The Mediating Effect of Guilt on Purchase Intention for Functional Foods

—Cross-cultural comparison of Japan and Australia—

Abstract

The global functional food market continues to expand, and many companies are pursuing international expansion. However, most products fail shortly after launch, partly due to an overemphasis on the functional appeal of the products. This highlights the need to show the mechanisms of emotional appeals that affect consumer decision-making. Our study focuses on guilt–specifically, anticipated guilt and reactive guilt–as an emotional appeal and examines how cultural differences affect the emergence of these emotions and their impact on purchase intention in Japan and Australia. The findings indicate that anticipated guilt strongly enhances purchase intention in Japan, whereas reactive guilt serves as the primary driver in Australia. Our study suggests that leveraging guilt, depending on cultural context, can contribute to the success of functional foods in international markets.

Keywords: Functional foods, Guilt, Anticipated guilt, Reactive guilt, Health consciousness, Long-term orientation, Short-term orientation

(7,983words)

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Ⅰ. Introduction

In recent years, demand for functional foods has increased along with rising global health consciousness, and the market size has expanded significantly (Chen & Martirosyan, 2021: Euromonitor International, 2025). Functional foods (FFs) are defined as foods that contain ingredients beyond basic nutritional value that contributes to improving health status, reducing risks, or enhancing specific physiological functions. Unlike supplements, they can be consumed as part of a regular diet. Examples include fortified juices, yogurts, and breakfast cereals (Anninou & Foxall, 2017: Karelakis et al., 2019: Landström, 2008). Beyond market expansion, the high profit margins and potential to address societal challenges have drawn

significant corporate attention (Sharma et al., 2024: Pakhucha & Iryna, 2022). Furthermore, for sustainable corporate growth, companies have to expand their markets overseas (Kodama et al., 2015). Consequently, many multinational corporations, such as Yakult and Danone, along with small and medium-sized enterprises and startups, are entering the global functional food market and actively pursuing international expansion (Menrad, 2003: Pakhucha & Iryna, 2022). However, it has been reported that approximately 90% of new products in the functional food market are withdrawn shortly after launch (Siegrist et al., 2015). One of the main factors behind this failure is that companies focus strongly on appealing to the functional aspects of the products (Mellentin, 2014). Marketing theory indicates that appealing to product benefits has two primary approaches such as functional and emotional appeals (Zhang et al., 2014). Considering factors of this failure, it is necessary to shift focus from not only on functional aspects but also on appealing to emotional aspects. An example of emotional appeal, particularly regarding health-related consumption, it has been noted that guilt serves as a strong motivator for consumer behavior (Ferreira, 2021). Although guilt has traditionally been regarded as a single emotion, it can be subdivided into "anticipated guilt", which involves anxiety about the future before purchasing, and "reactive guilt", which involves regret after purchasing. Subdividing guilt has been suggested to contribute to more effective marketing (Burnett & Lunsford, 1994). Furthermore, it has been reported that health-related guilt varies in its occurrence and intensity depending on cultural

background (Martins et al., 2023). Therefore, it is assumed that using the subdivided types of guilt appropriately for each culture could enable improved emotional appeals. Therefore, this study aims to examine how two types of guilt—anticipated guilt and reactive guilt—affect purchase intention for functional foods across cultural differences, thereby contributing to the marketing of functional foods in international markets based on cultural background.

Ⅱ. Previous Research and Hypotheses Development

1. Health Consciousness and Purchase Intention for Functional foods

Health consciousness (HC) is defined as an inherent motivation to maintain one's health and a sustained involvement in health-related issues (Dutta-Bergman, 2004a: Tan et al., 2022). It is an essential concept for understanding consumer behavior and food choices (Maehle et al., 2015). Previous research on functional foods has been criticized for being predominantly focused on Western countries (Huang et al., 2019). Moreover, it has been confirmed that health consciousness has a significant positive effect on consumers' purchase intention for functional foods in Asian countries including China, Taiwan, and Thailand (Chen, 2011: Huang et al., 2019: Kalin, 2022). These findings indicate that research on functional foods has progressed globally. On the other hand, previous research that explores the psychological mechanisms underlying this relationship remains limited (Chen & Martirosyan, 2021: Siegrist et al., 2015). Therefore, to comprehensively understand the process by which

purchase intention toward functional foods is formed, further research on the relationship between health consciousness and consumer psychology is essential.

2. Guilt

Human emotions are essential for understanding behavior, and guilt especially has long been recognized as one of the basic emotions studied in psychology (Izard, 1977). Psychologically, guilt is defined as an unpleasant emotion resulting from an individual's intention, action, or inaction (Baumeister et al., 1994) and serves as a motivational factor that promotes behavior modification and self-control (Izard, 1977). This concept has been applied to the field of consumer behavior, where guilt is regarded as an emotion that affects purchase decision-making (Burnett & Lunsford, 1994). In particular, guilt tends to motivate individuals to relieve discomfort, which characteristically leads to specific behaviors (Ferreira, 2021). Hence, in consumer research and marketing, guilt has attracted international attention as an effective emotional driver of consumer behavior, including purchase decision-making (Khandelwal et al., 2025). However, previous research has often regarded guilt as a single emotion, so that its details and differences in cultural acceptance have not been adequately considered (Arli et al., 2016: Huhmann & Brotherton, 1997). This undifferentiated treatment limits the applicability of marketing strategies that seek to reflect differences in consumer psychology (Hibbert et al., 2007). Moreover, previous research has suggested that the impact

of guilt varies across product categories (Lwin, 2013), and it is crucial to subdivide and understand guilt when using it in marketing (Burnett & Lunsford, 1994).

Burnett & Lunsford (1994) systematically organized guilt as an emotional factor affecting purchase decisions and proposed a theoretical framework to explain its psychological impact on consumer behavior. Specifically, guilt is subdivided into two temporal dimensions: anticipated guilt and reactive guilt. Anticipated guilt is defined as the guilt which is evoked when individuals consider the possibility that their future behavior may violate their personal or moral standards (Huhmann & Brotherton, 1997: Rawlings, 1970). In contrast, reactive guilt is the guilt evoked after individuals have violated their personal or moral standards (Huhmann & Brotherton, 1997: Rawlings, 1970). Recent research supports this classification (Martins et al., 2023), and these two types of guilt have been utilized across various fields, including fast-moving consumer goods and health-related products (Lwin, 2013).

3. The Guilt Evoked by Health Consciousness and Its Effect on Purchase Intention

Previous research has shown that consumers with high health consciousness experience stronger guilt than those with low health consciousness (Choi & Reid, 2018). The psychological mechanism underlying this tendency can be explained by The Model of Goal-Directed Behavior, as proposed by Perugini & Bagozzi (2001), who suggests that individuals

set high-level goals and anticipate negative emotions when considering the possibility of failing to achieve those goals. Therefore, individuals with high health consciousness, who strongly pursue the goal of being healthy, are more likely to experience strong guilt when imagining behaviors that may conflict with this goal. In addition, this can also be explained by Self-Discrepancy Theory, as proposed by Higgins (1987), who suggests that individuals feel guilt when their "actual self" is inconsistent with their "ought self". Therefore, it can be inferred that individuals with high health consciousness are more likely to internalize a strong sense of norm and thus experience guilt after unhealthy behaviors. However, it has not been fully understood whether health consciousness specifically evokes the subdivided types of guilt, such as anticipated guilt and reactive guilt.

Research on functional food purchase decisions indicates that consumers tend to feel guilty when they consider optimizing their health and lifestyle, and they utilize functional foods as a means to relieve such guilt (Anninou & Foxall, 2017). This behavior can be explained by the Negative State Relief Model (Cialdini et al., 1973), which suggests that humans inherently possess a desire to mitigate negative emotions, such as guilt, to maintain a positive mental state. Thus, choosing functional foods when experiencing guilt can be interpreted as a concrete example of a psychological process aimed at relieving negative effects. This suggests that guilt may promote healthier choices and increase purchase intention for functional foods (Chédotal et al., 2017).

Indeed, the effect of guilt on consumer purchase intention had been empirically demonstrated in other product categories such as chocolate and fair-trade products (Durkin et al., 2012: Lindenmeier et al., 2017). However, while guilt is suggested to affect purchase intention for functional foods, empirical evidence supporting this relationship remains insufficient. Furthermore, previous research has been identified that subdivide guilt into anticipated and reactive types and clarify how each affects purchase decisions. Therefore, testing theoretical insights regarding guilt within the specific consumption of purchase intention for functional foods holds significant theoretical and practical value (Saintives & Lunardo, 2016).

4. Cross-Cultural Differences in Guilt Perception

Arli et al. (2016) has demonstrated that cultural background substantially shapes consumers' emotional responses in marketing, with pronounced cross-cultural disparities observed, particularly in the interpretation of guilt. Therefore, focusing on the possibility that guilt may be perceived differently across countries and cultures, we examine its relationship with purchase intention for functional foods. In doing so, we subdivide guilt into anticipated guilt and reactive guilt. Our study focuses on the "long-term orientation and short-term orientation" cultural dimension proposed by Hofstede et al. (2010) and is collectively referred to as cultural time orientation. The two types of guilt focused on our study are emotions

associated with different time horizons as mentioned before (Huhmann & Brotherton, 1997). Therefore, this cultural dimension, which captures differences in temporal values, was judged to be particularly well-suited for our study.

Long-term orientation refers to the tendency to act with emphasis on future benefits and goals, whereas short-term orientation refers to a tendency to prioritize immediate benefits and instant results (Hofstede et al., 2010). Guilt in food choices has been identified as being evoked when consumers are forced to decide between the goals of "long-term benefits and health maintenance" and "immediate pleasure and instant gratification" (Wansink & Chandon, 2006). When confronted with this conflict, long-term oriented consumers tend to prioritize future benefits and health maintenance.

Long-term-oriented consumers, who tend to value future benefits and health maintenance (Hofstede et al., 2010), are more likely to feel anticipated guilt evoked by unhealthy food consumption. Consequently, they may gravitate toward healthier choices, such as functional foods. On the other hand, short-term-oriented consumers strongly prioritize immediate pleasure and instant gratification, making them more inclined toward pleasurable consumption behaviors (Hofstede et al., 2010). In turn, the reactive guilt evoked by unhealthy choices may increase purchase intention for functional foods.

Given our considerations, our study compares countries with culturally contrasting orientations toward long-term oriented and short-term oriented perspectives, focusing on

markets in which functional foods have achieved a meaningful scale. Specifically, we focused to examine Japan, which exhibits a markedly high long-term orientation score of 88, and Australia, which demonstrates a substantially lower score of 21 (Hofstede et al., 2010). Moreover, the functional food sectors in both markets are experiencing steady expansion, with annual growth rates of 8.7% in Japan and 10.7% in Australia, making them suitable for cross-national comparison (Grand View Research, 2023). Accordingly, Japan and Australia were selected as the comparison countries for our study.

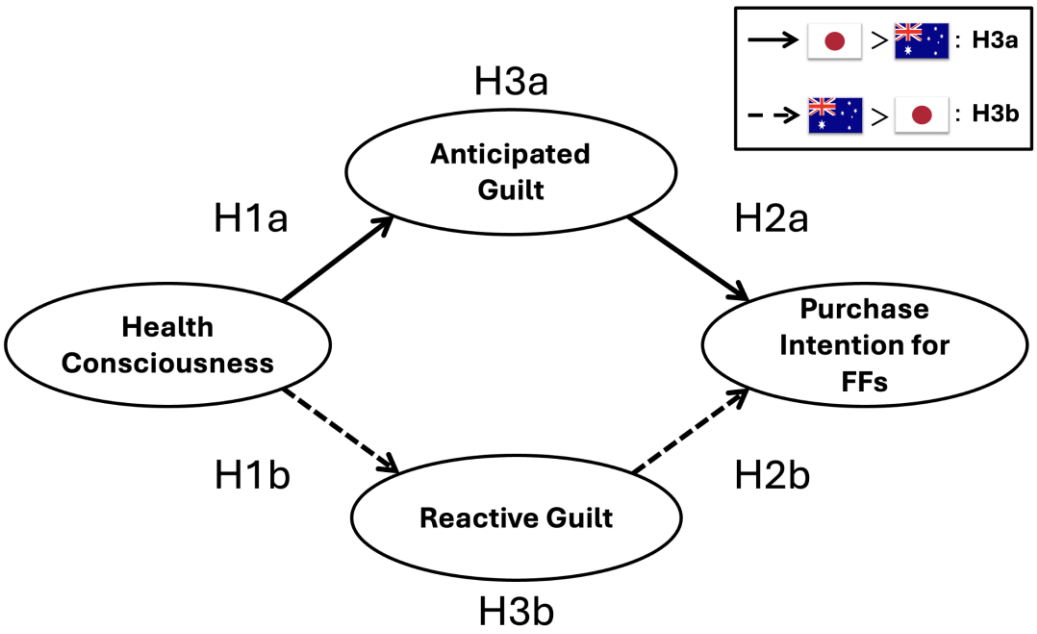
5. Hypotheses Development

Our study identifies the mechanism through which health consciousness enhances purchase intention for functional foods through two types of guilt. For developing hypotheses, we suggest that each subdivided guilt will positively affect health consciousness. This is based on previous research demonstrating that health consciousness evokes guilt (Choi & Reid, 2018: Higgins, 1987), leading us to expect that health consciousness similarly evokes the subdivided guilt. Specifically, H1a posits that health consciousness positively affects anticipated guilt, and H1b posits that health consciousness positively affects reactive guilt. Furthermore, considering that guilt has been suggested to positively enhance consumers' purchase intention, we hypothesize that each type of guilt will affect the purchase intention for functional foods based on the negative state-reduction (Cialdini et al., 1973: Durkin et al.,

2012).

Additionally, based on previous research indicating that treating guilt as a single construct limits the effectiveness of marketing reflecting consumer psychological differences (Hibbert et al., 2007), our study aims to contribute to the development of a more refined consumer approach by examining the effects of subdivided guilt constructs on purchase intention. Therefore, we examine whether anticipated guilt (H2a) and reactive guilt (H2b) positively affect consumers' purchase intention for functional foods. Additionally, our study examines whether the effect of guilt functioning as a mediating variable linking health consciousness and purchase intention differs across culture. As mentioned above, we suppose that anticipated guilt corresponds to long-term orientation, while reactive guilt corresponds to short-term orientation. Therefore, we hypothesize that anticipated guilt acts as the most effective mediating variable in long-term-oriented countries, such as Japan, while reactive guilt acts as the most effective mediator in short-term oriented countries, such as Australia. Given them, we expect the mediating relationship from health consciousness to anticipated guilt to purchase intention for functional foods to be stronger in Japan than in Australia (H3a). Conversely, the mediating relationship from health consciousness to purchase intention for functional foods through reactive guilt is expected to be stronger in Australia than in Japan (H3b).

Figure 1: Verification Model



Source: Authors.

H1a: Health consciousness enhances anticipated guilt.

H1b: Health consciousness enhances reactive guilt.

H2a: Anticipated guilt positively enhances purchase intention for functional foods (FFs).

H2b: Reactive guilt positively enhances purchase intention for functional foods (FFs).

H3a: The mediation effect of anticipated guilt in relationship between health consciousness and purchase intention for functional foods is stronger in Japan than in Australia.

H3b: The mediation effect of reactive guilt in relationship between health consciousness and purchase intention for functional foods is stronger in Australia than in Japan.

Ⅲ. Research and Analysis

1. Measurement Scale

In our study, we used four scales whose reliability and validity have both been established in previous research as shown in Table 1. The constructs of health consciousness, anticipated guilt, reactive guilt, and purchase intention for functional foods are all latent psychological variables that cannot be directly observed. Therefore, we decided to test the model using quantitative data with psychological scales. By verifying these psychological variables based on reliable data, the accuracy of marketing applications can be improved. To measure health consciousness and purchase intention for functional foods, we adopted the scales from Kalin (2022). For anticipated guilt, we used the scales from Elgaaied (2012), with minor modifications to fit our study. For reactive guilt, we adopted the dimensions from Silva & Martins (2017).

In our study, we prepared items in Japanese and English for our cross-cultural survey between Japan and Australia. Since the original text was in English, we used the back-translation method to translate them from English to Japanese. Then, two people fluent in both Japanese and English translated them into English. We also compared the original text to clarify any differences in interpretation and minimize any linguistic discrepancies that may arise from translation (Usunier, 1998).

Table 1: Measurement Scale

Construct		Items	Souces
Health Consciousness	**HC1**	I make a lot of efforts for my health.	Kalin(2022)
	HC2	I consider myself health conscious.	
	HC3	Health is important in my life.	
	HC4	I think it is important to know well how to eat healthy.	
	HC5	I often dwell on my health.	
Anticipated Guilt	**AG1**	I would feel guilty if I did not purchase functional foods on a regular basis.	Elgaaied(2012)
	AG2	My conscience would bother me if I did not purchase functional foods on a regular basis.	
	AG3	I would have a bad conscience toward my health if I did not purchase functional foods on a regular basis.	
Reactive Guilt	**RG1**	I feel guilty if I eat unhealthy food(junk food, carbonated soft drink, etc.).	Silva & Martins(2017)
	RG2	My conscience would bother me if I eat unhealthy food(junk food, carbonated soft drink, etc.).	
	RG3	I would have a bad conscience toward my health if I eat unhealthy food(junk food, carbonated soft drink, etc.).	
Purchase Intention for FFs	**PI1**	I am willing to purchase functional food although the options are limited.	Kalin(2022)
	PI2	I am willing to purchase functional food due to the additional nutrients.	
	PI3	I am willing to purchase functional food although it is a bit pricy.	
	PI4	I am willing to spend time sourcing for functional food I prefer functional food to the conventional alternatives.	

HC: Health Consciousness, AG: Anticipated Guilt, RG: Reactive Guilt, PI: Purchase Intention for FFs

Source: Authors.

2. Survey Method

In our study, we collected respondents through an online panel by international research company in Japan and Australia. To avoid common-method bias, the survey questions were randomly ordered for each participant, and all measurement items were rated

on a 7-point Likert scale, ranging from 1 (strongly agree) to 7 (strongly disagree) (Podsakoff et al., 2003). Attention-check items were included to ensure that participants carefully read and understood each question, and only valid responses were retained. The survey was conducted through a professional research agency, resulting in a final sample of 813 valid responses (Japan, N = 387: Australia, N = 426). The target age for this survey was 15 years or older in both countries. Although older individuals generally consume functional foods more actively due to increased health risks (Verbeke, 2005), there has been a widespread increase in purchasing intention for functional foods among young people (Vorage et al., 2020). Therefore, we adjusted the age distribution using the equal allocation method and collected 500 samples from each country, Japan and Australia. Furthermore, to ensure that respondents had a consistent understanding of functional foods, its definition was provided before the survey, thereby controlling for differences in perception among participants.

3. Reliability and Validity of The Measurement Scales

In our study, to verify the reliability and validity of the measurement scales and sample, we conducted exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) following the two-stage approach proposed by Anderson & Gerbing (1988). We used SPSS Statistics (Ver. 29.0.2.0), JASP (Ver. 0.19.3), and AMOS (Ver. 28.0.0.0). First, to verify whether each question item converged into each of the four concepts or not, EFA was conducted

using promax rotation and maximum likelihood estimation. Then we confirmed the factor loadings of each item. The results showed that factor loadings of all items were stable, and no items showed insignificance. Therefore, all items were used in subsequent analysis. Second, we conducted a CFA (maximum likelihood analysis) assessing model fit, convergent validity, internal consistency, and discriminant validity. The model fit indices were X^2=537.587, df=148, *p<.001*, CFI=.961, TLI=.944, RMSEA=.057, and SRMR=.053, meeting all criteria (Hair et al., 2014). Furthermore, the item-to-total and average variance extracted (AVE) were all satisfactory, as shown in Table 2 (Hair et al., 2014). Furthermore, to confirm internal consistency and construct validity, we calculated Cronbach's alpha, omega, and composite reliability (CR). The reliability criteria were all above 0.70, confirming sufficient internal consistency (Hair et al., 2014).

Table 2: convergent validity

Construct	Items	Mean	SD	Factor loading	Item-to-total	Cronbach α	ω	Coposite Reliability (CR)	Average Variance Extracted (AVE)
Health Consciousness	HC1	3.76	1.56	0.88	0.94	0.88	0.91	0.88	0.59
	HC2	3.63	1.51	0.93	0.94				
	HC3	2.59	1.34	0.76	0.95				
	HC4	2.88	1.39	0.67	0.94				
	HC5	3.78	1.57	0.33	0.94				
Anticipated Guilt	AG1	5.12	1.68	0.87	0.94	0.95	0.96	0.96	0.88
	AG2	5.14	1.68	0.97	0.94				
	AG3	5.10	1.68	0.83	0.94				
Reactive Guilt	RG1	4.34	1.66	0.89	0.94	0.94	0.94	0.94	0.84
	RG2	4.52	1.66	0.89	0.94				
	RG3	4.29	1.69	0.92	0.94				
Purchase Intention for FFs	PI1	4.33	1.55	0.78	0.94	0.93	0.93	0.92	0.75
	PI2	3.93	1.61	0.93	0.94				
	PI3	4.51	1.60	0.81	0.94				
	PI4	4.37	1.68	0.68	0.94				

HC: Health Consciousness, AG: Anticipated Guilt, RG: Reactive Guilt, PI: Purchase Intention for FFs

Source: Authors.

Next, we verified discriminant validity using Heterotrait-Monotrait Ratio of Correlations (HTMT) to measure the relationships between each variable (Henseler et al., 2015). It is said that discriminant validity is ensured if the HTMT correlation between concepts is 0.85 or less (Henseler et al., 2015). Of the four factors used in this verification, the maximum value was 0.778, meeting all criteria and confirming discriminant validity. Additionally, to examine the mitigating effect of common method bias, the single unmeasured latent method factor approach was conducted (Podsakoff et al., 2003). We confirmed that the change in standardized coefficients between models with and without the inclusion of a single

factor was below 0.2, indicating that common method bias was not a serious concern in our study. Based on these assessments, we verify the structural model using the collected data.

Table 3: HTMT (Heterotrait-Monotrait Ratio of Correlation)

		1	2	3	4
1	Health Consciousness				
2	Anticipated Guilt	0.581			
3	Reactive Guilt	0.503	0.676		
4	Purchase Intention for FFs	0.700	0.585	0.778	

Source: Authors.

IV. Results and Discussion

In our study, we first use structural equation modeling to test H1a and 2b and use Mediation analysis to test H3a and 3b. In this part, we used Amos (Ver. 28.0.0.0) and 2,000 bootstrapping for estimating moderation effects the following the recommendations of Hayes (2018).

1. Results of structural equation modeling

Table 4: Results of structural equation modeling (SEM)

	Path	Standardized Estimates	Standardized Differences	Test Statistics	*p*
Japan	Health Consciousness→Anticipated guilt	0.662	0.094	10.026	***
	Health Consciousness→Reactive guilt	0.725	0.097	10.437	***
	Anticipated Guilt→Purchase Intention for FFs	0.468	0.060	8.161	***
	Reactive Guilt→Purchase Intention for FFs	0.628	0.103	6.496	***
Australia	Health Consciousness→Anticipated guilt	0.586	0.092	9.413	***
	Health Consciousness→Reactive guilt	0.604	0.094	9.979	***
	Anticipated Guilt→Purchase Intention for FFs	0.376	0.047	6.536	***
	Reactive Guilt→Purchase Intention for FFs	0.879	0.092	7.467	***

Note: ***$p<0.001$, **$p<0.01$

X^2=537.587, df=148, $p<.001$, CFI=.961, TLI=.944, RMSEA=.057, SRMR=.053

Source: Authors.

We tested our hypotheses based on the results of SEM shown in Table 4. Both the relationship between health consciousness and anticipated guilt (Japan: ß=0.662, $p<.001$; Australia: ß=0.586, $p<.001$) and between health consciousness and reactive guilt (Japan: ß=0.725, $p<.001$; Australia: ß=0.604, $p<.001$) were significantly positive. Therefore, H1a and H1b were supported in both countries. Furthermore, both the effects of anticipated guilt on purchase intention for functional foods (Japan: ß=0.468, $p<.001$; Australia: ß=0.376, $p<.001$) and reactive guilt on purchase intention for functional foods (Japan: ß=0.628, $p<.001$; Australia: ß=0.879, $p<.001$) were significantly positive. Therefore, H2a and H2b were supported in both countries.

2. Results of a mediation analysis

Table 5: Results of a mediation analysis

	Path	Estimated Value	Standard Error	95%CI (lower)	95%CI (upper)	*p*
Japan	Health Consciousness→Anticipated Guilt→Purchase Intention for FFs	0.462	0.079	0.345	0.647	***
	Health Consciousness→Reactive Guilt→Purchase Intention for FFs	0.680	0.167	0.446	1.104	**
Australia	Health Consciousness→Anticipated Guilt→Purchase Intention for FFs	0.284	0.071	0.171	0.449	**
	Health Consciousness→Reactive Guilt→Purchase Intention for FFs	0.650	0.163	0.439	1.078	**

Note: ****p<0.001,**p<0.01*

X^2=537.587, df=148, *p<.001* , CFI=.961, TLI=.944, RMSEA=.057, SRMR=.053

Source: Authors.

In our study, we conducted a mediation analysis to examine the effects of health consciousness on purchase intention for functional foods through guilt. Table 5 shows the results of the mediation analysis. The effects of health consciousness on purchase intention for functional foods through anticipated guilt (Japan: β=0.462, *p<.001*; Australia: β=0.284, *p<.01*) was significantly positive in both countries, and this effect is stronger in Japan than in Australia. Therefore, H3a is supported. Furthermore, the effects of health consciousness on purchase intention for functional foods for functional foods through reactive guilt (Japan: β=0.680, *p<.01*; Australia: β=0.650, *p<.01*) was also significantly positive in both countries, but the differences of effect size between the two countries were little. Therefore, H3b was not supported.

3. Discussion

The results of our study provide several key insights into how health consciousness affects purchase intention for functional foods through guilt.

First, the results of H1a and H1b indicate that the positive relationship between health consciousness and guilt remains consistent even when guilt is temporally subdivided. While previous research has shown that individuals with high health consciousness tend to feel stronger guilty (Choi & Reid, 2018), our study suggests that this tendency extends across both anticipated and reactive guilt. It can be interpreted through a different theoretical mechanism supporting each type of guilt. Anticipated guilt is likely heightened as explained by the Model of Goal-Directed Behavior (Perugini & Bagozzi, 2001), which suggests that individuals with high health consciousness anticipate negative emotions such as guilt, when considering the possibility of failing to meet important personal goals. On the other hand, reactive guilt is likely enhanced as explained by Self-Discrepancy Theory (Higgins, 1987), which indicates that guilt is evoked when individuals realize that their actual self such as choosing unhealthy food, differs from their own expectations for staying healthy. Therefore, individuals with high health consciousness are more likely to experience both anticipated guilt for potential unhealthy behavior and reactive guilt after actual unhealthy choices.

Second, the results of H2a and H2b suggest that guilt enhances purchase intention

not only in other product categories examined in previous research such as chocolate and fair-trade products (Durkin et al., 2012: Lindenmeier et al., 2017), but also specifically in functional food market. Notably, this pattern remains consistent across both types of guilt. These findings can be interpreted through the Negative State Relief Model (Cialdini et al., 1973), which suggests that consumers are motivated to reduce guilt by making corrective choices such as purchasing functional foods.

Finally, the results of H3a and H3b highlight notable cultural differences in how guilt affects as a mediating psychological mechanism between health consciousness and purchase intention. While previous research has mainly examined the direct effect of health consciousness on purchase intention for functional foods (Chen, 2011: Huang et al., 2019: Kalin, 2022), this study extends this understanding by demonstrating that this relationship operates indirectly through the two different types of guilt. In H3a, the indirect effect through anticipated guilt is stronger in Japan than in short-term oriented countries such as Australia. On the other hand, in H3b, the indirect effect through reactive guilt has little difference between the two countries.

To interpret this result, it is useful to consider the results of H1 and H2. In H1, both anticipated and reactive guilt are more strongly evoked by health consciousness in Japan. The stronger effect of health consciousness on anticipated guilt can be interpreted through cultural time orientation. Since Japanese expect health consciousness in the long-term, they tend to

feel anticipated guilt. In addition, the stronger effect of health consciousness on reactive guilt in Japan can be explained by Self-Discrepancy Theory (Higgins, 1987). This theory states that guilt is evoked when the "actual self" differs from the "ought self", as mentioned above. Given Japanese tendency about health consciousness as mentioned above, they feel stronger reactive guilt after choosing unhealthy actions that contradict their internal standards. Moreover, the result of H2 demonstrated that anticipated guilt has a stronger effect on purchase intention in Japan, whereas reactive guilt has a stronger effect in Australia. This aligns with cultural time orientation pattern. In long-term oriented countries, such as Japan, anticipated guilt may enhance consumers' intention to purchase functional foods as a preventive choice. Meanwhile, in short-term oriented countries such as Australia, reactive guilt may enhance consumers' intention to purchase functional foods to adjust past unhealthy behavior.

The results of H3 suggest that cultural time orientation can partly explain the differences in how anticipated and reactive guilt operates across cultures. However, it does not fully account for the unexpectedly strong effect of reactive guilt in Japan. Given the results of H1 and H2 together, a more coherent explanation emerges. A key factor that can explain this reason is health consciousness. In Japan, health consciousness is deeply connected to way of thinking about future health condition in the long-term, which enhances personal standards regarding health maintenance. This cultural tendency may evoke not only anticipated guilt but also reactive guilt after unhealthy choices, making it a more effective factor in shaping

purchase intention for functional foods.

4. Post-Hoc Analysis

In our study, the analysis using the cultural dimension of long-term and short-term orientation in the test of H3a revealed a clear cultural difference in the relationship mediated by anticipated guilt. This result highlighted necessary to clarify the need to clarify how anticipated guilt affects the purchasing decision-making. Furthermore, the long-term and short-term orientation was found to be effective in comprehending cultural differences in anticipated guilt. By leveraging this consistency, further refinement of the mechanisms underlying anticipated guilt is expected to contribute more deeply to the understanding of decision-making in functional food consumption. Accordingly, our study conducted additional analyses based on theoretical knowledge of anticipated emotions.

Anticipated emotions, which include anticipated guilt, do not only evoke immediately before a decision but also affect subsequent perceptions and judgments, as consistently noted in emotion research (Richard et al., 1996: Wilson & Gilbert, 2003). Therefore, to deeply understand how anticipated guilt affects purchase intention for functional foods, it is necessary to examine how emotions change over time, including the connection to reactive guilt that occurs after behavior. Relatedly, research on regret, which is also a negative emotion, has shown that experiencing anticipated regret before taking an action affects how strong and

how often regret is felt afterward (Zeelenberg, 1999). The anticipated regret examined in Zeelenberg's (1999) study includes anticipated guilt, making it directly applicable to our study. Moreover, although it has been suggested that the psychological process linking anticipated emotions to post-behavioral emotions may be associated with cultural norms and values, empirical research explicitly incorporating cultural differences remains limited. This indicates the significance of understanding how different types of guilt work in different cultures. In addition, when the outcomes of a decision are not immediate, individuals often tend to underestimate unpleasant emotions they may feel in the future (Loewenstein, 1992). Applied to our study, evaluations of long-term and abstract outcomes, such as "future health," are likely weighed differently depending on cultural values, particularly long-term and short-term orientation. Based on this theoretical background, our study utilized a sequential mediation model to examine how health-consciousness-induced anticipated guilt leads to reactive guilt and then affects purchase intention for functional foods. Indirect effects were estimated using 2,000 bootstrap samples in accordance with Hayes (2018).

Table 6: Results of sequential mediation analysis

	Path	Estimated Value	Standard Error	95%CI (lower)	95%CI (upper)	*p*
Japan	HC→AG→RG→PI	0.248	0.104	0.113	0.521	**
Australia	HC→AG→RG→PI	0.488	0.195	0.274	1.038	**

HC: Health Consciousness, AG: Anticipated Guilt, RG: Reactive Guilt, PI: Purchase Intention for FFs

Note: ****p<0.001, **p<0.01* X^2=537.587, df=148, *p<.001*, CFI=.961, TLI=.944, RMSEA=.057, SRMR=.053

Source: Authors.

The relationship from health consciousness to purchase intention for functional foods, through anticipated guilt and subsequently reactive guilt (Japan: ß=0.248, *p<.01*; Australia: ß=0.488, *p<.01*), showed a significant positive effect in both countries.

5. Discussion about Post-Hoc Analysis

The support for the sequential mediation model confirms that purchase intention for functional foods is formed through a stepwise process, in which anticipated guilt leads to reactive guilt. This finding is consistent with previous research about emotion, and demonstrates that this framework also applies in business, showing that psychological insights can inform consumer behavior research. In addition, the strength of sequential relationship differs clearly across cultures. In Japan, purchase intention for functional foods is formed at the stage of anticipated guilt, and the subsequent effect of reactive guilt is relatively small compared with Australia. This suggests that in long-term-oriented countries,

negative emotions about future health are early in decision-making. As a result, individuals are more likely to restrain unhealthy behavior and purchase functional foods. These findings align with H3a and indicate that reactive guilt is less likely to be evoked in the first place. In Australia, anticipated guilt leads more strongly to reactive guilt than in Japan, resulting in a greater combined effect of these two emotions on purchase intention for functional foods. In short-term-oriented countries, anticipated guilt is not enough to sufficiently restrain hedonic consumption, and reactive guilt evoked after such behavior plays an important role in decision-making. Therefore, a stepwise process, in which anticipated and reactive guilt accumulates sequentially, emerges as a key mechanism that enhances purchase intention for functional foods. Overall, these results provide empirical evidence that the continuity of emotions, as proposed in psychological theory, appears at different stages of decision-making depending on cultural orientation. It deepens understanding of cultural differences in consumer behavior and offers new implications for international marketing in the functional food market.

Ⅴ. Qualitative Research

1. Rationale for Qualitative Research

The results of this quantitative research showed that both types of guilt enhance purchase intention for functional foods, and their effects vary across cultural background.

Then, further investigation is needed to understand how these mechanisms align with actual marketing practice in the functional food industry. Marketing for functional foods mainly focuses on functional benefits, and emotional appeals remain limited. Therefore, quantitative measures alone are insufficient to evaluate practical effectiveness, so that we concluded that qualitative research is essential. Using semi-structured interviews and survey-based questionnaires with industry professionals, we aimed to gain deeper insight into the use of emotional appeals. Specifically, we examine how anticipated guilt and reactive guilt are utilized in functional food marketing and how companies perceive these approach. This qualitative research is essential for bridging the gap between theoretical and quantitative findings and practical application and for understanding the effectiveness of guilt-related marketing in the functional food industry.

2. Methodology

From among the top 50 brands in Brand Finance's "Most Valuable Food Brands 2025" ranking, we identified the companies that own brands active in the Japanese functional food market, resulting in nine companies. These companies were selected because Japan is the one of the origins of functional foods (Hardy, 2000) and offers particularly valuable insights for understanding this market. We asked to participate interview about our study and three companies agreed to take part in the research. For the purpose of anonymity,

companies are referred to as Company A, Company B, and Company C.

Table 6: Qualitative Research Subjects

	A	B	C
Business Details	Dairy & Beverage	Packaged Foods	Beverage
Headquarters	Japan	Japan	Japan
Operating Countries	over 120 (including Japan and Australia)	19 (including Japan and Australia)	39 (including Japan and Australia)
Overseas Sales (JPY)	approx. 5.0 Trillion (2023)	7.77 Billion (March, 2025)	23.88 Billion (2024)
Survey Date	11th November 2025	13th November 2025	19th November 2025
Research Method	Interviewed through an Online platform	Interviewed through an Online platform	Interviewed through an Online platform
Position	Brand Manager	Marketing Staff	Sales & Marketing Director

Source: Authors.

3. Findings

Interviews with representatives from Company A, B and C provide several important insights about how companies position functional foods and how guilt appeals are utilized in their marketing. These insights deepen our understanding of how functional foods are strategically utilized across different brands and cultures.

First, the interviews revealed two different approaches to the positioning of functional foods. According to the representatives from Company A and B, functional foods are positioned as healthier substitutes for existing products in order to encourage consumers to switch from conventional choices. Both companies recognized the effect of guilt on consumer

decision-making. Company A emphasizes messages such as “delicious and low-fat, without feeling guilty”, which serve to relieve anticipated guilt about health before consumption. By framing their product in this way, the company addresses consumers’ anticipated guilt regarding future health, assuming that they may feel guilty about potential negative health outcomes and promotes the value of the product accordingly.

In contrast, Company B displays healthier alternatives on the inside of instant food lids, which serves to evoke reactive guilt after consuming less healthy products. By framing their messaging in this way, the company prompts consumers to recognize that they have consumed an unhealthy product, triggering feelings of reactive guilt, and encourages them to choose functional or healthier options in subsequent purchases.

Compared to Company A’s and B’s marketing, the representative from Company C explained that the company mainly focuses on marketing with health claims and scientific evidence. This approach works well because Company C positions its functional foods as a distinct category of products, encouraging consumers to choose them for their unique value rather than comparing them with existing products. As a result, functional appeals are more effective than emotional appeals for Company C. However, the representative from Company C noted that the company’s philosophy of “preventive medicine” closely aligns with the concept of anticipated guilt. So, Company C’s philosophy of avoiding future health risks and associated practices such as door-to-door sales and health education may naturally engage consumer’s

anticipated guilt.

The findings of our quantitative research demonstrate that the effectiveness of anticipated or reactive guilt differs depending on cultural background. Although companies generally recognize the necessity of cultural adaptation, this awareness has not yet been extended to guilt-related marketing. However, as our findings show, many companies are formulating strategies that align with anticipated or reactive guilt, even if they are not consciously designed as such. These insights imply that future marketing for functional foods can be optimized by utilizing the type of guilt appeal with the cultural background of the target market. It highlights a significant opportunity for further development in international marketing for functional foods.

VI. Conclusions

1. Academic implications

Our study provides valuable insights into the international marketing of functional foods. Then, we present three academic implications. First, our study applied the Negative State Relief Model (Cialdini et al., 1973) to clarify the effect of guilt, advancing understanding of insufficiently examined emotional factors in purchase intention for functional foods. Second, against the theoretical limitations and background that guilt should be subdivided, we identified the two types of guilt that are most effective depending on cultural

background. In Japan, anticipated guilt is the most effective driver of purchase intention and appealing to this emotion enhances purchase intention for functional foods. Conversely, in Australia, reactive guilt is the most effective driver and appealing to reactive guilt promotes purchase intention for functional foods. These results demonstrate that the effective type of guilt varies by cultural context, confirming that the two countries link to purchase intention through distinct psychological mechanisms. Third, our study confirmed the effectiveness of reactive guilt. Regarding H3, reactive guilt had a stronger mediating effect than anticipated guilt in both countries. However, it has been found that 61% of guilt-based advertisements target anticipated guilt and that research focusing on reactive guilt remains extremely limited (Huhmann & Brotherton, 1997: Lwin, 2013). In this context, our study offers new insights.

2. Practical implications

The global functional food market is steadily expanding, driven by rising health consciousness. However, depending on how a company positions its products, relying on functional benefits alone may not be sufficient. Therefore, companies need to adjust their strategies to match specific cultural patterns of guilt that affect consumer decision-making. Based on our findings, to optimize marketing for functional foods effectively, in long-term-oriented countries, companies should implement preventive strategies in advertising and packaging that address consumers' desire to avoid future health concerns. On the other hand,

in short-term-oriented countries, companies should implement strategies in advertising and packaging that address consumers' desire to relieve guilt evoked from past behaviors. These strategies are effective when companies position their products to relieve that guilt. Thus, distinguishing between anticipated and reactive guilt, and optimizing the appeal content according to cultural background becomes an important strategy for enhancing the effectiveness of functional food marketing in international markets.

3. Limitations

Finally, we discuss prospects based on our study. First is the application to other product categories. By examining the effects of subdivided guilt, our study clarified the purchasing mechanism for functional foods. For future research applying subdivided guilt to verify other product categories will enrich the findings obtained in our study. Second, expanding the scope of countries analyzed. While our study focused on countries with relatively mature functional foods markets, different patterns in the role of consumer guilt may exist in countries where functional foods are not yet common or in emerging markets. Future research should pursue more international verification including countries with different cultural background.

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和論文

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