure in Appendix D). To iterate, karmic reward seeking speaks to a mentality, such that *doing good (bad) deeds now will likely invite future fortune (misfortune) and good (bad) luck*. Drawing on the theoretical underpinning of the licensing effect (Khan & Dhar, 2006), individuals' need for engaging in sustainable consumption would be substantially attenuated, potentially eliminated, *if they have had such similar experiences in the past*. In this sense, a positive self-affirmation recall ought to decrease participants' desire of manifesting greater preference for sustainable consumption. Accordingly, after elevating all participants' superstitious beliefs, Study 3 instructed participants to recall a previous incident in which their actions benefited others, while those in the control condition were asked to recall everything they have eaten or drank in the previous 48 hours. The findings, as expected, confirmed the proposed theorization. Participants in the control condition still reported a favourable preference for sustainable options, manifested as higher choice ratio of choosing sustainable options; however, the positive effect of superstitious beliefs was diminished after the introduction of self-affirmation task.

Finally but not least, the researcher conducted a single-paper meta-analysis to consolidate the effect of superstitious beliefs on consumer sustainability (McShane & Böckenholt, 2017). The results revealed that, when superstitious beliefs were made more salient, the meta-analysis estimate of sustainability (Control condition estimates = 4.39, SE = .39) was significantly lower than that of the superstitious condition, hence lending robust support for the "superstitious beliefs" effect.

8.3.2 Impact of Superstitious Beliefs on Consumer Impulsivity

In the second inquiry, there are two researcher objectives, including 1) to explore whether activating the salience of superstitious beliefs will be likely to influence consumer impulsivity, and if the answer to objective 1 is affirmative, 2) to examine the underlying mechanism that can account for the effect of superstitious beliefs.

These objectives of this focal investigation were addressed via five pre-registered studies, offering more reproduceable insights with transparent, hypothesis-driven research practices (Nosek et al., 2018; Simmons et al., 2021; van't Veer & Giner-Sorolla, 2016). These studies, including one correlational study, three experimental studies, and one single-paper meta-analysis, evinced that when superstitious beliefs are made more salient, consumers were more likely to inhibit their impulse. Furthermore, this occurred due to elevated long-term orientation (LTO) encouraging greater preference for future gains over immediate ones. Specifically, Study 1 aimed at establishing the phenomenon by measuring superstitious beliefs and consumer impulsivity as chronic, individual-level constructs. The results, interestingly, revealed counterintuitive insights in contrast to consumer expectations, conventional wisdom and cognitive error-based predictions. In particular, although there is virtually no research has empirically examined the interplay between superstitious beliefs and consumer impulsivity, one theoretical account can be made that high levels of impulsivity might expose consumers to various cognitive errors in reasoning, such as an elevated reliance on superstitious beliefs (Michalczuk et al., 2011). In this regard, there ought to be a positive relationship thereof. However, the resulting findings of Study 1 showed that participants scoring high on salient superstitious beliefs were more prone to indicate lower levels of impulsivity trait.

To delve into this relationship, Study 2 and subsequent studies proceeded to explore the “*cause-and-effect*” relationship using an experimental approach. That is, Study 2 sheds light on whether salient superstitious beliefs lead to significantly decreased consumer impulsivity, or vice versa. To manipulate different levels of the salience of superstitious beliefs, participants in the treatment condition (i.e., salient superstitious beliefs vs. control condition) were asked to recall and describe a situation where superstitious beliefs affected the outcome (vs. asked to write down everything that they have eaten and drank in the past 48 hours; Chatterjee, Irmak, & Rose, 2013).

As “impulse” is often associated and imbued with negative, undesirable connotations, explicitly mentioning it semantically in the experimental instructions might cause participants to modify their responses due to social desirability bias (Chung & Monroe, 2003; Fisher, 1993; Fisher & Katz, 2000; Nederhof, 1985). To mitigate this possibility, Study 2 followed prior seminal conceptualization of impulsivity (O’Guinn & Faber, 1989; Kacen & Lee, 2002), and employed the word “spontaneous” instead of “impulsive” to operationalize a more neutral scenario. To capture consumer impulsivity in the marketing context, participants were re-directed to a series of consumption scenarios, with options featuring different levels of impulsivity and both falls within the participants’ budget. For example, one such scenario portrayed a scenario of purchasing laptop: while he/she just bought a laptop last year and it has been working perfectly, he/she noticed a promotion of a laptop for \$500 from the same marker that works twice as fast. Next, they reported whether they would purchase the laptop – therefore, being more impulsive – or ignore the promotion – therefore being less impulsive.

The findings lent support for the effect of superstitious beliefs, and revealed that, by activating superstitious beliefs, participants were more likely to resist the temptation of impulses. Moreover, it is noteworthy to highlight that inducing salient superstitious beliefs might result in

distinct affect, which in turn temporarily influences consumer impulsivity (Iyer, Blut, Xiao, & Grewal, 2020). Reassuringly, the manipulation of superstitious beliefs did not alter distinct affect tested; more importantly, the observed effect of superstitious beliefs went above and beyond the influence of affect.

Despite of the insights afforded in Study 2, one pitfall lies in that the dependent variable (i.e., consumer impulsivity) was assessed as a hypothetical outcome, thereby restricting the extent to which the effect can be translated and replicated in the real world. To address this drawback, this research designed Study 3 to enhance its incentive compatibility (see Appendix F). Specifically, participants in this study were informed that one of them would be randomly selected and receive an additional bonus of US \$10 (Hulland, Baumgartner, & Smith, 2018). Furthermore, Study 3 attempted to 1) employ a specific product category – snacks – to examine consumer impulsivity, and 2) examine whether long-term orientation explains the relationship between superstitious beliefs on consumer impulsivity (see example of experimental design and procedure in Appendix E).

The results of Study 3 can be synthesized into two key findings. First, replicating Studies 1 and 2, salient superstitious beliefs led to significantly reduced impulsivity when choosing snacks, in terms of both *the total price*, and *the number of items*. The fact that the results were obtained from assessing both measures, helps to strengthen the generalizability of the findings, and demonstrates the effectiveness of using superstitious beliefs to curb consumer impulsivity. Second, supporting the role of long-term orientation, thinking about superstitious beliefs enacted participants to value long-term, future rewards over short-term, immediate ones, hence heightening a greater long-term orientation in their temporal focus. As a result, this shift in participants' temporal focus motivated them to favour less impulsive behaviours.

To further strengthen robustness of the findings and its real-world implications, Study 4 examined the observed effect in a field experiment setting (see example of experimental design and procedure in Appendices G, H, and I). Capitalizing on an open-source online grocery store tool (Howe, Ubel, & Fitzsimons, 2022; <https://openscience-onlinegrocery.com>), the purpose of this study is two-fold. First of all, through a field-based inquiry, it offers the findings greater veracity highlighting that, even in a realistic setting with potential other influences, activating superstitious beliefs remain effective in decreasing consumer impulsivity. Second, Study 4 focused on the core theorization regarding the extent to which consumers can resist impulsive purchases is driven by their temporal focus prioritizing future, long-term gains after being exposed to salient (vs. non-salient) superstitious beliefs. Instead of examining the mediation effect via measurement (i.e., process-by-mediation), this study directly manipulated long-term orientation, and observed if it produced compatible effects compared to activating superstitious beliefs.

The findings surfaced from this study demonstrated that salient (vs. non-salient) superstitious beliefs resulted in substantially reduced consumer impulsivity in online grocery shopping – in terms of *the total price*, *the number of items*, and *calory count* – and the change in impulsivity was mediated by the shift in temporal orientation (i.e., to be long-term vs. short-term focused). Moreover, there was no significant difference between the “salient superstitious beliefs” and “long-term orientation” conditions, implying that it was, indeed, enhanced long-term orientation induced by superstitious beliefs that led to the variation in consumer impulsivity. Finally, a set of single-paper meta-analyses using the multiple contrast standardized meta-analysis approach (MCSM), confirmed the robustness of the documented effect.

In summary, the impact of activating salient superstitious beliefs as an intervention strategy to curb consumer impulsivity was investigated, theorized, and confirmed. Across a series of studies involving a correlational study, experiments, and a single-paper meta-analysis, salient superstitious beliefs is found to have a significant effect such that consumers are less likely to manifest impulsivity, as examined in trait impulsivity, consumption preferences, and actual shopping behaviours in a field experiment setting. The effect of superstitious beliefs was further accounted for through a temporarily enhanced long-term orientation. Contrary to conventional wisdom and cognitive error-based predictions, the findings herein hint at counterintuitive *benign* effect of superstitious beliefs.

8.4 Contributions and Implications

8.4.1 Theoretical Contributions

This thesis makes several important contributions to the knowledge in its respective field, as elaborated below. First, this research adds to the nascent literature investigating superstitions, such beliefs, and their impact on consumer behaviour by shedding light on the potential in affecting consumers' normative behaviours (e.g., consumer sustainability and impulsivity), and positing two novel psychological processes accounting for their impact, i.e., *karmic reward seeking tendency* and *long-term orientation (LTO)*. Through an exhaustive and meticulous review of the existing literature across diverse disciplines, predominantly in psychology, sociology, anthropology, and religious studies, prior research on superstitions and superstitious beliefs has hitherto focused predominantly on their implications on individuals' sense of control (Keinan, 1994; Malinowski, 1954; Whitson & Galinsky, 2008). From the seminal work in this line of research (Skinner, 1948), to more recent advancements in Vaidyanathan, Aggarwal, and

Bakpayev (2018), scholarly understanding of superstitious beliefs ubiquitously emphasizes how the possession of such beliefs enacts the transmission of energy, also referred as the contagious superstitions, to the individual, thereby empowering them to be *more confident about predicting, and control* how the outcome of a situation evolves (Kramer & Block, 2011; Lindeman & Aarnio, 2006; Zusne & Jones, 1989). For instance, during instances of uncontrollability (e.g., after the exposure of as unsolvable word puzzle), individuals were more likely to invoke superstitious beliefs (Dudley, 1999). Congenially, after activating good-luck-related superstitions or actions, such as “break a leg” and “keep ones’ fingers crossed,” Damisch and colleagues (2010) found that, these individuals were more likely to demonstrate improved performance due to boosted self-efficacy in mastering difficult tasks.

Pertaining closely to the field of marketing, researchers’ attention has been disproportionally devoted to understanding how consumers responded to products collated with positive superstitious cues. For instance, in an interesting investigation incorporating Taiwanese participants, Block and Kramer (2009) showcased that these consumers believed that a red (symbolizing good luck in Taiwanese culture) rice cooker – because of its association with good luck – will outperform a green [a luck-neutral color] rice cooker. Given the complex nature of superstitious beliefs, as detailed in Chapter 2 (Section 2.2), it will be a remiss of us to assume a unidimensional implication of such beliefs (e.g., good luck). To this end, further understanding of superstitious beliefs and their downstream impacts emerged from this thesis. Specifically, this thesis documented novel downstream consequences of superstitious beliefs in that they offered hidden utility in stimulating consumer behaviours that are more sustainable and less impulsive. This is a significant contribution as, to the best of the researcher’s knowledge, this features the first in examining the normative implications of superstitious beliefs in marketing, in particular,

consumer behaviour. Moreover, upon documenting the effects of superstitious beliefs, this research further disentangled the nuances of such beliefs by empirically examining the underlying mechanisms that explained the psychological processes at play. By verifying the roles of karmic reward seeking tendency (Chapter 5) and long-term orientation (Chapter 7) through both measurement and manipulation, this thesis complemented this emerging literature and conferred researchers with a more fine-grained understanding.

Furthermore, this investigation joins the motivation and goal pursuit literature, and further advances our scholarly understanding thereof (Kruglanski et al., 2018; Shah et al., 1998). In particular, a conundrum in promoting goal attainment is that, despite of individuals' awareness of the end goal, they might not engage in corresponding actions that align with these goals. For instance, a consumer may have a goal of losing weight, yet still succumb to temptation by opting for burgers over salad (Wilcox, Vallen, Block, & Fitzsimons, 2009). As an effort to address this dilemma, recent scholarly advancements in this realm of research posits a novel concept of "fusion" between *means* and *the end*. That is, by highlighting the connectivity, i.e., the extent to which ones' actions are linked to the end goal, it will likely offer greater intrinsic motivation for individuals to engage in such goal-aligning actions. As a pioneer effort to empirically test this conception, this thesis echoed these notions, and found that, by highlighting the karmic causality between individuals' actions and their consequences, this heightened *fusion* stimulates them to be more sustainable (Chapter 5).

8.4.2 Managerial Implications

In examining consumer sustainability and impulsivity, this thesis carries managerially significant implications for marketers, academics, and industry practitioners, as detailed below.

This investigation found that thinking about superstitious beliefs substantially altered consumer behaviours in relation to the sustainability sector. The scale of global green technology and sustainability market alone has burgeoned, amounting to US \$35.5 billion in 2021, and is expected to peak at US \$417.4 by 2030 (Statista, 2023). With the rapid growth in this sector, companies and marketers alike are vying for consumers patronizing sustainable products and services. In this regard, the resulting findings of this research are thus informative for marketers, because they hint at novel insights on encouraging sustainable consumption. When designing and implementing marketing communications, advertising, and marketing campaigns, companies will benefit from harnessing superstitious beliefs. One way to achieve this involves the explicit inclusion of superstitious elements in branding, as exemplified by the use of “karma drinks;” Carroll, 2022). Alternatively, marketers can adopt a more implicit approach by integrating superstitious notions and cues with sustainable call-to-actions, such as the expression “what goes around comes around.” By implementing such tactics, consumers might be unconsciously more inclined to patronize sustainable products and services.

Congentially, in the investigation of consumer impulsivity, the researcher revealed that superstitious consumers tended to exhibit lower levels of impulsivity, due to their elevated long-term orientation. Moreover, the robustness of the findings has been confirmed in the way that these consumers were inclined to purchase fewer products, allocate less money towards spending, and demonstrate greater preference for products/services that are less indulgent and impulsive in nature. In line with these findings, this investigation resonates with the assertions by Iyer et al. (2020) in their recent meta-analysis of impulsive consumption. Specifically, the authors posited that, effective communication strategies remain one of the most important determinants in impulsive spending, despite of a myriad of factors at play, such as store ambience, merchandise,

and pricing strategies. Thus, the present findings herein hint at a pivotal managerial implication, as they highlight a novel factor that marketers can leverage to discourage purchases on impulse.

On the flip side, for marketers promoting less sustainability – such as the fast fashion industry – and those that capitalize on consumer impulsivity – for example, the entertainment and fast-food sectors, utilizing superstitious beliefs might backfire and hamper marketers. Therefore, marketers are compelled to make an informed decision on investing in superstitious beliefs, depending on the nature of their offerings.

Furthermore, another critical managerial implication of these findings is in offering insights for marketers to re-consider their targeting and segmentation strategies. Conventionally, marketers rely on demographic characteristics of prospects, such as age, gender, marital status, and socio-economic status. However, compared to demographic characteristics, consumers' individual-level differences, psychological traits and characteristics are more inclined to be reliable predictors of consumer behaviour, thereby conferring marketers with greater capacity of converting prospects to customers. This research departs away from the traditional approach, and instead, put forth to a novel, psychographic segmentation strategy (Gilbert & Warren, 1995). Specifically, by tracking prospects' superstitious beliefs through analyzing their social media footprint, or using their zip code as a proxy, marketers in the sustainability sector can reach out to more superstitious prospects, and push more targeted marketing communications to them.

8.4.3 Policy and Consumer Implications

Managerial advancements aside, these findings of this research should be of interest to regulatory bodies, policy makers, non-for-profit organizations, and consumers. Indeed, in scholarly inquiries, there is an emerging initiative compelling researchers to shy away from being

“handmaidens of business” (MacInnis & Folkes, 2010, p. 901). Instead of solely contesting and accepting the current status quo, scholars ought to capitalize on and disseminate their expertise and knowledge to scrutinize existing practices, address social issues and drive positive social changes (Hutton & Heath, 2020, p. 9). As elegantly synthesized by Andrew and colleagues (2022) as follows, marketing researchers ought to:

“right a wrong, to protect consumers, and/or to address general frustrations with society or market limitations,” and ultimately, to “increase awareness of the contradictions either hidden or distorted by everyday understandings and in doing so – direct attention to the possibilities for social transformation in the present configuration of social processes” (Lather, 1986, p. 259; also cited in Hutton & Heath, 2020).

To this end, identifying the normative consequences of superstitious beliefs on consumer sustainability and impulsivity as conceptualized in this thesis offers several important policy implications. By highlighting the previously underexamined potential of superstitious beliefs in promoting sustainable consumer behaviours, this research offers legislative authorities and policy makers, including the United States Environmental Protection Agency (EPA), with a feasible toolkit to stimulate more sustainable consumption behaviours. For example, a joint government-business social marketing campaign that harness superstitious cues can unconsciously encourage consumers to favor more sustainable consumptions, and discourage purchasing, consuming, and disposing products in an irresponsible manner.

In addition, with over US \$18 billion being spent annually on unplanned, impulsive purchases, it signals an ongoing battle between companies and consumers – where the latter in

general strive to resist such temptations, while the former deliberately cater to such impulsive urges (McDermott, 2021; Vyse, 2018). Leveraging findings of this thesis, governing agencies and regulatory bodies can encourage, or even mandate, the incorporation of superstitious cues to curb impulsive spending. Furthermore, policy makers and non-for-profit organizations can design and implement educational initiatives and campaigns, aimed at enhancing consumers' understanding of the effects of superstitious beliefs on their purchase behaviours. Ultimately, it is up to consumers themselves to decide to capitalize on superstitious beliefs as an available resource to combat impulsivity. Such policy and consumer welfare implications are corollaries naturally arising from this thesis, thus highlighting, and extending its contributions beyond the realms of theory and practice.

8.4.4 Methodological Contributions

In scholarly inquiries examining superstitious beliefs, prior research – particularly in disciplines such as psychology, anthropology, sociology, and religious studies – has predominantly relied on employing qualitative methods (D'Agati, 2014; Keinan, 2002). This predilection might stem from the philosophical assumptions that pervade these various disciplines. Specifically, in comparison to the emphasis on identifying the “causal laws” in marketing research, these disciplines are more inclined towards understanding complex, and often multifaceted phenomena by delving into individuals' subjective experiences and narratives. By employing qualitative methods, such as interviews, focus groups, and ethnographic studies, researchers can obtain a more comprehensive understanding of the phenomenon under investigation – the meaning and context of these beliefs through the lens of individuals, the nuances of superstitious beliefs, how they interact with other aspects of individuals' lives, the way

in which superstitious beliefs differ across individuals, and evolve over time, depending on individuals' ontological perspectives. Furthermore, given the investigation of superstitious beliefs is still in its infancy, the utilization of qualitative methods confers upon researchers the capacity to acquire a plethora of rich, intricate, and nuanced insights, thereby consolidating the groundwork for formulating hypotheses for future inquiries that may incorporate quantitative methodologies.

The proliferation and pervasive use of superstitious beliefs in marketing are undeniable, as marketers have been long capitalizing on these beliefs to boost sales and revenues, as exemplified by products and services such as crystals, spell kits sold on Amazon.com (Vyse 2018). Despite this, the academic community has, unfortunately, devoted scant attention to examining how superstitious beliefs affect consumer behaviours (with only a few exceptions noted in Block & Kramer, 2009; Damisch, Stoberock, & Mussweiler, 2010; Kramer & Block, 2008, 2009, 2014). The aforementioned void in research therefore warrants more empirical inquiries illuminating the causal implications of superstitious beliefs. To this end, the present research responds to the pressing need and seek to establish causal relations, rather than relying solely on qualitative methods to gather participants' subjective experiences and interpretations. By employing this methodological approach, this research yielded additional valuable insights, furnishing reliable "cause-and-effect" evidence that overcomes the limitations of qualitative methods such as interviews.

Nevertheless, notwithstanding the considerable advantages afforded by experimental studies, it is important to acknowledge that, just like any research methods, they are not immune to limitations. As later recognized within the paradigms of positivism and post-positivism, the reality can only be captured and measured in an imperfect fashion, thereby rendering research

findings susceptible to the influences of confound factors, as detailed in Chapter (Section 3.2.2). Indeed, experimental research has traditionally relied upon a singular means of operationalizing key constructs, such as the independent and dependent variables, and frequently resorted to hypothetical scenarios, which may engender methodological distortions. As a result, the resultant findings may be subject to measurement errors, a paucity of generalizability, and a dearth of replicability in the real world (Loken & Gelman, 2017).

In contrast, this research evidenced multiple ways in which the effect of superstitious beliefs was observed, hence presents an additional methodological contribution. First, in a departure from the mainstream studies conducted in the field of marketing, this thesis eschewed the use of Amazon MTurk as a data collection platform to recruit participants. Instead, by employing a more reputable alternative platform, i.e., Cloud Research, it facilitated a heightened degree of attention and engagement among participants, thereby engendering findings that are more reliable and valid. Of greater importance, this research adopts a multi-method approach that synergistically integrates a variety of empirical methods, comprising online experiments, correlational studies, incentive-compatible experiments, field experiments and single-paper meta-analyses. By complementing hypothetical outcomes with the addition of actual behaviours, greater incentive compatibility, and the multi-faceted operationalization, it empowers researchers to gain a more accurate understanding of the phenomenon under investigation (Haghani et al., 2021; Hulland, Baumgartner, & Smith, 2018; Zawojka, & Czajkowski, 2017). Such a diverse assortment of methods allows for the triangulation of findings through multiple perspectives and analytical techniques, thereby conferring a heightened level of empirical robustness and veracity of the research findings.

Furthermore, this investigation also presents additional methodological innovations that endow the inquiry with greater robustness, as detailed below. Responding to the call for more transparent and hypotheses-driven research practices, this thesis has pre-registered all studies as per Simmons et al. (2021). By precisely articulating the research hypotheses, study design, sampling and analysis plans, this innovation prevent researchers from artificially fabricating statistically significant results, commonly referred as p-hacking. Following on, this empirical innovation can be incorporated into marketing research, and capitalised on as a novel and effective approach to enhance the replicability and reproduction of research findings, hence adding a significant methodological contribution.

Last but not least, this thesis adds to the field of mediation research and offers a novel methodological approach to examine mediation evidence, hence highlighting another methodological contribution. Conventionally, the empirical support underscoring the psychological processes (i.e., underlying mechanisms) is sought via the practice of process-by-mediation, i.e., through directly measuring the mediating variables. While this approach remains widely used and often effective, it is susceptible to potential issues, such as the experimenters' demand effect, or the spill over effect due to the measurement of dependent variable (Kim et al., 2018). To this end, this research examined the underlying mechanisms by experimentally manipulating the mediator itself, or another variable that influences and *only* influences the mediator, as inspired by the "moderation-of-process" approach. If directly manipulating the mediator produces compatible results as manipulating the independent variable, then it lends the mediation evidence with greater robustness. In sum, by combining the traditional *measurement-of-mediation* approach and this new *manipulation-of-mediation* approach, it offers triangulated mediation evidence using different methods across multiple studies (Kim, Hwang, Phillips, Jang,

Kim, Spence, & Park, 2018; Kim, Cui, Jang, Spence, & Park, 2019; Spencer, Zanna, & Fong, 2005).

8.5 Limitations of the Thesis & Recommendations for Future Research

This thesis is dedicated to investigating the effects of activating salient superstitious beliefs on consumer sustainability and impulsivity, hence identifying a novel motivating factor in driving more mindful consumer behaviours, and extending the scholarly understanding of superstitious beliefs. However, despite of its insightful findings, it is not without limitations. In the section that follows, the researcher outlines key theoretical and methodological limitations, in turn, offers fruitful avenues for future inquiries.

8.5.1 Theoretical Limitations and Recommendations for Future Research

Given the complex nature of superstitious beliefs, these beliefs are inextricably intertwined with multifarious factors, including but not limited to cultural backgrounds, religious afflictions, among many others. While this research sheds light upon intriguing and compelling findings that hint at benign consequences of superstitious beliefs, it is imperative to acknowledge that, just as other research within the post-positivism paradigm, it may encompass omitted influences and oversights that might oversimplify the complicated nature of the phenomenon being studied. For instance, as portrayed in the study presented in Chapter 5, salient superstitious beliefs led to significantly more sustainable consumer behaviours driven by consumers' karmic reward seeking tendency. The concept of Karma, as originated in Indian, specifically in Hindu and Buddhist doctrines, might be more salient and influential to Indian consumers in comparison to their western counterparts and other populations less familiar with this notion. Therefore, future

inquiries would benefit from examining the findings of this research across diverse demographic cohorts, and subject these findings to comparisons of their robustness.

Moreover, existing scholarship on superstitious beliefs suggests the presence of different types of such beliefs, comprising *individually* held beliefs (e.g., fans' rituals in sports, wearing red socks before important exams for good luck), as well as *culturally* held beliefs (e.g., knocking on wood). Additionally, along a different criterion of categorization, there exists *proactive* superstitious beliefs (e.g., wearing lucky charms brings good luck; crossing one's fingers for good luck; Delacroix & Guillard, 2008; Carlson, Mowen, & Fang, 2009) and *passive* beliefs (e.g., what happens to people is determined by fate; your palm lines impact your future; Hernandez et al., 2008; Sierra et al., 2018), as discussed in Chapter 2 (Section 2.2.1).

Depending on the varying sources (individual vs. cultural) and nature of superstitious beliefs (proactive vs. passive), the effects documented in this thesis might differ when superstitious beliefs of different nature is made more salient. For example, subscribers of passive superstitious beliefs are more inclined to believe in external factors, such as luck, fate, and destiny, thereby devaluing the utility of their own actions. That is, since their destiny has been pre-determined, individuals' behaviours will pose minimal impact on the outcome, if any. Consequently, these individuals may be less motivated to modify their behaviours based on superstitious considerations, owing to their belief that their fate has ordained the course of events. In this regard, inducing passive superstitious beliefs, such as contemplating ones' fate, is unlikely to stimulate consumers possessing passive (vs. proactive) superstitious beliefs to partake in sustainable behaviours. An interesting avenue for future studies would be to explore in detail the different types of superstitious beliefs.

Last but not least, another avenue for future inquiries is to introduce potential moderators¹² of the observed effects, i.e., identifying the boundary conditions. In experimental research, identifying both theoretically and empirically relevant moderators is paramount, as it helps shed light upon the circumstances under which the relationship between the independent variable and dependent variable arises and attenuates. Research looking into moderating influences speaks to inquiries seeking to address the application boundaries of any given effect. In other words, this stream of research attempt to address questions, such as the extent to which superstitious beliefs remain effective in decreasing consumer impulsivity for all populations, whether this effect applies universally, and conditions under which the effect might be strengthened/weakened. This is of great importance, as a more fine-grained understanding of when, where, and for whom an effect occurs confers researchers with the ability to further refine their theories on the phenomenon and glean richer contextual insights. To this end, these concerns merit careful examinations in future inquiries.

8.5.2 Methodological Limitations and Recommendations for Future Research

By opting for an experimental approach, this research temporarily manipulates the salience of participants' superstitious beliefs and investigates its impact by observing and measuring variations in participants' behaviours with respect to sustainable consumption and impulsivity. Although it has been widely acknowledged the advantages of experimental research in establishing causal relationships, at the same time, it also introduces, *to some extent*, inevitable limitations to the present research, as synthesized below.

¹² Moderator is defined as a variable that can affect the relationship between the independent variable and dependent variable. A moderator affects such relationships through either strengthening/attenuating the magnitude of the relationships, or altering the direction of the relationships for different levels of the moderator (Hayes, 2017).

- *Omitted influences of other factors.* Due to high levels of control in manipulating and/or measuring key constructs and the need to isolate the influence of other factors, it is not feasible to examine all constructs that might be potentially related to this thesis. While this thesis has incorporated and empirically examined several factors, including individuals' environmental consciousness (as a covariate; Chapter 5), self-efficacy (as an alternative explanation; Chapter 5), affect, gender, income (as covariates; Chapter 7), as well as awe and self-control (as alternative explanations; Chapter 7), a more rigorous and thorough examination of alternative constructs is beyond the scope, and available resources of a PhD thesis.
- *Limited insights regarding complex constructs.* Considering the nature of deploying an experimental approach, this thesis was designed and executed comprehensively. Nevertheless, as the majority of variables in this research are complex constructs with multi facets, it poses challenges, and consequently, limitations regarding the selection of key constructs and the operationalization thereof in this research. For instance, the study featured in Chapter 5 assessed consumers' sustainability by capturing participants' preference between a sustainable option and a non-sustainable option. Nevertheless, sustainability encompasses a myriad of aspects, including deferring non-sustainable purchase decisions, recycling and product disposal behaviours, and willingness to pay for sustainable products and/or services.
- *The homogeneity in participants' characteristics.* Homogeneity in sampling refers to the similarity shared among participants, such as their demographic characteristics, socioeconomic status, and cultural background. While high degrees of homogeneity enable a more controlled empirical examination, it also raises concerns, in that the

findings might be limited in the tested sample. As the findings of this research is solely based upon US-based participants, a singular source of sampling units might entail unwanted biases and therefore, limit the generalizability of the resulting findings to the entire population. Therefore, a more comprehensive understanding of the phenomenon merits future examination across diverse populations.

- *Lack of richness in data.* Compared to data collected through qualitative research methods, such as interviews, focus groups and ethnographic studies, quantitative research is more concerned about establishing the cause-and-effect relations between variables, which might not capture the nuances and complexity in social phenomena.

In light of the preceding discussion of the methodological limitations, it sheds light on intriguing opportunities for future inquiries. First of all, future research is warranted to enhance the reliability and validity of the findings herein by taking into considerations of other theoretically or practically relevant variables, and assessing key constructs by tapping into different facets. For instance, in investigating consumers' sustainability, future research can examine to which extent consumers incorporate sustainability into their identity influences the findings of this research. Moreover, instead of exploring consumers' preference between sustainable and non-sustainable options, scholars can examine consumers' littering behaviours (Trudel, Argo, & Meng, 2016). Another fruitful opportunity lies in the pursuit of confirmatory evidence. By employing neuromarketing techniques, such as functional Magnetic Resonance Imaging (fMRI), electroencephalography (EEG), and eye tracking, it allows researchers to dive into consumer behaviour that traditional approach is incapable of, and further enhance the validity of the findings (Hsu & Cheng, 2018; Koller, 2010).

Additionally, to enhance the generalizability, scholars can take the findings one step further, and attempt to replicate this effect beyond the US-based participants. In particular, scholars may undertake further investigations across different settings from diverse cultural backgrounds. By doing so, researchers can obtain a more comprehensive understanding of superstitious beliefs, and how they affect consumer behaviours across different populations.

Moreover, as the academic investigation of superstitious beliefs, and how such beliefs affect consumer behaviour, is still in its infancy, this investigation endeavours to stimulate more thought-provoking insights and inquiries on this topic. In this thesis, the findings provided valuable and novel insights in shaping more sustainable and less impulsive consumer behaviours, thereby offering fascinating research opportunities. Future studies ought to benefit from the pioneer effort of this research, and adopt alternative methodological approaches to further enrich existing understanding. For example, how do superstitious beliefs affect consumers' perceptions of the environmental impact of their consumption behaviours? How do superstitious beliefs interact with other psychological factors, such as consumers' perceived control and the need for being compliant with societal norms, to shape their sustainable behaviours? All these intriguing questions merit further inquiries.

8.6 Conclusion of Chapter 8

In this Chapter, upon re-visiting the overarching research objective investigating the effect of superstitious beliefs on consumer behaviour, the researcher succinctly summarized critical findings of this research. Specifically, the study presented in Chapter 5 addressed *RQ2* and *RQ3*, and revealed that activating salient superstitious beliefs led to significantly greater

consumer sustainability (Study 1). This research further showed that this effect occurred because, when superstitious beliefs were made more salient, consumers were more inclined to experience a heightened tendency of investing in good deeds (by preferring sustainable options over other alternatives) to exchange for future karmic rewards (i.e., karmic reward seeking; Studies 2 & 3). Furthermore, the subsequent inquiry explored the impact of superstitious beliefs on the extent to which consumers were able to resist the temptation of impulse, hence answering *RQ4* and *RQ5* (Chapter 8). Across five studies, the findings evinced that, counterintuitively, salient superstitious beliefs curbed consumers' impulsivity, in terms of trait impulsivity (Study 1), types of preferred products (Study 2), monetary spending (including total price and the number of items; Studies 3 and 4), and calory preference during grocery shopping (Study 4). Furthermore, this effect was driven by an enhanced temporal focus towards future, long-term rewards (Studies 3 and 4).

Additionally, drawing on these findings, Chapter 8 synthesized the theoretical, managerial, policy, consumer, as well as methodological contributions of this thesis. Finally, this Chapter concluded by acknowledging the theoretical and methodological limitations of this research – and specifically laid out questions for future inquiries –including examining different types of superstitious beliefs across different populations, introducing boundary conditions, incorporating multiple operationalizations of key constructs, and employing alternative methodological approaches.

The following Chapter, Chapter 9, represents the concluding phase of this investigation, offering a critical personal reflection on this thesis, and the concluding remarks.

Chapter 9: Conclusion

“Research is formalized curiosity. It is poking and prying with a purpose.”

---- Author Zora Neale Hurston

9.1 Some Personal Reflections – Looking Back on the Journey

Embarking on a Ph.D. ride is no small feat; for intrepid researchers, it has proven to be an adventure like no other. This journey of pursuing a more fine-grained understanding of superstitious beliefs has been a challenging, yet exhilarating ride to say the least. Inspired by the researcher's own cultural background and personal interest in the enigma of consumer irrationality, this exploration is imbued with ardour, devotion, and zeal that is palpable to all; at the same time, let us not forget the sweat and blood that have been spilled in the pursuit of knowledge, for they are the hallmarks of true passion and unwavering dedication.

In the realm of marketing, the investigation of superstitious beliefs has long been neglected, especially in consumer research, leaving it a largely uncharted territory. However, a conscientious pursuit of advancement in knowledge demands a rigorous and comprehensive exploration of all that is known on this topic. To this end, such an endeavour requires delving into an array of disciplines beyond the confines of marketing, encompassing the likes of behavioural psychology (Skinner, 1948), popular psychology (Vyse, 2013; Wheen, 2004), abnormal psychology (Devenport, 1979; Brugger et al., 1994; Shaner, 1999; Nayha, 2002), evolutionary biology and dynamics (Foster & Kokko, 2009), religiosity studies (Gothóni, 1994), medicine (Diamond, 2001), anthropology, sociology, and neurology (Gallagher & Lewis, 2001; Singhal & Khadilkar, 2014). Such an extensive and interdisciplinary approach will, without doubt, yield valuable insights into this intriguing phenomenon, provoking future inquiries in this fascinating area of research.

Going back and forth into the literature on superstitious beliefs has been a profound experience for the researcher, as it has exposed the intricate nature and vast scope of this intriguing

topic. The extant literature, crafted by esteemed scholars with remarkable intellects, has underscored the significance of this topic, revealing that superstitious beliefs can trigger a plethora of psychological processes, ultimately resulting in a diverse range of behavioural outcomes. This realisation has further fuelled the researcher's desire to unearth the philosophical and methodological underpinnings of this research, leading to the adoption of a post-positivism paradigm. Through a multifaceted approach encompassing experimental studies, correlational studies, and single-paper meta-analyses, this research findings have been fortified with greater robustness, solidifying the veracity of the conclusions drawn.

Perhaps the most transformative aspect of this Ph.D. journey has been the profound appreciation it has curated withing the researcher, for the staggering level of commitment, labor, and dedication that defines the academic scholarships. Countless sleepless nights spent painstakingly devising the optimal experimental designs; meticulously selecting confounding factors, control variables and alternative explanations; experimenting, failing, and re-experimenting until significant findings were uncovered – all of these arduous steps have illuminated the sheer magnitude of effort required to succeed in academia. This hard-won understanding has not only fortified the researcher's resolve in her future career, but also kindled a deep respect and admiration for those who have devoted their lives to the pursuit of knowledge.

The Ph.D. journey has been nothing short of a life-changing experience, propelling me to new heights, both personally and professionally. It has benefited me tremendously in several ways. First, through this process, I was blessed to conduct research at the Auckland University of Technology (AUT) in New Zealand. As I delved deeper into my work, I was surrounded by a community of knowledgeable and friendly academics who not only shared their expertise, but also their empathy and care for my growth and development. Undoubtedly, one of the major

highlights of my Ph.D. journey has been the privilege to present my research at various conferences and universities. These experiences not only gave me the platform to showcase my work, but also allowed me to refine my research and hone my skills as an academic. Additionally, interacting with other senior academics, including many well-respected gurus in the field, has been a truly inspiring experience that has pushed the boundaries of this research, and deepened my understanding of this topic.

Moreover, having the opportunity of working on multiple research projects in parallel to my Ph.D. research has been an exhilarating experience. Through these projects, I have learned and grown remarkably, constantly pushing myself towards becoming an independent researcher. As my primary supervisor once said, “you will never learn how to combat better than actually going to war.” This could not be truer, and my experiences conducting research – from ideation and design to data collecting, analysis, and going through revisions – have allowed me to mature in ways I never thought possible. Nevertheless, it is worth noting that working on these projects simultaneously has been both a blessing and a curse. While I am forever grateful for the invaluable lessons I have learned and the growth opportunities they have offered, they have taken up a considerable amount of my time and effort as well.

As my Ph.D. journey draws to a close (see proof of submission to journals in Appendices J and K), I can confidently say that the countless analyses and hours spent working on this research has been instrumental in shaping me into a better, more resilient researcher. Not only have these efforts helped me gain deeper insights into my research topic, but they have also built my stamina and endurance, laying a strong foundation for a lifetime of academic inquiries. As I move forward from this chapter of my Ph.D. journey, I am filled with hope and excitement for all that lies ahead. Through the countless lessons and skills acquired over the course of this journey, I am confident

that I am well-equipped to tackle whatever challenges and opportunities, and they will continue to serve well in my future endeavours. Yet, amidst this confidence, I am also keenly aware of the importance of staying grounded and remaining a humble and curious explorer of the journey ahead.

I sincerely believe that this thesis, including the novel theorizations, methodology, empirical examination, and insights derived from the data can expand our knowledge on this topic – superstitious beliefs – in truly remarkable ways, not only in shaping our knowledge of this fascinating subject, but also opening up exciting avenues for future inquiries. I am excited to see where the journey of academic inquiry will take us next, as we continue to explore the intriguing sphere of superstitious beliefs. As a departing note, I hope fellow researchers, academics, pracademics, industry practitioners, and policy makers alike will enjoy reading and studying this thesis.

9.2 Concluding Remarks

Despite consumers' efforts to be rational and objective, superstitious beliefs continue to permeate our lives, even among those who consider themselves highly educated and logical thinkers. With over 70% of the population indicates that they are at least somewhat superstitious in the United States alone, it seems almost impossible to compel individuals to resist the influences of such powerful beliefs. Amidst this paradox, a question therefore arises: when people cannot resist superstitious beliefs, can they harness their influence?

By examining the impact of superstitious beliefs on consumers' sustainability, this thesis offers a compelling glimpse into the hidden utility of these beliefs. By demonstrating that the

activation of salient superstitious beliefs motivates consumers to manifest greater preference for sustainable products and services, this research hints at an affirmative answer to the above question, and reveals a powerful intervention strategy to shape consumer behaviour in a more sustainable manner. In a separate investigation, this research evinces that when superstitious beliefs are made more salient, consumers are more inclined to resist the temptation of impulses.

Taken together, this thesis sheds light on fascinating phenomena, offering limitless opportunities for future research: by thinking about superstitious beliefs, it counteractively helps curate more mindful consumer behaviours. Given that the investigation of superstitious beliefs in the marketing discipline is still in its infancy, this thesis endeavours to serve as a springboard with limitless opportunities for future research, and spur more thought-provoking inquiries in this domain of investigation.

Chapter 10: References

- Aggarwal, P., Block, L., Kramer, T., & McGill, A. L. (2018). The science of extraordinary beliefs: An introduction to this issue, *Journal of the Association for Consumer Research*, 3(4), 451-453.
- Ajzen, I. (1991). The theory of planned behaviour. *Organizational Behaviour and Human Decision Processes*, 50(2), 179-211.
- Alter, A. L., Oppenheimer, D. M., Epley, N., & Eyre, R. N. (2007). Overcoming intuition: metacognitive difficulty activates analytic reasoning. *Journal of Experimental Psychology: General*, 136(4), 569.
- Ambler, T., & Styles, C. (2000). The future of relational research in international marketing: Constructs and conduits. *International Marketing Review*, 17(6), 492-508.
- Andrews, J. C., Burton, S., Gundlach, G. T., Hill, R. P., Kees, J., Netemeyer, R. G., & Walker, K. L. (2022). What exactly is marketing and public policy? Insights for JPPM researchers. *Journal of Public Policy & Marketing*, 41(1), 10-33.
- Ang, S. H., Lai, W. K., & Leong, S. M. (2014). The effects of superstition on choice and latency. *Psychology & Marketing*, 31(12), 1074-1083.
- Aytekin, A. I., Saka, M., Aydin, S., Garip, B., & Kayir, H. (2017). How Trait Impulsivity Associated with Creativity?. *Psychiatry and Clinical Psychopharmacology*, 27, 210.
- Barends, A. J., & De Vries, R. E. (2019). Noncompliant responding: Comparing exclusion criteria in MTurk personality research to improve data quality. *Personality and Individual Differences*, 143, 84-89.
- Baumann, A. A., & Odum, A. L. (2012). Impulsivity, risk taking, and timing. *Behavioural Processes*, 90(3), 408-414.
- Baumeister, R. F. (2002). Yielding to temptation: Self-control failure, impulsive purchasing, and consumer behaviour. *Journal of Consumer Research*, 28(4), 670-676.
- Beatty, S., & Ferrell, M. E. (1998). Impulse buying: Modelling its precursors. *Journal of Retailing*, 74(2), 169-191.
- Beck, J., & Forstmeier, W. (2007). Superstition and belief as inevitable by-products of an adaptive learning strategy. *Human Nature*, 18(1), 35-46.
- Bell, E., Bryman, A., & Harley, B. (2022). *Business research methods*. Oxford university press.
- Biedenbach, T., & Müller, R. (2011). Paradigms in project management research: examples from 15 years of IRNOP conferences. *International journal of managing projects in business*, 4(1), 82-104.
- Biesta, G. (2010). Pragmatism and the philosophical foundations of mixed methods research. In A. Tashakkori & C. Teddlie, *SAGE Handbook of Mixed Methods in Social & Behavioural Research* (pp. 95-118). Thousand Oaks, California: SAGE Publications, Inc. <https://doi.org/10.4135/9781506335193.n4>
- Block, L., & Kramer, T. (2009). The effect of superstitious beliefs on performance expectations. *Journal of the Academy of Marketing Science*, 37, 161-169.
- Boden, M. T., & Berenbaum, H. (2004). The potentially adaptive features of peculiar beliefs. *Personality and Individual Differences*, 37(4), 707-719.
- Bohlen, G. M., Diamantopoulos, A., & Schlegelmilch, B. B. (1993). Consumer perceptions of the environmental impact of an industrial service. *Marketing Intelligence & Planning*, 11(1), 37-48.

- Bolt, D. M., Lu, Y., & Kim, J. S. (2014). Measurement and control of response styles using anchoring vignettes: a model-based approach. *Psychological Methods*, 19(4), 528.
- Brewer, J., & Hunter, A. (1989). *Multimethod research: A synthesis of styles*. Thousand Oaks, CA: SAGE Publications.
- Brough, A. R., Wilkie, J. E., Ma, J., Isaac, M. S., & Gal, D. (2016). Is eco-friendly unmanly? The green-feminine stereotype and its effect on sustainable consumption. *Journal of Consumer Research*, 43(4), 567-582.
- Brugger, P., Dowdy, M. A. & Graves, R. E. (1994). From superstitious behaviour to delusional thinking: The role of the hippocampus in misattributions of causality. *Medical Hypotheses* 43, 397-402.
- Buelens, B., Burger, J., & van den Brakel, J. A. (2018). Comparing inference methods for non-probability samples. *International Statistical Review*, 86(2), 322-343.
- Buhrmester, M., Kwang, T., & Gosling, S. D. (2011). Amazon's Mechanical Turk: A new source of inexpensive, yet high-quality, data? *Perspectives on Psychological Science*, 6, 3-5. <https://doi.org/10.1177/1745691610393980>
- Burrell, G., & Morgan, G. (1979). *Sociological paradigms and organisational analysis* (Vol. 248). London: Heinemann.
- Calvert, G., Fulcher, E., Fulcher, G., Foster, P., & Rose, H. (2014). Using implicit methods to develop an objective measure of media brand engagement. *International Journal of Market Research*, 56(1), 15-32.
- Carey, S. (1995). On the origin of causal understanding.
- Carlson, B. D., Mowen, J. C., & Fang, X. (2009). Trait superstition and consumer behaviour: Re-conceptualization, measurement, and initial investigations. *Psychology & Marketing*, 26(8), 689-713.
- Carson, D., Gilmore, A., Perry, C., & Gronhaug, K. (2001). *Qualitative marketing research*. Thousand Oaks, California: SAGE Publications, <https://doi.org/10.4135/9781849209625>
- Casey, L. S., Chandler, J., Levine, A. S., Proctor, A., & Strolovitch, D. Z. (2017). Intertemporal differences among MTurk workers: Time- based sample variations and implications for online data collection. *SAGE Open*, 7(2), 1-15. <https://doi.org/10.1177/2158244017712774>
- Catina, P., & Iso-Ahola, S. E. (2004). Positive illusion and athletic success. *International Sports Journal*, 8, 80-93.
- Cavana, R. Y., Delahave, B. L., & Sekaran, U. (2001). *Applied business research: Qualitative and quantitative methods*. Milton, Queensland, Australia: J. Wiley.
- Chamorro-Premuzic, T. (2015), The Psychology of Impulsive Shopping, *The Guardian*, November 26, <https://www.theguardian.com/media-network/2015/nov/26/psychology-impulsive-shopping-christmas-black-friday-sales> [Accessed March 28, 2023].
- Chandler, J., Paolacci, G., & Hauser, D. J. (2020). Data quality issues on MTurk. In L. Litman & J. Robinson (Eds.) *Conducting Online Research on Amazon Mechanical Turk and Beyond* (95-120). Sage Academic Publishing. Thousand Oaks: CA
- Chandler, J., Paolacci, G., Peer, E., Mueller, P., & Ratliff, K. A. (2015). Using nonnaive participants can reduce effect sizes. *Psychological Science*, 26(7), 1131-1139.
- Chandler, J., Rosenzweig, C., Moss, A. J., Robinson, J., & Litman, L. (2019). Online panels in social science research: Expanding sampling methods beyond Mechanical Turk. *Behaviour Research Methods*, 51(5), 2022-2038.

- Cherryholmes, C. H. (1992). Notes on pragmatism and scientific realism. *Educational Researcher*, 21(6), 13–17. <https://doi.org/10.3102/0013189X021006013>
- Chmielewski, M., & Kucker, S. C. (2020). An MTurk crisis? Shifts in data quality and the impact on study results. *Social Psychological and Personality Science*, 11(4), 464-473.
- Chung, J., & Monroe, G. S. (2003). Exploring social desirability bias. *Journal of Business Ethics*, 44, 291-302.
- Churchill, G. A., & Iacobucci, D. (2006). *Marketing research: methodological foundations* (Vol. 199, No. 1). New York: Dryden Press.
- Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology*, 58(6), 1015-1026.
- Collis, J., & Hussey, R. (2009). *Business Research: A practical guide for undergraduate and postgraduate students* 3rd Edition Palgrave MacMillan.
- Collis, J., & Hussey, R. (2013). *Business research: A practical guide for undergraduate and postgraduate students*. New York: Macmillan International Higher Education.
- Conick, H. (2019). How brands can help consumers green up their act. *Marketing News, A Publication of the American Marketing Association*.
- Cook, T. D., Campbell, D. T., & Shadish, W. (2002). *Experimental and quasi-experimental designs for generalized causal inference* (pp. 103-134). Boston, MA: Houghton Mifflin.
- Creswell, J. W. (2009). *Research design: qualitative, quantitative, and mixed methods approaches*. Thousand Oaks, California: SAGE Publications.
- Crotty, M. (1998). *The foundations of social research: Meaning and perspective in the research process*. Thousand Oaks, California: SAGE Publications.
- D'Agati, M. (2014). "I Feel Like I'm Going to Win": Superstition in Gambling. *Qualitative Sociology Review*, 10(2), 80-101.
- Dag, I. (1999). The relationships among paranormal beliefs, locus of control and psychopathology in a Turkish college sample. *Personality and Individual Differences*, 26, 723–737.
- Damisch, L., Stoberock, B., & Mussweiler, T. (2010). Keep your fingers crossed! How superstition improves performance. *Psychological Science*, 21(7), 1014-1020.
- Datta, L. (1994). Paradigm wars: A basis for peaceful coexistence and beyond. *New Directions for Program Evaluation*, 1994(61), 53–70. <https://doi.org/10.1002/ev.1668>
- Davis, B., Ozanne, J. L., & Hill, R. P. (2016). The transformative consumer research movement. *Journal of Public Policy & Marketing*, 35(2), 159-169.
- De Houwer, J., Teige-Mocigemba, S., Spruyt, A., & Moors, A. (2009). Implicit measures: A normative analysis and review. *Psychological Bulletin*, 135(3), 347-368.
- Delacroix, E., & Guillard, V. (2008). Understanding, defining and measuring the trait of superstition. Paris Dauphine University.
- Dempsey, M. A., & Mitchell, A. A. (2010). The influence of implicit attitudes on choice when consumers are confronted with conflicting attribute information. *Journal of Consumer Research*, 37(4), 614-625.
- Devenport, L.D. (1979). Superstitious bar pressing in hippocampal and septal rats. *Science*, 205, 721-723.
- DeVon, C. (2022). Over 60% of Americans regret an impulse buy — here's how social media makes it so hard to resist, *CNBC*, August 20, <https://www.cnbc.com/2022/08/20/why-impulse-purchases-on-social-media-are-hard-to-resist.html> [Accessed March 29, 2023].

- Dewitt, B., Fischhoff, B., Davis, A. L., Broomell, S. B., Roberts, M. S., & Hanmer, J. (2019). Exclusion criteria as measurements I: identifying invalid responses. *Medical Decision Making*, 39(6), 693-703.
- Dholakia, U. M. (2000). Temptation and resistance: An integrated model of consumption impulse formation and enactment. *Psychology & Marketing*, 17(11), 955-982.
- Diamond, J. (2001). Snake oil and other preoccupations. London, UK: Vintage.
- Dittmar, H., & Bond, R. (2010). I want it and I want it Now': Using a temporal discounting paradigm to examine predictors of consumer impulsivity. *British Journal of Psychology*, 101(4), 751-776.
- Dittmar, H., Beattie, J., & Friese, S. (1995). Gender identity and material symbols: Objects and decision considerations in impulse purchases. *Journal of Economic Psychology*, 16(3), 491-511.
- Dittmar, H., Halliwell, E., & Stirling, E. (2009). Understanding the impact of thin media models on Women's body-focused affect: The roles of thin-ideal internalization and weight-related self-discrepancy activation in experimental exposure effects. *Journal of Social and Clinical Psychology*, 28(1), 43-75.
- Dudley, R. T. (1999). The effect of superstitious belief on performance following an unsolvable problem. *Personality and Individual Differences*, 26(6), 1057-1064.
- Dunlap, R. E., & Van Liere, K. D. (1978). The "new environmental paradigm". *The Journal of Environmental Education*, 9(4), 10-19.
- Dwyer, P. C., Maki, A., & Rothman, A. J. (2015). Promoting energy conservation behaviour in public settings: The influence of social norms and personal responsibility. *Journal of Environmental Psychology*, 41, 30-34.
- Eroglu, S. A., Machleit, K. A., & Davis, L. A. (2003). Empirical testing of a model of online store atmospherics and shopper responses. *Psychology & Marketing*, 20(2), 139-150.
- Ewing, D., Allen, C., & Kardes, F. (2008). Conditioning implicit and explicit brand attitudes using celebrity affiliates. *Advances in Consumer Research*, 35, 593-599.
- Farrell, A. M., Grenier, J. H., & Leiby, J. (2017). Scoundrels or stars? Theory and evidence on the quality of workers in online labor markets. *Accounting Review*, 92, 93-114. <https://doi.org/10.2308/accr-51447>
- Fassin, Y. (2000). Innovation and ethics ethical considerations in the innovation business. *Journal of Business Ethics*, 27, 193-203.
- Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G* Power 3: A flexible statistical power analysis program for the social, behavioural, and biomedical sciences. *Behaviour Research Methods*, 39(2), 175-191.
- Fazio, R. H., & Olson, M. A. (2003). Implicit measures in social cognition research: Their meaning and use. *Annual Review of Psychology*, 54(1), 297-327.
- Feilzer, Y. M. (2010). Doing mixed methods research pragmatically: Implications for the rediscovery of pragmatism as a research paradigm. *Journal of Mixed Methods Research*, 4(1), 6-16.
- Fisher, R. J. (1993). Social desirability bias and the validity of indirect questioning. *Journal of Consumer Research*, 20(2), 303-315.
- Fisher, R. J., & Katz, J. E. (2000). Social-desirability bias and the validity of self-reported values. *Psychology & Marketing*, 17(2), 105-120.

- Foster, K. R., & Kokko, H. (2009). The evolution of superstitious and superstition-like behaviour. *Proceedings of the Royal Society B: Biological Sciences*, 276(1654), 31-37.
- Fox, N. J. (2008). Post-positivism. *The SAGE encyclopedia of qualitative research methods*, 2, 659-664.
- French, C. C., & Kerman, M. K. (1996). Childhood trauma, fantasy proneness and belief in the paranormal. Paper presented at *the Annual Conference of the British Psychological Society*, London.
- Fukukawa, K. (2003). A theoretical review of business and consumer ethics research: Normative and descriptive approaches. *The Marketing Review*, 3(4), 381-401.
- Gallagher, T. J., & Lewis, J. M. (2001). Rationalists, fatalists, and the modern superstitious: Test-taking in introductory sociology. *Sociological Inquiry*, 71(1), 1-12.
- Gawronski, B., & Bodenhausen, G. V. (2006). Associative and propositional processes in evaluation: an integrative review of implicit and explicit attitude change. *Psychological Bulletin*, 132(5), 692.
- Gawronski, B., & De Houwer, J. (2014). Implicit measures in social and personality psychology.
- Gawronski, B., Hofmann, W., & Wilbur, C. J. (2006). Are “implicit” attitudes unconscious?. *Consciousness and Cognition*, 15(3), 485-499.
- Geller, E. S., Bechtel, R.B., & Churchman, A. (2002). The challenge of increasing pro-environment behaviour. In *Handbook of environmental psychology*, Bechtel and Churchman, A. (Eds.) New York: John Wiley & Sons, 525-540.
- Gephart, R. (1999). Paradigms and research methods. *Research Methods Division, Academy of Management, Research Methods Forum*, (Vol. 4).
- Giebelhausen, M., Chun, H. H., Cronin Jr, J. J., & Hult, G. T. M. (2016). Adjusting the warm-glow thermostat: How incentivizing participation in voluntary green programs moderates their impact on service satisfaction. *Journal of Marketing*, 80(4), 56-71.
- Gigerenzer, G., Swijtink, J., Porter, M., Daston, B., Beatty, R., & Kruger, W. (1989). The empire of chance: How probability theory changed social science. *New York: Cambridge*.
- Gilbert, F. W., & Warren, W. E. (1995). Psychographic constructs and demographic segments. *Psychology & Marketing*, 12(3), 223-237.
- Goodman, J. K., Cryder, C. E., & Cheema, A. (2013). Data collection in a flat world: The strengths and weaknesses of Mechanical Turk samples. *Journal of Behavioural Decision Making*, 26, 213–224. [https:// doi.org/10.1002/bdm.1753](https://doi.org/10.1002/bdm.1753)
- Gothóni, R. (1994). Religio and Superstitio reconsidered. *Archive for the Psychology of Religion*, 21(1), 37-46.
- Green, T., & Peloza, J. (2014). Finding the right shade of green: The effect of advertising appeal type on environmentally friendly consumption. *Journal of Advertising*, 43(2), 128-141.
- Greenwald, A. G., & Banaji, M. R. (2017). The implicit revolution: Reconceiving the relation between conscious and unconscious. *American Psychologist*, 72(9), 861.
- Gregg, B. (2016). *The human rights state: Justice within and beyond sovereign nations*. University of Pennsylvania Press.
- Griskevicius, V., Tybur, J. M., & Van den Bergh, B. (2010). Going green to be seen: status, reputation, and conspicuous conservation. *Journal of Personality and Social Psychology*, 98(3), 392-404.

- Gromet, D. M., Kunreuther, H., & Larrick, R. P. (2013). Political ideology affects energy-efficiency attitudes and choices. *Proceedings of the National Academy of Sciences*, 110(23), 9314-9319.
- Gruber, V., & Schlegelmilch, B. B. (2014). How techniques of neutralization legitimize norm- and attitude-inconsistent consumer behaviour. *Journal of Business Ethics*, 121, 29-45.
- Guba, E., & Lincoln, Y. (2000). Paradigmatic controversies, contradictions, and emerging controversies. *Handbook of qualitative research*.
- Haghani, M., Bliemer, M. C., Rose, J. M., Oppewal, H., & Lancsar, E. (2021). Hypothetical bias in stated choice experiments: Part II. Conceptualisation of external validity, sources and explanations of bias and effectiveness of mitigation methods. *Journal of Choice Modelling*, 41, 100322.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis: Global edition*.
- Hamerman, E. J., & Johar, G. V. (2013). Conditioned superstition: Desire for control and consumer brand preferences. *Journal of Consumer Research*, 40(3), 428-443.
- Hamerman, E. J., & Morewedge, C. K. (2015). Reliance on luck: Identifying which achievement goals elicit superstitious behaviour. *Personality and Social Psychology Bulletin*, 41(3), 323-335.
- Hardcastle, J. L. (2013). Nike, Starbucks: Climate change policy is “economic opportunity,” *Environmental Leader*, <https://www.environmentalleader.com/2013/04/nike-starbucks-climate-change-policy-is-economic-opportunity/>
- Hart, P. S., & Nisbet, E. C. (2012). Boomerang effects in science communication: How motivated reasoning and identity cues amplify opinion polarization about climate mitigation policies. *Communication Research*, 39(6), 701-723.
- Hernandez, M. D., Wang, Y. J., Minor, M. S., & Liu, Q. (2008). Effects of superstitious beliefs on consumer novelty seeking and independent judgment making: Evidence from China. *Journal of Consumer Behaviour: An International Research Review*, 7(6), 424-435.
- Herriges, J. A., & Shogren, J. F. (1996). Starting point bias in dichotomous choice valuation with follow-up questioning. *Journal of Environmental Economics and Management*, 30(1), 112-131.
- Hill, M. (2005). Ethical considerations in researching children’s experiences. *Researching Children’s Experience*, 61-86.
- Hoch, S. J., & Loewenstein, G. F. (1991). Time-inconsistent preferences and consumer self-control. *Journal of Consumer Research*, 17(4), 429-507.
- Hopkins, D. J., & King, G. (2010). Improving anchoring vignettes: Designing surveys to correct interpersonal incomparability. *Public Opinion Quarterly*, 74(2), 201-222.
- Hopkins, M. S., Townend, A., Khayat, Z., Balagopal, B., Reeves, M., & Berns, M. (2009). The business of sustainability: What it means to managers now. *MIT Sloan Management Review*, 51(1), 20-26.
- Horton, J. J., Rand, D. G., & Zeckhauser, R. J. (2011). The online laboratory: Conducting experiments in a real labor market. *Experimental Economics*, 14, 399-425. <https://doi.org/10.1007/s10683-011-9273-9>
- Hsu, M. Y. T., & Cheng, J. M. S. (2018). fMRI neuromarketing and consumer learning theory: Word-of-mouth effectiveness after product harm crisis. *European Journal of Marketing*.

- Huang, J. L., Bowling, N. A., & Liu, Y. (2015). Detecting insufficient effort responding with an infrequency scale: Evaluating validity and participant reactions. *Journal of Business Psychology*, 30(2), 299–311.
- Huff, C., & Tingley, D. (2015). “Who are these people?” Evaluating the demographic characteristics and political preferences of MTurk survey respondents. *Research & Politics*, 2(3), 1–12. <https://doi.org/10.1177/2053168015604648>
- Hulland, J., Baumgartner, H., & Smith, K. M. (2018). Marketing survey research best practices: Evidence and recommendations from a review of JAMS articles. *Journal of the Academy of Marketing Science*, 46, 92-108.
- Hutton, M., & Heath, T. (2020). Researching on the edge: emancipatory praxis for social justice. *European Journal of Marketing*, 54(11), 2697-2721.
- Imai, K., Tingley, D., & Yamamoto, T. (2013). Experimental designs for identifying causal mechanisms. *Journal of the Royal Statistical Society: Series A (Statistics in Society)*, 176(1), 5-51.
- Iphofen, R. (2009). *Ethical decision making in social research: A practical guide* (pp. 1-17). Basingstoke: Palgrave Macmillan.
- Irwin, H. J. (1992). Origins and functions of paranormal belief: The role of childhood trauma and interpersonal control. *Journal of the American Society for Psychical Research*, 86, 199–208.
- Iyer, G. R., Blut, M., Xiao, S. H., & Grewal, D. (2020). Impulse buying: a meta-analytic review. *Journal of the Academy of Marketing Science*, 48, 384-404.
- Jacoby, L. L., Lindsay, D. S., & Toth, J. P. (1992). Unconscious influences revealed: Attention, awareness, and control. *American Psychologist*, 47(6), 802.
- Johnson, K. A. (2021). God... Karma, Jinn, spirits, and other metaphysical forces. *Current Opinion in Psychology*, 40, 10-14.
- Jones, M. A., Reynolds, K. E., Weun, S., & Beatty, S. E. (2003). The product-specific nature of impulse buying tendency. *Journal of Business Research*, 56(7), 505–511.
- Kacen, J. J., & Lee, J. A. (2002). The influence of culture on consumer impulsive buying behaviour. *Journal of Consumer Psychology*, 12(2), 163–176.
- Källmén, H., Andersson, P., & Andren, A. (2008). Are irrational beliefs and depressive mood more common among problem gamblers than non-gamblers? A survey study of Swedish problem gamblers and controls. *Journal of Gambling Studies*, 24(4), 441-450.
- Kang, J., Park, J. K., & Kim, H. (2018). The influence of implicit self-theories on causal inferences about superstitions and consequences on subsequent tasks. *Journal of the Association for Consumer Research*, 3(4), 477-489.
- Kardes, F. R., Herr, P. M., & Schwarz, N. (Eds.). (2019). *Handbook of research methods in consumer psychology*. Routledge.
- Kashiha, S. (2015). On the relationship between adolescents’ tendency to superstition and the source of control. *International Journal of Academic Research in Business and Social Sciences*, 5(4), 134-145.
- Kees, J., Berry, C., Burton, S., & Sheehan, K. (2017). An analysis of data quality: Professional panels, student subject pools, and Amazon's Mechanical Turk. *Journal of Advertising*, 46(1), 141-155.
- Keinan, G. (1994). Effects of stress and tolerance of ambiguity on magical thinking. *Journal of Personality and Social Psychology*, 67, 48–55.

- Keinan, G. (2002). The effects of stress and desire for control on superstitious behaviour. *Personality and Social Psychology Bulletin*, 28(1), 102-108.
- Kennedy, R., Clifford, S., Burleigh, T., Waggoner, P. D., Jewell, R., & Winter, N. J. (2020). The shape of and solutions to the MTurk quality crisis. *Political Science Research and Methods*, 8(4), 614-629.
- Khait, A. (2020). *What is impulsive buying and how to avoid it*. Last Accessed March 4, 2023. <https://medium.com/all-things-fashion-fun/what-is-impulsive-buying-and-how-to-avoid-it-bd4678b88a8d>.
- Khan, U., & Dhar, R. (2006). Licensing effect in consumer choice. *Journal of Marketing Research*, 43(2), 259-266.
- Kim, J., Cui, Y., Jang, S., Spence, M. T., & Park, J. (2019). Response to regarding mediation analysis revisited. *Australasian Marketing Journal*, 27(2), 126-128.
- Kim, J., Hwang, E., Phillips, M., Jang, S., Kim, J. E., Spence, M. T., & Park, J. (2018). Mediation analysis revisited: Practical suggestions for addressing common deficiencies. *Australasian Marketing Journal*, 26(1), 59-64.
- Kipper, D. A., Green, D. J., & Prorak, A. (2010). The relationship among spontaneity, impulsivity, and creativity. *Journal of Creativity in Mental Health*, 5(1), 39-53.
- Koller, M. (2010). Consumers' attitude towards applying fMRI in marketing research. *ACR North American Advances*.
- Kramer, T., & Block, L. (2007). Paraskevidekatriaphobia: The effect of superstition on risk-taking behaviour. *ACR European Advances*.
- Kramer, T., & Block, L. (2008). Conscious and nonconscious components of superstitious beliefs in judgment and decision making. *Journal of Consumer Research*, 34(6), 783-793.
- Kramer, T., & Block, L. (2009). The impact of thinking style on sympathetic magical thinking. In *NA – Advances in Consumer Research (Ed.)*, 36, 31-35.
- Kramer, T., & Block, L. (2011). Nonconscious effects of peculiar beliefs on consumer psychology and choice. *Journal of Consumer Psychology*, 21(1), 101-111.
- Kramer, T., & Block, L. G. (2014). Like Mike: Ability contagion through touched objects increases confidence and improves performance. *Organizational Behaviour and Human Decision Processes*, 124(2), 215-228.
- Kruger, J., Risen, J., Gilovich, T., & Savitsky, K. (2009). Why calling attention to success seems to invite failure. In *NA – Advances in Consumer Research (Ed.)*, 36, 31-35.
- Lades, L. K. (2014). Impulsive consumption and reflexive thought: Nudging ethical consumer behaviour. *Journal of Economic Psychology*, 41, 114-128.
- Lather, P. (1986). Research as praxis. *Harvard Educational Review*, 56(3), 257-278.
- Lawrence, T., Edwards, C., Barraclough, N., Church, S., & Hetherington, F. (1995). Modelling childhood causes of paranormal beliefs and experiences: Childhood trauma and childhood fantasy. *Personality and Individual Differences*, 19, 209-215.
- Levay, K. E., Freese, J., & Druckman, J. N. (2016). The demographic and political composition of Mechanical Turk samples. *Sage Open*, 6, 1-17. <https://doi.org/10.1177/2158244016636433>
- Li, H. (2021). Confidence charms: How superstition influences overconfidence bias in Han and the Qiang ethnic minority Chinese. *The Journal of Psychology*, 155(5), 473-488.
- Lin, Y. C., & Chang, C. C. A. (2012). Double standard: The role of environmental consciousness in green product usage. *Journal of Marketing*, 76(5), 125-134.

- Lindeman, M., & Svedholm, A. M. (2012). What's in a term? Paranormal, superstitious, magical and supernatural beliefs by any other name would mean the same. *Review of General Psychology*, 16(3), 241-255.
- Litman, L., & Robinson, J. (2020). *Conducting online research on Amazon Mechanical Turk and beyond*. Sage Publications.
- Litman, L., Moss, A., Rosenzweig, C., & Robinson, J. (2021). Reply to MTurk, Prolific or panels? Choosing the right audience for online research. *Choosing the right audience for online research* (January 28, 2021).
- Litman, L., Robinson, J., & Abberbock, T. (2017). TurkPrime. com: A versatile crowdsourcing data acquisition platform for the behavioural sciences. *Behaviour Research Methods*, 49(2), 433-442.
- Litman, L., Robinson, J., & Rosenzweig, C. (2015). The relationship between motivation, monetary compensation, and data quality among US and India based workers on Mechanical Turk. *Behaviour Research Methods*, 47, 519–528. <https://doi.org/10.3758/s13428-014-0483-x>
- Litman, L., Rosenzweig, C., & Moss, A. (2020). New solutions dramatically improve research data quality on MTurk.
- Loken, E., & Gelman, A. (2017). Measurement error and the replication crisis. *Science*, 355(6325), 584-585.
- MacInnis, D. J., & Folkes, V. S. (2010). The disciplinary status of consumer behaviour: A sociology of science perspective on key controversies. *Journal of Consumer Research*, 36(6), 899–914. <https://doi.org/10.1086/644610>
- Malhotra, N., Hall, J., Shaw, M., & Oppenheim, P. (2006). *Marketing research: An applied orientation*. Deakin University.
- Malinowski, B. (1954). *Magic, science and religion and other essays*. Garden City, NY: Doubleday.
- Mallett, R. K. (2012), “Eco-guilt motivates eco-friendly behaviour,” *Ecopsychology*, 4(3), 223–31.
- Marques, N. S., & Tourinho, E. Z. (2015). The selection of cultural units by non-contingent cultural events. *Behaviour and Social Issues*, 24(1), 126-140.
- Marsden, E. (2019). Methodological transparency and its consequences for the quality and scope of research. In *The Routledge handbook of research methods in applied linguistics* (pp. 15-28). Routledge.
- Matherly, T. (2019). A panel for lemons? Positivity bias, reputation systems and data quality on MTurk. *European Journal of Marketing*, 53(2), 195-223.
- Mattila, A. S., & Wirtz, J. (2001). Congruency of scent and music as a driver of in-store evaluations and behaviour. *Journal of Retailing*, 77(2), 272–289.
- Mayo, M., & Mallin, M. (2014). Antecedents and anticipated outcomes of superstitious behaviour among professional salespeople. *Journal of Business & Industrial Marketing*, 29(3), 227-237.
- McGrath, J. E., & Johnson, B. A. (2003). Methodology makes meaning: How both qualitative and quantitative paradigms shape evidence and its interpretation. In P. M. Camic, J. E. Rhodes, & L. Yardley (Eds.), *Qualitative research in psychology: Expanding perspectives in methodology and design*. (pp. 31–48). American Psychological Association. <https://doi.org/10.1037/10595-003>

- Meade, A. W., & Craig, S. B. (2012). Identifying careless responses in survey data. *Psychological Methods*, 17(3), 437–455.
- Mick, D. G., & Demoss, M. (1990). Self-gifts: Phenomenological insights from four contexts. *Journal of Consumer Research*, 17(3), 322–332.
- Morales, A. C., Amir, O., & Lee, L. (2017). Keeping it real in experimental research—Understanding when, where, and how to enhance realism and measure consumer behaviour. *Journal of Consumer Research*, 44(2), 465–476.
- Morewedge, C. K., & Kahneman, D. (2010). Associative processes in intuitive judgment. *Trends in Cognitive Sciences*, 14(10), 435–440.
- Nayha, S. (2002). Traffic deaths and superstition on Friday the 13th. *American Journal of Psychiatry*, 159(12), 2110–2111.
- Nederhof, A. J. (1985). Methods of coping with social desirability bias: A review. *European Journal of Social Psychology*, 15(3), 263–280.
- Newman, C. L., Finkelstein, S. R., & Davis, B. (2021). Transformative Consumer Research and Public Policy and Marketing Research: Distinct, Yet Complementary, Approaches. *Journal of Public Policy & Marketing*, 40(3), 331–335.
- Nikolova, H., & Nenkov, G. Y. (2022). We succeeded together, now what: Relationship power and sequential decisions in couples' joint goal pursuits. *Journal of Marketing Research*, 59(2), 271–289.
- Nosek, B. A., Ebersole, C. R., DeHaven, A. C., & Mellor, D. T. (2018). The preregistration revolution. *Proceedings of the National Academy of Sciences*, 115(11), 2600–2606.
- O'Brien, D. T. (2012). Thinking, fast and slow by Daniel Kahneman.
- O'Guinn, T. C., & Faber, R. J. (1989). Compulsive buying: A phenomenological exploration. *Journal of Consumer Research*, 16(2), 147–157.
- Palan, S., & Schitter, C. (2018). Prolific. ac—A subject pool for online experiments. *Journal of Behavioural and Experimental Finance*, 17, 22–27.
- Panhwar, A. H., Ansari, S., & Shah, A. A. (2017). Post-positivism: An effective paradigm for social and educational research. *International Research Journal of Arts and Humanities*, 45(45), 253–259.
- Paolacci, G., & Chandler, J. (2014). Inside the Turk: Understanding Mechanical Turk as a participant pool. *Current Directions in Psychological Science*, 23, 184–188. <https://doi.org/10.1177/0963721414531598>
- Paolacci, G., Chandler, J., & Ipeirotis, P. G. (2010). Running experiments on amazon mechanical Turk. *Judgment and Decision Making*, 5(5), 411–419.
- Park, E. J., Kim, E. Y., Funches, V. M., & Foxx, W. (2012). Apparel product attributes, web browsing, and E-impulse buying on shopping websites. *Journal of Business Research*, 65(11), 1583–1589.
- Peer, E., Brandimarte, L., Samat, S., & Acquisti, A. (2017). Beyond the Turk: Alternative platforms for crowdsourcing behavioural research. *Journal of Experimental Social Psychology*, 70, 153–163.
- Peng, Y. S., Hsiung, H. H., & Chen, K. H. (2012). The level of concern about Feng Shui in house purchasing: The impacts of self-efficacy, superstition, and the Big Five personality traits. *Psychology & Marketing*, 29(7), 519–530.
- Piaget, J. (1929/1951). *The child's conception of the world*. London, UK: Routledge & Kegan.
- Piron, F. (1991). Defining impulse purchasing. *ACR North American Advances*.

- Podlesny, J. A., & Raskin, D. C. (1977). Physiological measures and the detection of deception. *Psychological Bulletin*, 84(4), 782.
- Ponterotto, J. G. (2005). Qualitative research in counselling psychology: A primer on research paradigms and philosophy of science. *Journal of Counselling Psychology*, 52(2), 126–136. <https://doi.org/10.1037/0022-0167.52.2.126>
- Pronin, E., Wegner, D. M., McCarthy, K., & Rodriguez, S. (2006). Everyday magical powers: the role of apparent mental causation in the overestimation of personal influence. *Journal of Personality and Social Psychology*, 91(2), 218.
- Punj, G. (2011). Impulse buying and variety seeking: Similarities and differences. *Journal of Business Research*, 64(7), 745–748.
- Rice, T. W. (2003). Believe it or not: Religious and other paranormal beliefs in the United States. *Journal for the Scientific Study of Religion*, 42(1), 95-106.
- Ripple, W. J., Wolf, C., Newsome, T. M., Galetti, M., Alamgir, M., Crist, E., et al. (2017). World scientists' warning to humanity: A second notice. *BioScience*, 67(12), 1026-1028.
- Risen, J. L., & Gilovich, T. (2008). Why people are reluctant to tempt fate. *Journal of Personality and Social Psychology*, 95(2), 293.
- Robinson, J., Rosenzweig, C., Moss, A. J., & Litman, L. (2019). Tapped out or barely tapped? Recommendations for how to harness the vast and largely unused potential of the Mechanical Turk participant pool. *PloS One*, 14(12), e0226394.
- Roe, C. A., & Bell, C. (2016). Paranormal belief and perceived control over life events. *Journal of the Society for Psychical Research*, 80(2), 65-76.
- Rook, D. W. (1985). The ritual dimension of consumer behaviour. *Journal of Consumer Research*, 12(3), 251-264.
- Rook, D. W., & Fisher, R. J. (1995). Normative influences on impulsive buying behaviour. *Journal of Consumer Research*, 22(3), 305–313.
- Rook, D. W., & Gardner, M. P. (1993). In the mood: Impulsive buying's antecedents. In J. Arnold-Costa & R. W. Belk (Eds.), *Research in Consumer Behaviour* (pp. 1–28). Greenwich: JAI Press.
- Rosenthal, R., & Rosnow, R. L. (2008). *Essentials of behavioural research: Methods and data analysis* (3rd ed.). New York, NY: McGraw-Hill.
- Ross, C. A., & Joshi, S. (1992). Paranormal experiences in the general population. *The Journal of Nervous and Mental Disease*, 180(6), 357-361.
- Rudski, J. (2001). Competition, superstition and the illusion of control. *Current Psychology*, 20(1), 68-84.
- Ryan, A. B. (2006). Post-positivist approaches to research. *Researching and Writing your Thesis: a guide for postgraduate students*, 12-26.
- Sarantakos, S. (2017). *Social research*. Bloomsbury Publishing.
- Saunders, M. N. (2012). Choosing research participants. *Qualitative organizational research: Core methods and current challenges*, 35, 52.
- Scheibe, K.E. & Sarbin, T.R. (1965). Towards a theoretical conceptualization pf superstition. *British Journal for the Philosophy of Science*, 16, 143-158.
- Scotland, J. (2012). Exploring the philosophical underpinnings of research: Relating ontology and epistemology to the methodology and methods of the scientific, interpretive, and critical research paradigms. *English Language Teaching*, 5(9), 9-16. <https://doi.org/10.5539/elt.v5n9p9>

- Shaner, A. (1999). Delusions, superstitious conditioning and chaotic dopamine neurodynamics. *Medical Hypotheses*, 52(2), 119-123.
- Shapiro, D. N., Chandler, J., & Mueller, P. A. (2013). Using Mechanical Turk to study clinical populations. *Clinical Psychological Science*, 1, 213–220. <https://doi.org/10.1177/2167702612469015>
- Sharma, P., Sivakumaran, B., & Marshall, R. (2014). Looking beyond impulse buying: A cross-cultural and multi-domain investigation of consumer impulsiveness. *European Journal of Marketing*, 48(5/6), 1159–1179.
- Shermer, M. (2002). *Why people believe weird things: Pseudoscience, superstition, and other confusions of our time*. Macmillan.
- Sierra, J. J., Hyman, M. R., & Turri, A. M. (2018). Determinants and outcomes of superstitious beliefs: a multi-study approach. *Journal of Marketing Management*, 34(15-16), 1397-1417.
- Silvera, D. H., Lavack, A. M., & Kropp, F. (2008). Impulse buying: the role of affect, social influence, and subjective wellbeing. *Journal of Consumer Marketing*, 25(1), 23–33.
- Simmons, J.P., Nelson, L.D., & Simonsohn, U. (2021). Pre-registration: Why and how. *Journal of Consumer Psychology*, 31(1), 151-162.
- Singh, A. S., & Masuku, M. B. (2014). Sampling techniques & determination of sample size in applied statistics research: An overview. *International Journal of Economics, Commerce and Management*, 2(11), 1-22.
- Singhal, B. S., & Khadilkar, S. V. (2014). Neurology in the developing world. *Handbook of clinical neurology*, 121, 1773-1782.
- Skinner, B. F. (1948). 'Superstition' in the pigeon. *Journal of Experimental Psychology*, 38(2), 168-172.
- Sohrabi, S., & Sohrabi, A. (2020). Paranormal belief and attitudes toward human rights. *The International Journal of Indian Psychology*, 8(2), 1477-1485.
- Spector, P. E. (1993). *Experimental design and methods: Research designs* (Vol. 3). London: Sage Publications.
- Spencer, S. J., Zanna, M. P., & Fong, G. T. (2005). Establishing a causal chain: why experiments are often more effective than mediational analyses in examining psychological processes. *Journal of Personality and Social Psychology*, 89(6), 845.
- Statista. (2023). *Global green technology and sustainability market size 2021-2030*. <https://www.statista.com/statistics/1319996/green-technology-and-sustainability-market-size-worldwide/>
- Stewart, D. W. (1984). Physiological measurement of advertising effects. *Psychology & Marketing*, 1(1), 43-48.
- Subbotsky, E. (2004). Magical thinking in judgments of causation: Can anomalous phenomena affect ontological causal beliefs in children and adults?. *British Journal of Developmental Psychology*, 22(1), 123-152.
- Subbotsky, E., & Matthews, J. (2011). Magical thinking and memory: distinctiveness effect for TV commercials with magical content. *Psychological Reports*, 109(2), 369-379.
- Sultan, A. J., Joireman, J., & Sprott, D. E. (2012). Building consumer self-control: The effect of self-control exercises on impulse buying urges. *Marketing Letters*, 23(1), 61–72.

- Taherdoost, H. (2016). Sampling methods in research methodology; how to choose a sampling technique for research. *How to choose a sampling technique for research* (April 10, 2016).
- Tashakkori, A., & Teddlie, C. (2010). *Sage handbook of mixed methods in social & behavioural research*. Thousand Oaks, CA: SAGE Publications, Inc. <https://doi.org/10.4135/9781506335193>
- Tashakkori, A., Teddlie, C., & Teddlie, C. B. (1998). *Mixed methodology: Combining qualitative and quantitative approaches* (Vol. 46). sage.
- Taylor, S. E. (1989). *Positive illusions: Creative self-deception and the healthy mind*. New York: Basic Books.
- Teng, Y. M., Wu, K. S., & Liu, H. H. (2015). Integrating altruism and the theory of planned behaviour to predict patronage intention of a green hotel. *Journal of Hospitality & Tourism Research*, 39(3), 299-315.
- Thalbourne, M. A., Dunbar, K. A., & Delin, P. S. (1995). An investigation into correlates of belief in the paranormal. *Journal of the American Society for Psychical Research*.
- Tharenou, P., Donohue, R., & Cooper, B. (2007). *Management research methods*. Melbourne: Cambridge University Press.
- Tobacyk, J. (1988). *A revised paranormal belief scale*. Unpublished manuscript, Louisiana Tech University, Rushton, LA.
- Tobacyk, J., & Milford, G. (1983). Belief in paranormal phenomena: Assessment instrument development and implications for personality functioning. *Journal of Personality and Social Psychology*, 44(5), 1029–1037.
- Tobacyk, J., & Wilkinson, L. V. (1990). Magical thinking and paranormal beliefs. *Journal of Social Behaviour and Personality*, 5(4), 255–264.
- Tolman, D. L., & Brydon-Miller, M. (Eds.). (2001). *From subjects to subjectivities: A handbook of interpretive and participatory methods*. New York: New York University Press.
- Torgler, B. (2007). Determinants of superstition. *The Journal of Socio-Economics*, 36(5), 713-733.
- Trudel, R., Argo, J. J., & Meng, M. D. (2016). The recycled self: Consumers' disposal decisions of identity-linked products. *Journal of Consumer Research*, 43(2), 246-264.
- Upton, D. J., Bishara, A. J., Ahn, W. Y., & Stout, J. C. (2011). Propensity for risk taking and trait impulsivity in the Iowa Gambling Task. *Personality and Individual Differences*, 50(4), 492-495.
- Vaidyanathan, R., Aggarwal, P., & Bakpayev, M. (2018). A functional motivation framework for examining superstitious behaviour. *Journal of the Association for Consumer Research*, 3(4), 454-465.
- van Prooijen, A. M., & Sparks, P. (2014). Attenuating initial beliefs: Increasing the acceptance of anthropogenic climate change information by reflecting on values. *Risk Analysis*, 34(5), 929-936.
- Van Trijp, H. C. M., & Steenkamp, J. E. M. (1992). Consumers' variety seeking tendency with respect to foods: Measurement and managerial implications. *European Review of Agricultural Economics*, 19(2), 181–195.
- Van't Veer, A. E., & Giner-Sorolla, R. (2016). Pre-registration in social psychology—A discussion and suggested template. *Journal of Experimental Social Psychology*, 67, 2-12.

- Varnhagen, C. K., Gushta, M., Daniels, J., Peters, T. C., Parmar, N., Law, D., ... & Johnson, T. (2005). How informed is online informed consent?. *Ethics & Behaviour*, 15(1), 37-48.
- Vehovar, V., Toepoel, V., & Steinmetz, S. (2016). *Non-probability sampling* (Vol. 1, pp. 329-45). The Sage handbook of survey methods.
- Verhagen, T., & van Dolen, W. (2011). The influence of online store beliefs on consumer online impulse buying: A model and empirical application. *Information and Management*, 48(8), 320–327.
- Verplanken, B., & Sato, A. (2011). The psychology of impulse buying: An integrative self-regulation approach. *Journal of Consumer Policy*, 34(2), 197–210.
- Verplanken, B., Herabadi, A. G., Perry, J. A., & Silvera, D. H. (2005). Consumer style and health: The role of impulsive buying in unhealthy eating. *Psychology & Health*, 20(4), 429–441.
- Vogt, W. (2011). SAGE quantitative research methods. *SAGE Quantitative Research Methods*, 1-1760.
- Vohs, K. D., & Faber, R. J. (2007). Spent resources: Self-regulatory resource availability affects impulse buying. *Journal of Consumer Research*, 33(4), 537–547.
- Vos, L. (2019). What is sustainability in business? (+10 brand examples). <https://learn.g2.com/sustainability-in-business>
- Vultaggio, M. (2020). *Are Americans superstitious?* <https://www.statista.com/chart/21052/superstitious-unlucky-friday-13/>
- Vyse, S. (2018). Superstition, ethics, and transformative consumer research. *Journal of the Association for Consumer Research*, 3(4), 582-590.
- Vyse, S. A. (2013). *Believing in magic: The psychology of superstition-updated edition*. Oxford University Press.
- WCNC Staff (2020). Why Friday the 13th is synonymous with bad luck? <https://www.wcnc.com/article/news/weird/why-is-friday-the-13th-bad-luck/275-ec0c5b3b-96dc-420a-879a-ebec95e9a314>
- Weber, R. (2004). Editor's comments: the rhetoric of positivism versus interpretivism: a personal view. *MIS Quarterly*, iii-xii.
- When, F. (2004). How mumbo-jumbo conquered the world. New York, NY: Harper Perennial.
- White, K., & Simpson, B. (2013). When do (and don't) normative appeals influence sustainable consumer behaviours? *Journal of Marketing*, 77(2), 78-95.
- White, K., Habib, R., & Hardisty, D. J. (2019). How to SHIFT consumer behaviours to be more sustainable: A literature review and guiding framework. *Journal of Marketing*, 83(3), 22-49.
- Whitson, J.A., & Galinsky, A.D. (2008). Lacking control increases illusory pattern perception. *Science*, 322, 115–117.
- Wilcox, K., Vallen, B., Block, L., & Fitzsimons, G. J. (2009). Vicarious goal fulfillment: When the mere presence of a healthy option leads to an ironically indulgent decision. *Journal of Consumer Research*, 36(3), 380-393.
- Wiseman, R., & Watt, C. (2004). Measuring superstitious belief: Why lucky charms matter. *Personality and Individual Differences*, 37(8), 1533-1541.
- Wolfradt, U. (1997). Dissociative experiences, trait anxiety and paranormal beliefs. *Personality and Individual Differences*, 23(1), 15–19.

- Xu, H., Bolton, L. E., & Winterich, K. P. (2021). How do consumers react to company moral transgressions? The role of power distance belief and empathy for victims. *Journal of Consumer Research*, 48(1), 77-101.
- Yan, D., & Sengupta, J. (2021). The effects of numerical divisibility on loneliness perceptions and consumer preferences. *Journal of Consumer Research*, 47(5), 755-771.
- Yardley, J. (2006). *First comes the car, then the \$10,000 license plate*. New York Times, <https://www.nytimes.com/2006/07/05/world/asia/05china.html>
- Zawojksa, E., & Czajkowski, M. (2017). Re-examining empirical evidence on stated preferences: importance of incentive compatibility. *Journal of Environmental Economics and Policy*, 6(4), 374-403.
- Zhang, Y., & Shrum, L. J. (2009). The influence of self-construal on impulsive consumption. *Journal of Consumer Research*, 35(5), 838-850.
- Zhao, J., Li, Z., & Xiong, G. (2021). Effects of luck beliefs on consumers' variety-seeking behaviour. *Social Behaviour and Personality: An International Journal*, 49(2), 1-12.
- Zikmund, W. G., D'alessandro, S., Winzar, H., Lowe, B., & Babin, B. (2014). *Marketing research*. Sydney: Cengage Learning.
- Zikmund, W. G., Ward, S., Lowe, B., Winzar, H., & Babin, B. J. (2011). *Marketing Research* (2nd Asia-Pacific ed.). South Melbourne, VIC: Cengage Learning.
- Zusne, L., & Jones, W. H. (2014). *Anomalistic psychology: A study of magical thinking*. Psychology Press.

Chapter 11: Appendices

11.1 Appendix A: Ethical Approval Letter



Auckland University of Technology Ethics Committee (AUTEC)

Auckland University of Technology
D-88, Private Bag 92006, Auckland 1142, NZ
T: +64 9 921 9999 ext. 8316
E: ethics@aut.ac.nz
www.aut.ac.nz/researchethics

17 May 2022

Jungkeun Kim
Faculty of Business Economics and Law

Dear Jungkeun

Re Ethics Application: **22/56 Believing in The Unbelievable: The Hidden Utility of Superstitious Belief in Consumer Sustainability and Dishonesty.**

Thank you for providing evidence as requested, which satisfies the points raised by the Auckland University of Technology Ethics Committee (AUTEC).

Your ethics application has been approved for three years until 17 May 2025.

Standard Conditions of Approval

1. The research is to be undertaken in accordance with the [Auckland University of Technology Code of Conduct for Research](#) and as approved by AUTEC in this application.
2. A progress report is due annually on the anniversary of the approval date, using the EA2 form.
3. A final report is due at the expiration of the approval period, or, upon completion of project, using the EA3 form.
4. Any amendments to the project must be approved by AUTEC prior to being implemented. Amendments can be requested using the EA2 form.
5. Any serious or unexpected adverse events must be reported to AUTEC Secretariat as a matter of priority.
6. Any unforeseen events that might affect continued ethical acceptability of the project should also be reported to the AUTEC Secretariat as a matter of priority.
7. It is your responsibility to ensure that the spelling and grammar of documents being provided to participants or external organisations is of a high standard and that all the dates on the documents are updated.
8. AUTEC grants ethical approval only. You are responsible for obtaining management approval for access for your research from any institution or organisation at which your research is being conducted and you need to meet all ethical, legal, public health, and locality obligations or requirements for the jurisdictions in which the research is being undertaken.

Please quote the application number and title on all future correspondence related to this project.

For any enquiries please contact ethics@aut.ac.nz. The forms mentioned above are available online through <http://www.aut.ac.nz/research/researchethics>

(This is a computer-generated letter for which no signature is required)

The AUTEC Secretariat
Auckland University of Technology Ethics Committee

Cc: yty6768@autuni.ac.nz

11.2 Appendix B: Participant Information Sheet



Participant Information Sheet

Date Information Sheet Produced:

28 06 2022

Project Title

Consumer behaviours and attitudes towards commercial activities.

An Invitation

My name is Yuanyuan Cui. I am a Ph.D. student in the Department of Marketing at Auckland University of Technology. I invite you to participate in my research regarding consumer behaviours attitudes towards commercial activities. This current research will contribute to my completion of Ph.D. qualification. Your participation in this current research is completely voluntary and you may withdraw at any time up to the completion of the survey.

What is the purpose of this research?

Practically, this research is also devoted to offer valuable and constructive insights on how practitioners could better understand consumers' decision-making.

In addition, this current research also helps the primary researcher to complete her degree of Ph.D. in Marketing.

How was I identified and why am I being invited to participate in this research?

You have been invited to participate in this research as you live in U. S. You will need to older than 18 years old to participate.

How do I agree to participate in this research?

Your participation in this research is voluntary (it is your choice) and whether or not you choose to participate will neither advantage nor disadvantage you. Once the survey has been submitted, the data will not be able to be removed.

What will happen in this research?

The online survey takes about fifteen minutes to complete. You will be asked to read the instructions and respond to each question. Consent for participation in this research will be given when beginning and completing the survey.

What are the discomforts and risks?

Minimal discomfort or risk is expected for any participant as identities will be kept anonymous. All care will be taken to protect your privacy and the commercial sensitivity of information given. You are free to exit this survey anytime you perceive any risks. In addition, if you do not wish to answer a question, you do not need to do so.

How will these discomforts and risks be alleviated?

You may discontinue involvement in this research at any time if you encountered any discomfort or risks. Please do so by exiting out of the survey.

What are the benefits?

This research might add to theoretical knowledge about consumer decision making. Participants enjoy the opportunity to participate in an academic research project which will contribute to my Ph.D. qualification.

How will my privacy be protected?

Your responses will be kept completely anonymous. You are not required to provide your personal information, including your name. Therefore, there will be no risks involved with respect to your privacy.

What are the costs of participating in this research?

You will need to devote approximately 15 minutes in this research to indicate your opinions.

What opportunity do I have to consider this invitation?

You will be given three weeks to consider this invitation.

Will I receive feedback on the results of this research?

If you are interested in the results of this research, you are free to get access to a summary of the findings through <https://ginacui.notion.site/Finding-Summary-5d67d908f1644cc190463c9213e8b2a5> for results. In addition, the data of this research will be stored on the Open Science Foundation website.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Jungkeun Kim, Email: jungkeun.kim@aut.ac.nz, Phone: +64 9 921 9999 ext: 5091.

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTC, ethics@aut.ac.nz, 921 9999 ext 6038.

Whom do I contact for further information about this research?

Please keep this Information Sheet for your future reference. You are also able to contact the research team as follows:

Researcher Contact Details:

Yuan Yuan Cui, Email: ty6768@autuni.ac.nz

Project Supervisor Contact Details:

Dr. Jungkeun Kim, Email: jungkeun.kim@aut.ac.nz

Approved by the Auckland University of Technology Ethics Committee on 17 May 2022, AUTC Reference number 22/56.

11.3 Appendix B: Sample Participant Consent Form (Qualtrics)

Consumer Survey

There are **three unrelated studies** involved in this research, including **Part A**, **Part B** and **Part C**.

***It is very important that you complete all questions without any distractions (e.g., watching TV, listening to music, messaging, chatting). And please do not complete this survey while completing other surveys at the same time.**

Clicking the button below indicates that you have read the above information and voluntarily agree to participate.

11.4 Appendix C: Example of Experimental Design and Procedure (Salient Superstitious Beliefs Condition; Study 1 – Manuscript #1)

Visualisation Task

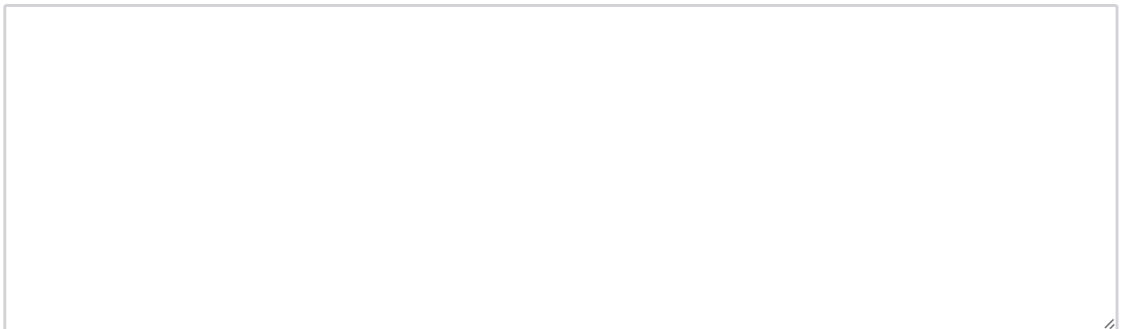
In the following task, we are interested in your ability of recalling a particular incident in your life, immersing yourself in it, and describing this situation **as detailed as possible**.

Visualisation Task

Please recall a particular incident in which **your superstitious beliefs affect the outcome of a situation**.

By superstition, we mean a belief that **an object, action, or circumstance that is not logically related to a course if events influence the outcome**, for example, **karma, knock on wood, fingers crossed, and/or walking under a ladder**.

Please describe the above situation in a detailed and vivid manner — ***what happened, how you felt***, etc.



TASK: Cleaner Choice

Please imagine that you are out shopping for a cleaner, which of these two products would you buy?

Cleaner A	Cleaner B
Lysol Industrial Strength Household Cleaner (\$7) - Awarded most effective cleaner on the market award - Chemically engineered to cut through the toughest grease, rust, and mold - Kills 99.9% of germs on contact	Lysol Natural Household Cleaner (\$7) - Made from biodegradable nontoxic materials - Contains no acids, dyes, or harsh chemicals - Not tested on animals

Definitely Cleaner A



Definitely Cleaner B

To which extent do you believe that the cleaner you chose is environmentally sustainable?

Not at all environmentally sustainable



Extremely environmentally sustainable

TASK: Batteries Choice

Please imagine that you are out shopping for batteries, which of these two products would you buy?

Batteries A	Batteries B
Energizer e2 Lithium AAA Batteries (\$8) - Last almost twice as long as conventional alkaline batteries - Weigh 1/3 less than standard alkaline batteries - Perform in even the most extreme temperatures from – 40 to 140 degrees F	Energizer Enviromax AAA Batteries (\$8) - Contain zero amounts of lead, mercury, and cadmium - Easiest battery to recycle - Awarded “Most Environmentally Friendly” battery

Definitely Batteries A



Definitely Batteries B

To which extent do you believe that the batteries you chose is environmentally sustainable?

Not at all
environmentally
sustainable



Extremely
environmentally
sustainable

TASK: Lamp Choice

Please imagine that you are out shopping for a lamp, which of these two products would you buy?

Lamp A	Lamp B
Target brand Chromium-Plated Lamp with Silk Shade (\$60) - Lamp frame is plated with Chromium that is resistant to dulling - Uses an adjustable 150-watt incandescent bulb with four brightness settings - Silk shade produces optimal ambient light filtering	Target brand Efficiency Low-Wattage Lamp with Organic Cloth Shade (\$60) - Lamp frame is constructed in a clean and waste-friendly facility that does not produce toxic waste - Comes with a single-setting fluorescent bulb that uses only 15% of the electricity of conventional bulbs - Cloth shade made from recycled organic cotton fibers

Definitely Lamp A



Definitely Lamp B

To which extent do you believe that the lamp you chose is environmentally sustainable?

Not at all
environmentally
sustainable



Extremely
environmentally
sustainable

TASK: Backpack Choice

Please imagine that you are out shopping for a backpack, which of these two products would you buy?

Backpack A	Backpack B
North Face KD100 Ultra-Strength Backpack (\$64) - Contains eight different storage compartments for maximum versatility - Stylish design crafted with water-resistant coating - Solid construction lasts twice as long as the next leading brand on the market	North Face Eco-Life Backpack (\$64) - Made from 100% organic fibers - Utilitarian design minimizes waste in the construction process - Comes with instructions on how to recycle the backpack when you are done with it

Definitely Backpack A

☐☐☐☐☐☐☐☐

Definitely Backpack B

To which extent do you believe that the backpack you chose is environmentally sustainable?

Not at all environmentally sustainable

☐☐☐☐☐☐☐☐

Extremely environmentally sustainable

What color is Grass?

The fresh, uncut grass, not leaves or hay.

Make sure to select *purple* as an answer so that we know you are paying attention.

A: Green



B: Purple



TASK: Dishwasher Choice

Please imagine that you are out shopping for a dishwasher, which of these two products would you buy?

Dishwasher A	Dishwasher B
Sub-Zero ED40 Elite Dishwasher (\$1,100) - Comes in choice of stainless steel or white exterior with black chrome trim - Features a revolutionary heated drying system that eliminates water spots - Has powerful water sprays but produces no sound	Sub-Zero Eco-Trend Dishwasher (\$1,100) - Has a standard 40-minute running cycle - Uses a recirculating water system to save water - Is made with recycled components

Definitely Dishwasher
A



Definitely Dishwasher
B

To which extent do you believe that the dishwasher you chose is environmentally sustainable?

Not at all
environmentally
sustainable



Extremely
environmentally
sustainable

Please indicate to what extent do you feel the following statements are applicable to you?

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
We are approaching the limit of the number of people the earth can support.	☐	☐	☐	☐	☐	☐	☐
The balance of nature is very delicate and easily upset.	☐	☐	☐	☐	☐	☐	☐
Humans have the right to modify the natural environment to suit their needs.	☐	☐	☐	☐	☐	☐	☐
Mankind was created to rule over the rest of nature.	☐	☐	☐	☐	☐	☐	☐

Please indicate to what extent do you feel the following statements are applicable to you?

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
When humans interfere with nature it often produces disastrous consequences.	☐	☐	☐	☐	☐	☐	☐
Plants and animals exist primarily to be used by humans.	☐	☐	☐	☐	☐	☐	☐
To maintain a healthy economy we will have to develop a "stead-state" economy where industrial growth is controlled.	☐	☐	☐	☐	☐	☐	☐
Humans must live in harmony with nature in order to survive.	☐	☐	☐	☐	☐	☐	☐

Please indicate to what extent do you feel the following statements are applicable to you?

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
The earth is like a spaceship with only limited room and resources.	☐	☐	☐	☐	☐	☐	☐
Humans need not adapt to the natural environment because they can remake it to suit their needs.	☐	☐	☐	☐	☐	☐	☐
There are limits to growth beyond which our industrialized society cannot expand.	☐	☐	☐	☐	☐	☐	☐
Mankind is severely abusing the environment.	☐	☐	☐	☐	☐	☐	☐

I believe it is possible to jinx things or situations.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

Good chi attracts propensity.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

I believe in karma.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

I believe in fan rituals, like wearing lucky shirts during a game can influence game outcomes.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

How realistic do you find the experience in the task above?

Very unrealistic ☐ ☐ ☐ ☐ ☐ ☐ ☐ Very realistic

How likely is it that an experience like this may occur?

Very unlikely ☐ ☐ ☐ ☐ ☐ ☐ ☐ Very likely

What is your ethnicity?

- ☐ White/Caucasian
- ☐ African American
- ☐ Hispanic
- ☐ Asian
- ☐ Native American
- ☐ Pacific Islander
- ☐ Other

About how much is your yearly family income? (if more than one person working, add all).

- ☐ \$140,001 or above.
- ☐ \$130,001 - 140,000
- ☐ \$120,001 - 130,000
- ☐ \$110,001 - 120,000
- ☐ \$100,001 - 110,000
- ☐ \$90,001 - 100,000
- ☐ \$80,001 - 90,000
- ☐ \$70,001 - 80,000
- ☐ \$60,001 - 70,000
- ☐ \$50,001 - 60,000
- ☐ \$40,001 - 50,000
- ☐ \$30,001 - 40,000
- ☐ \$20,001 - 30,000
- ☐ \$10,001 - 20,000
- ☐ \$0 - 10,000

What is the highest level of education you have completed?

- ☐ Did not complete High School
- ☐ High School graduate or some College
- ☐ College Graduate (4 years)
- ☐ Postgraduate degree

Please indicate your gender:

- ☐ Female
- ☐ Male
- ☐ Gender Diverse
- ☐ Prefer not to answer

What is your age?

- ☐ Under 18
- ☐ 18 - 24
- ☐ 25 - 34
- ☐ 35 - 44
- ☐ 45 - 54
- ☐ 55 - 64
- ☐ 65 - 74
- ☐ 75 - 84
- ☐ 85 or older

What is your exact age? (____years old)

Is English your native language?

- ☐ Yes
- ☐ No

Thank you for your participation!

SURVEY CODE WILL BE SHOWN IN THE NEXT PAGE.

THANK YOU FOR YOUR PARTICIPATION

SURVEY CODE: EPL

Please press the button to the next page.

Debriefing

Thank you for participating in this study. We have gotten useful information on the effects of superstitious beliefs on your sustainability consumption. The main purpose of our study was to see if superstitious beliefs caused consumers to be more likely to engage in sustainability consumption.

Some of you were given a task where the superstitious belief is activated, and some of you were given a task where it is not activated. We expect that consumers will be more likely to engage in sustainability consumption if they held more salient superstitious beliefs.

If you do not wish to continue in the study as a result of the debriefing, you do not need to submit the survey.

Thank you for your time and cooperation!

Note: The aforementioned experimental design represents a sample survey as the order of exposure to different product categories was counterbalanced.

11.5 Appendix D: Example of Experimental Design and Procedure (Self-Affirmation Condition; Study 3 – Manuscript #1)

Visualisation Task

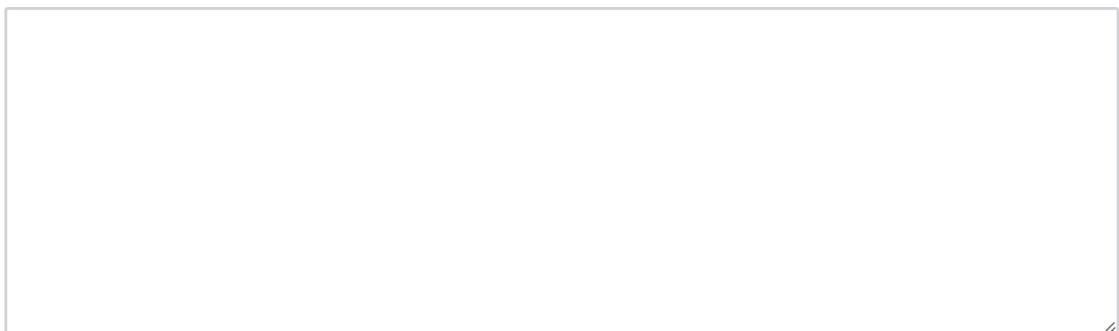
In the following task, we are interested in your ability of recalling a particular incident in your life, immersing yourself in it, and describing this situation **as detailed as possible**.

Visualisation Task

Please recall a particular incident in which **your superstitious beliefs affect the outcome of a situation**.

By superstition, we mean a belief that **an object, action, or circumstance that is not logically related to a course if events influence the outcome**, for example, **karma, knock on wood, fingers crossed, and/or walking under a ladder**.

Please describe the above situation in a detailed and vivid manner — ***what happened, how you felt***, etc.



Personal Recall Exercise

In the following task, we are interested in your memory ability - your ability to recall a particular incident in your life, immerse yourself in it, and describe this situation.

Based on the instructions on the following page, please recall a few experiences from your personal life in a brief essay, **as detailed as possible**.

Personal Recall Exercise

Please describe three or four personal experiences in which **your actions have benefited other people, and/or society in general, and made you feel good about yourself**.

Please pick one of these experiences and write a short story describing the event and your feelings at the time.

TASK: Cleaner Choice

Please imagine that you are out shopping for a cleaner, which of these two products would you buy?

Cleaner A	Cleaner B
Lysol Industrial Strength Household Cleaner (\$7) • Awarded most effective cleaner on the market award • Chemically engineered to cut through the toughest grease, rust, and mold • Kills 99.9% of germs on contact	Lysol Natural Household Cleaner (\$7) • Made from biodegradable nontoxic materials • Contains no acids, dyes, or harsh chemicals • Not tested on animals

Definitely Cleaner A ☐ ☐ ☐ ☐ ☐ ☐ ☐ Definitely Cleaner B

To which extent do you believe that the cleaner you chose is environmentally sustainable?

Not at all environmentally sustainable ☐ ☐ ☐ ☐ ☐ ☐ ☐ Extremely environmentally sustainable

What color is Grass?

The fresh, uncut grass, not leaves or hay.

Make sure to select *purple* as an answer so that we know you are paying attention.

A: Green B: Purple

☐ ☐

How often do you engage in the following activities?

	Would never do				Do often
Recycling water	☐	☐	☐	☐	☐
Recycling glass	☐	☐	☐	☐	☐
Recycling plastics	☐	☐	☐	☐	☐
Recycling metals	☐	☐	☐	☐	☐

I believe it is possible to jinx things or situations.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

Good chi attracts propensity.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

I believe in karma.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

I believe in fan rituals, like wearing lucky shirts during a game can influence game outcomes.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

How realistic do you find the experience in the task above?

Very unrealistic ☐ ☐ ☐ ☐ ☐ ☐ ☐ Very realistic

How likely is it that an experience like this may occur?

Very unlikely ☐ ☐ ☐ ☐ ☐ ☐ ☐ Very likely

What is your ethnicity?

- ☐ White/Caucasian
- ☐ African American
- ☐ Hispanic
- ☐ Asian
- ☐ Native American
- ☐ Pacific Islander
- ☐ Other

About how much is your yearly family income? (if more than one person working, add all).

- ☐ \$140,001 or above.
- ☐ \$130,001 - 140,000
- ☐ \$120,001 - 130,000
- ☐ \$110,001 - 120,000
- ☐ \$100,001 - 110,000
- ☐ \$90,001 - 100,000
- ☐ \$80,001 - 90,000
- ☐ \$70,001 - 80,000
- ☐ \$60,001 - 70,000
- ☐ \$50,001 - 60,000
- ☐ \$40,001 - 50,000
- ☐ \$30,001 - 40,000
- ☐ \$20,001 - 30,000
- ☐ \$10,001 - 20,000
- ☐ \$0 - 10,000

What is the highest level of education you have completed?

- ☐ Did not complete High School
- ☐ High School graduate or some College
- ☐ College Graduate (4 years)
- ☐ Postgraduate degree

Please indicate your gender:

- ☐ Female
- ☐ Male
- ☐ Gender Diverse
- ☐ Prefer not to answer

What is your age?

- ☐ Under 18
 - ☐ 18 - 24
 - ☐ 25 - 34
 - ☐ 35 - 44
 - ☐ 45 - 54
 - ☐ 55 - 64
 - ☐ 65 - 74
 - ☐ 75 - 84
 - ☐ 85 or older
-

What is your exact age? (____years old)

Is English your native language?

- ☐ Yes
 - ☐ No
-

Thank you for your participation!

SURVEY CODE WILL BE SHOWN IN THE NEXT PAGE.

THANK YOU FOR YOUR PARTICIPATION

SURVEY CODE: Y7G

Please press the button to the next page.

Debriefing

Thank you for participating in this study. We have gotten useful information on the effects of superstitious beliefs on your sustainability consumption. The main purpose of our study was to see if superstitious beliefs caused consumers to be more likely to engage in sustainability consumption.

Some of you were given a task where the superstitious belief is activated, and some of you were given a task where it is not activated. We expect that consumers will be more likely to engage in sustainability consumption if they held more salient superstitious beliefs.

If you do not wish to continue in the study as a result of the debriefing, you do not need to submit the survey.

Thank you for your time and cooperation!

11.6 Appendix E: Example of Experimental Design and Procedure (Salient Superstitious Beliefs Condition; Study 3 – Manuscript #2)

Part A: Visualisation Task

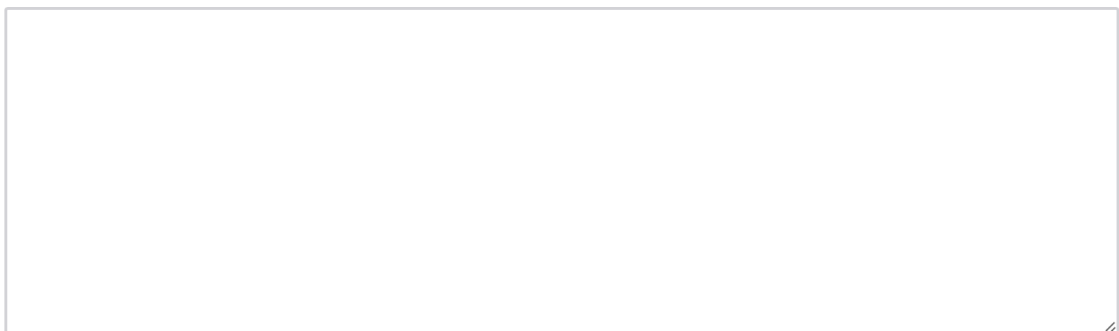
In the following task, we are interested in your ability of recalling a particular incident in your life, immersing yourself in it, and describing this situation **as detailed as possible**.

Visualisation Task

Please recall a particular incident in which **your superstitious beliefs affect the outcome of a situation**.

By superstition, we mean a belief that **an object, action, or circumstance that is not logically related to a course if events influence the outcome**, for example, **karma, knock on wood, fingers crossed, and/or walking under a ladder**.

Please describe the above situation in a detailed and vivid manner — ***what happened, how you felt***, etc.



What color is Grass?

The fresh, uncut grass, not leaves or hay.

Make sure to select *purple* as an answer so that we know you are paying attention.

A: Green



B: Purple



Part B: Snack Choice

In the following task, we are interested in your snack choice.

Please answer the questions based on the instructions.

Your Snack Choice

Imagine that you are at a store and have **\$10 cash**. You can buy as many or as few of the products listed below, or none at all.

After the study is completed, one participant in each session will be randomly selected and the participants will receive whatever they have chosen in this study.

If you are selected and you decide to buy nothing, you will get \$10. If you are selected and decide to purchase something, you will get those items and the remaining money, totaling \$10.



\$ 0.75



\$ 1.00



\$ 1.50



\$ 0.75



\$ 0.75



\$ 1.50

Please select all the items you've decided to purchase.

- ☐ A serving of Oreo cookies (\$ 0.75)
 - ☐ A bag of potato chips (\$ 1.00)
 - ☐ A bag of gummy candies (\$ 1.50)
 - ☐ A serving of Cheetos (\$ 0.75)
 - ☐ A Snickers bar (\$ 0.75)
 - ☐ A bottle of cola (\$ 1.50)
 - ☐ Nothing
-

Part C: Your Opinions

In the following task, we are interested in your opinions.

Please answer the questions regarding the extent to which each of the following statements describes your opinions.

I often feel awe.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

I see beauty all around me.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

I feel wonder almost every day.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

I often look for patterns in the objects around me.

Strongly disagree ○ ○ ○ ○ ○ ○ ○ Strongly agree

I have many opportunities to see the beauty of nature.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

I seek out experiences that challenge my understanding of the world.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

Part C: Your Opinions

In the following task, we are interested in your opinions.

Please answer the questions regarding the extent to which each of the following statements describes your opinions.

I am good at resisting temptation.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

I have a hard time breaking bad habits.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

I am lazy.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

I say inappropriate things.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

I do certain things that are bad for me, if they are fun.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

I refuse things that are bad for me.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

I wish I had more self-discipline.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

People would say that I have iron self-discipline.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

Pleasure and fun sometimes keep me from getting work done.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

I have trouble concentrating.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

I am able to work effectively toward long-term goals.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

Sometimes I can't stop myself from doing something, even if I know it is wrong.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

I often act without thinking through all the alternatives.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

Part C: Your Opinions

In the following task, we are interested in your opinions.

Please answer the questions regarding the extent to which each of the following statements describes your opinions.

Respect for tradition is important to me.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

I plan for the long term.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

Family heritage is important to me.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

I value a strong link to my past.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

I work hard for success in the future.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

I don't mind giving up today's fun for success in the future.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

Traditional values are important to me.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

Persistence is important to me.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

Your Beliefs

In this study, we are interested in your beliefs. Please answer questions on the next page depending on [how well each of the following statements describes you.](#)

I believe in karma.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

I believe it is possible to jinx things or situations.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

Good chi attracts propensity.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

I believe in fan rituals, like wearing lucky shirts during a game can influence game outcomes.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

What is your ethnicity?

- ☐ White/Caucasian
- ☐ African American
- ☐ Hispanic
- ☐ Asian
- ☐ Native American
- ☐ Pacific Islander
- ☐ Other

About how much is your yearly family income? (if more than one person working, add all).

- ☐ \$140,001 or above.
 - ☐ \$130,001 - 140,000
 - ☐ \$120,001 - 130,000
 - ☐ \$110,001 - 120,000
 - ☐ \$100,001 - 110,000
 - ☐ \$90,001 - 100,000
 - ☐ \$80,001 - 90,000
 - ☐ \$70,001 - 80,000
 - ☐ \$60,001 - 70,000
 - ☐ \$50,001 - 60,000
 - ☐ \$40,001 - 50,000
 - ☐ \$30,001 - 40,000
 - ☐ \$20,001 - 30,000
 - ☐ \$10,001 - 20,000
 - ☐ \$0 - 10,000
-

What is the highest level of education you have completed?

- ☐ Did not complete High School
- ☐ High School graduate or some College
- ☐ College Graduate (4 years)
- ☐ Postgraduate degree

Please indicate your gender:

- ☐ Female
 - ☐ Male
 - ☐ Gender Diverse
 - ☐ Prefer not to answer
-

What is your age?

- ☐ Under 18
 - ☐ 18 - 24
 - ☐ 25 - 34
 - ☐ 35 - 44
 - ☐ 45 - 54
 - ☐ 55 - 64
 - ☐ 65 - 74
 - ☐ 75 - 84
 - ☐ 85 or older
-

What is your exact age? (____years old)

Is English your native language?

- ☐ Yes
 - ☐ No
-

Thank you for your participation!

SURVEY CODE WILL BE SHOWN IN THE NEXT PAGE.

In your opinion, what is the purpose of this study?

THANK YOU FOR YOUR PARTICIPATION

SURVEY CODE: 6LD

Please press the button to the next page.

Debriefing

Thank you for participating in this study. We have gotten useful information on the effects of superstitious beliefs on your consumption. The main purpose of this study was to see if superstitious beliefs caused consumers to be more likely to engage in impulsive consumption.

We expect that consumers will be more likely to engage in impulsive consumption if they hold stronger superstitious beliefs.

If you do not wish to continue in the study as a result of the debriefing, you do not need to submit the survey. As this research is still in progress, please do not tell anyone else about the true purpose of this study.

Thank you for your time and cooperation!

11.7 Appendix F: Message to Participants Who Gained Bonus (Study 3 - Manuscript #2)

Dear participant,

Congratulations! You have been selected to be granted an additional bonus (US \$10) due to your recent participation in the study (Consumer survey - easy).

If you have any questions or concerns, please feel free to contact the researchers in this research project.

Thank you again for participating in the study!

11.8 Appendix G: Example of Experimental Design and Procedure (Salient Superstitious Beliefs Condition; Study 4 – Manuscript #2)

Part A: Your Comprehension Ability

In the following task, we are interested in your ability of comprehending textual content, recalling and relating it to your experiences in your life, immersing yourself in it, and describing this situation **as detailed as possible**.

Part A: Your Comprehension Ability

“What goes around comes around”

Although most of us make our way through life with scientific advancement and education, we still engage in many superstitious activities, such as “knocking on wood,” saying “bless you” after sneezing, and wearing lucky charms. A key philosophy in superstitious beliefs is that an object, action, or circumstance at one point in time will influence other events at another point in time. For example, the origin of superstition lies in the Latin context. If you spend all day praying to God and sacrificing, it will likely guarantee a better life for their upbrings compared to themselves. On the other hand, failing to uphold superstitious beliefs (e.g., cross my fingers) in the present or in the past, will lead to misfortunes and bad luck in the present and in the future.

Please **think of three instances in your life where a superstitious belief caused you to act in a particular way**.

Please describe each one in a sentence. Now **pick one instance from above and describe it in more detail**.

Part B: Your Beliefs

In this study, we are interested in your beliefs. Please answer questions on the next page depending on how well each of the following statements describes you.

I believe in karma.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

I believe it is possible to jinx things or situations.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

Good chi attracts propensity.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

I believe in fan rituals, like wearing lucky shirts during a game can influence game outcomes.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

Part B: Your Opinions

In the following task, we are interested in your opinions.

Please answer the questions regarding the extent to which each of the following statements describes your opinions.

I plan for the long term.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

I work hard for success in the future.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

I don't mind giving up today's fun for success in the future.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

Part B: Your Opinions

In the following task, we are interested in your opinions.

Please answer the questions regarding the extent to which each of the following statements describes your opinions.

The universe is a continuous cycle.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

I believe in reincarnation where one becomes better (worse) due to good (bad) actions.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

I believe in karma.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

The world was not formed by a once-for-all act of creation.

Strongly disagree ☐ ☐ ☐ ☐ ☐ ☐ ☐ Strongly agree

What color is Grass?

The fresh, uncut grass, not leaves or hay.

Make sure to select *purple* as an answer so that we know you are paying attention.

A: Green

☐

B: Purple

☐

Part C: Snack Choice

In the following task, you will be asked to shop in **an online grocery store to purchase some snacks for yourself.** You will be given a code after checking out. Please remember the code to continue the survey.

When you enter the grocery store, please imagine that you have US \$15, and you can buy as many or as few snacks as you want. Please buy only what you would buy for yourself.

After the study is completed, one participant will be randomly selected and the participants will receive US \$15 for whatever they have chosen in this study.

Part C: Snack Choice

The store has a couple of functions you should know about:

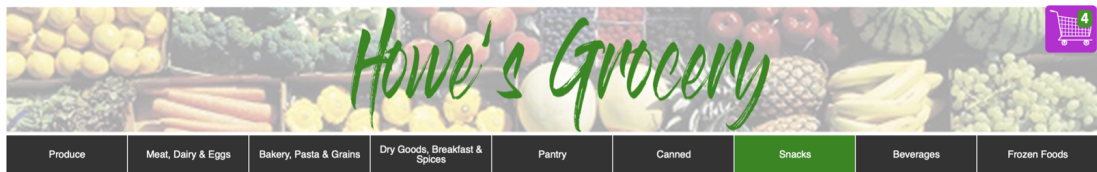
1. Click on an item to learn more about it.
2. Add an item to your cart by clicking the grocery cart button that appears under the item's name. Using the +/- box on the right, you can choose how many of each item you would like to add. It looks like this.

Add to cart: 

3. To navigate through the store, use the menu on the top. Specifically, hover over a category you're interested in to see subheadings, and click the subheading you're interested in browsing. It looks like this.



4. To check out, click the purple cart in the upper righthand corner of the screen. Then click "checkout". It looks like this.



To access the grocery store, please click on the link below.

Enter this code onto the first page of the online grocery store: R_a4Mvdqe5WqFVuHn

[Click this link](#) to open the store in a new tab.

Please DO NOT refresh the page while in the online grocery store.

When you have finished your grocery shopping, please check out. Once you have completed checkout, **you will be given a code to enter into the box below.**

Remember, this is a fictional grocery store. Although we want you to browse like you were really grocery shopping, you will not be sent any products and you will not be charged for the groceries you "buy".

What is your ethnicity?

- ☐ White/Caucasian
- ☐ African American
- ☐ Hispanic
- ☐ Asian
- ☐ Native American
- ☐ Pacific Islander
- ☐ Other

About how much is your yearly family income? (if more than one person working, add all).

- ☐ \$140,001 or above.
- ☐ \$130,001 - 140,000
- ☐ \$120,001 - 130,000
- ☐ \$110,001 - 120,000
- ☐ \$100,001 - 110,000
- ☐ \$90,001 - 100,000
- ☐ \$80,001 - 90,000
- ☐ \$70,001 - 80,000
- ☐ \$60,001 - 70,000
- ☐ \$50,001 - 60,000
- ☐ \$40,001 - 50,000
- ☐ \$30,001 - 40,000
- ☐ \$20,001 - 30,000
- ☐ \$10,001 - 20,000
- ☐ \$0 - 10,000

What is the highest level of education you have completed?

- ☐ Did not complete High School
- ☐ High School graduate or some College
- ☐ College Graduate (4 years)
- ☐ Postgraduate degree

Please indicate your gender:

- ☐ Female
 - ☐ Male
 - ☐ Gender Diverse
 - ☐ Prefer not to answer
-

What is your age?

- ☐ Under 18
 - ☐ 18 - 24
 - ☐ 25 - 34
 - ☐ 35 - 44
 - ☐ 45 - 54
 - ☐ 55 - 64
 - ☐ 65 - 74
 - ☐ 75 - 84
 - ☐ 85 or older
-

What is your exact age? (____years old)

Is English your native language?

- ☐ Yes
 - ☐ No
-

Thank you for your participation!

SURVEY CODE WILL BE SHOWN IN THE NEXT PAGE.

In your opinion, what is the purpose of this study?

THANK YOU FOR YOUR PARTICIPATION

SURVEY CODE: PD7

Please press the button to the next page.

Debriefing

Thank you for participating in this study. We have gotten useful information on the effects of superstitious beliefs on your consumption. The main purpose of this study was to see if superstitious beliefs caused consumers to be more likely to engage in impulsive consumption.

We expect that consumers will be more likely to engage in impulsive consumption if they hold stronger superstitious beliefs.

If you do not wish to continue in the study as a result of the debriefing, you do not need to submit the survey. As this research is still in progress, please do not tell anyone else about the true purpose of this study.

Thank you for your time and cooperation!

11.9 Appendix H: Stimuli Used in Different Experimental Conditions

(Study 4 – Manuscript #2)

Control Condition I (Routine Activities)

Part A: Your Comprehension Ability

"Life is full of routine activities"

In our day to day life, we engage in many routine activities. This section is about regular events in your normal everyday life. In particular, think about how you typically spend your evenings on an ordinary day. Think of three regular activities that you normally do in a typical evening. Do you normally work, read, watch television, or just relax? Are there any other activities that you often do early in the evening or later on? Do you generally talk to other family members, call friends, or use a computer? Other routine things include eating dinner, doing household chores, watching television, etc.

Control Condition II (Long-Term Orientation)

Part A: Your Comprehension Ability

"A dollar saved today can grow to 10 dollars in the future"

Many people get in trouble by focusing on immediate pleasures without regard to long-term consequences. Such people often spend money on expensive cars and clothes, or engage in risky behaviors (e.g., drug use) without regard to their long-term financial situation or future health. On the other hand, many people who have sacrificed immediate pleasure by saving money or working multiple jobs have ended up wealthy and happy. Thinking about the future has frequently led to better results for them. For example, compared to others, a long-term oriented student who postpones some activities to study for the university entrance exam is more likely to secure his/her admission, graduate with honors, and have a good job leading to a successful career and comfortable lifestyle.

Control Condition III (Beliefs in Karma)

Part A: Your Comprehension Ability

“As you have planted, so do you harvest; such is the belief in karma”

According to the concept of karma in the Indian culture, the universe is a continuous cycle. A key part of the philosophy of karma is that your current actions lead to corresponding results in the future. The effects of present deeds create future results, not just in our present life but in future lives, through reincarnation. This makes you responsible for your actions in life. Belief in karma means one believes that if we sow goodness, we will reap goodness; if we sow evil, we will reap evil. For example, if you behave appropriately (e.g., being truthful) in the present, something good typically happens to you in the future. On the other hand, doing something bad (e.g., being untruthful) in the present, will generally lead to bad results in the future.

Salient Superstitious Beliefs Condition

Part A: Your Comprehension Ability

“What goes around comes around”

Although most of us make our way through life with scientific advancement and education, we still engage in many superstitious activities, such as “knocking on wood,” saying “bless you” after sneezing, and wearing lucky charms. A key philosophy in superstitious beliefs is that an object, action, or circumstance at one point in time will influence other events at another point in time. For example, the origin of superstition lies in the Latin context. If you spend all day praying to God and sacrificing, it will likely guarantee a better life for their upbrings compared to themselves. On the other hand, failing to uphold superstitious beliefs (e.g., cross my fingers) in the present or in the past, will lead to misfortunes and bad luck in the present and in the future.

11.10 Appendix I: Message to Participants Who Gained Bonus (Study 4 - Manuscript 2)

Dear participant,

Congratulations! You have been selected to be granted an additional bonus (US \$15) due to your recent participation in the study (Consumer survey - Easy).

If you have any questions or concerns, please feel free to contact the researchers in this research project.

Thank you again for participating in the study!

11.11 Appendix J: Submission Proof of Manuscript 1

Submission Confirmation

 Print

Thank you for your submission

Submitted to

Journal of Consumer Research

Manuscript ID

JCONRES-2023-001

Title

The Superstitious Road Not Taken: How Superstitious Belief Shapes Consumer Sustainability

Authors

Cui, Yuanyuan (Gina)

Date Submitted

02-Jan-2023

11.12 Appendix K: Submission Proof of Manuscript 2

Submission Confirmation

 Print

Thank you for your submission

Submitted to

Journal of Consumer Research

Manuscript ID

JCONRES-2023-097

Title

It Is A Marathon Not A Sprint: Superstitious Beliefs Curb Consumer Impulsivity

Authors

Cui, Yuanyuan (Gina)

Date Submitted

05-Mar-2023