Regulatory focus and junk food avoidance:
The influence of health consciousness, perceived risk and message framing

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Abstract

The purpose of this research is to examine: (1) the health-related factors namely perceived health consciousness and perceived risk that motivate a person's intention to avoid junk food consumption, and (2) the influence of regulatory focus (promotion vs prevention foci) on a person's intention to avoid junk food consumption under the conditions of gain-framing vs loss-framing health communication and messages. A set of hypotheses are tested across three studies. Study 1 (n = 148) shows that regulatory focus influences the consumers' intention to avoid junk food. Also, health consciousness mediates the relationship between regulatory focus and junk food avoidance intention. Study 2 (n = 132) finds that perceived risk amplifies the relationship between regulatory focus and health consciousness. Study 3 (n = 168) demonstrates that message framing combined with the appropriate regulatory focus positively influences the consumers' intention to avoid junk food. The findings validate and extend the current theoretical framework in relation to unhealthy eating behaviours (e.g., junk food consumption). Based on the findings of this research, the practitioners can utilise the correct type of health information or claims for the appropriate consumer segment (whether prevention or promotion foci) to effectively implement campaigns and programs.

Keywords: Junk food, Consumption, Diet, Food choices, Obesity, Regulatory focus.

Cite this paper as:

Shimul, A. S., Cheah, I., & Lou, A. J. (2021). Regulatory focus and junk food avoidance: The influence of health consciousness, perceived risk and message framing. *Appetite*, 105428. https://doi.org/10.1016/j.appet.2021.105428

1. INTRODUCTION

One of the most significant and preventable causes of poor health and early death is the rapidly rising rates of overweight and obesity (WHO, 2020). The alarming increase in obesity prevalence worldwide (Ng et al. 2014) is predominantly driven by dietary changes, with food now increasingly processed, affordable, and aggressively marketed (Swinburn et al., 2011). Obesity is also often the result of physical factors such as stress, tiredness and work-related factors such as high workload demands which produces 'burnout' (Chui et al., 2019) also known as "a syndrome of emotional exhaustion" (Leiter and Maslach, 1998, p.347). This is often associated with stress and other negative emotional states (Sproesser et al., 2014).

Marketing and advertising have a strong influence on food preferences, choices, and consumption (Chui et al. 2019). Evidence demonstrates that acute exposure to food advertising influences dietary choices (Chandon and Wansink, 2012; Dixon et al., 2014) and increases food intake among children (Boyland et al. 2016). Among the adolescents and adults, advertising builds substantial brand awareness, particularly for fast/junk food (Kelly et al., 2019). Thus, mass media marketing communications (Murukutla et al. 2020) as well as social media campaigns with an omnipresence focus in marketing (Vassallo et al. 2018) have been utilised as a form of large scale intervention on a regional or national scale. Public health campaigns such as Australia's 'LiveLighter' program incorporates the key messages of previous healthy lifestyle campaigns such as "Go for 2&5" and "Find 30" (Livelighter, 2020). Other global public health campaigns include the Boston Public Health Commission 'Fatsmack' program in the United States, which is a social marketing campaign targeted at teenagers to create awareness around diabetes and unhealthy eating (e.g., consumption of sugary beverages). The "One You Programme" from the UK also encourages adults to change their lifestyles and adopt healthier behaviours (Hayes, 2013). Furthermore, previous research has investigated how 'junk' food and non-alcoholic beverages are promoted on Facebook (Freeman et al. 2014) and Instagram (Ginsberg, 2015) particularly on the behavioural effects of user-generated images (Coary and Poor, 2016).

While the impact of mass media advertising and public health campaigns have proven effective in sustaining prevention efforts, the process of developing the type of health communication messages sent to consumers is still regarded as complex, yet an important one (Murukutla et al., 2020; Kelly et al., 2019; Boyland et al., 2016). This is primarily because individuals will

tend to process health messages differently based on their knowledge and beliefs on a particular health topic or issue (Gomez, Borges and Pechmann, 2013). Furthermore, only a handful of research studies (Cui et al., 2019; Kelly et al., 2019; Boyland et al., 2016; Hayes, 2013 Gomez, Borges and Pechmann, 2013) are conducted to understand how individuals would interact with different types of outcome expectations to determine their intention to adopt a positive behavioural change. As such, it is important to understand the cognitive mechanisms which drive individual differences to reduce consumption of junk food as a result of different health communication and messages. In order to do so, this study aims to investigate the influential factors as well as the cognitive mechanisms of change for intervention aimed at improving healthy food consumption choices of Australians affected by unhealthy food consumption patterns.

Given the above discussions, this research is motivated by the premise that individuals' regulatory focus may determine their altruistic behaviours such as health and well-being (e.g., Keller, 2006; Uskul et al., 2008; Ferrer et al., 2017; Pichierri et al., 2020). The regulatory focus literature indicates that most people have one of two foci that influence one's strategies and feelings in decision making (Crowe and Higgins, 1997; Higgins, 2000). Regulatory fit occurs when a person's regulatory focus fits the message framing of the advertising. For example, "if a person with promotion (vs prevention) focus is exposed to a piece of gain-framing (vs loss-framing) message, it will form a regulatory fit" (Cui et al. 2019, p. 1970). Furthermore, regulatory fit can be primed by the situation or message and thus affects a person's motivation, brand attitude and evaluation of new stimuli (Gomez et al., 2013).

Therefore, the main purpose of this research is twofold: (1) to examine the health-related factors namely perceived health consciousness and perceived risk that motivate a person's intention to avoid junk food consumption, and (2) to examine the influence of regulatory focus (promotion vs prevention foci) on a person's intention to avoid junk food consumption under the conditions of gain-framing vs loss-framing health communication and messages. The rest of this paper is organised into several sections; it begins with a review of the relevant literature and the justification of research hypotheses. Then, the research method and results are discussed. Finally, the theoretical and practical implications of the findings are presented with the limitations and future research directions.

2. RELEVANT LITERATURE REVIEW

2.1. Obesity and junk food consumption

The overconsumption of unhealthy foods is a major contributing factor to a person becoming overweight and obese. Obesity and overweight are major health concerns of the 21st century with a tripling in obesity rates since 1975 (WHO, 2018). Being overweight or obese has many secondary health consequences such as cardiovascular disease, diabetes, musculoskeletal disorders, increased risk of some cancers (e.g., breast, liver and kidney), and has been linked to more deaths worldwide than being underweight (WHO, 2018). Consequently, the increasing prevalence of being overweight or obese is associated with a large economic burden (Withrow and Alter, 2011). One of the recognised global drivers of the obesity epidemic is changes in the food system including the increased availability of cheap, highly- palatable, energy-dense nutrient poor foods (Swinburn et al., 2011). These foods are often referred to as junk foods because they are low in nutrients, but high in kilojoules, saturated fat, sugar and salt. The dietary pattern of consuming junk food more than once per week has been flagged by health practitioners as 'detrimental' (Chandon and Wansink, 2012; Dixon et al., 2014), and while dietary interventions can prevent and often reverse overweight and obese status (Kelly et al., 2019), it is often challenged by aggressive food marketing tactics that continue to promote junk food towards consumers (Murukutla et al., 2020). The Diet, Nutrition and the Prevention of Chronic Disease report by the World Health Organization (2018) reported that there was a convincing evidence that the consumption of energy-dense, nutrient poor junk foods is a risk factor for weight gain and obesity. Furthermore, it has been well-established that the immense onslaught of junk food marketing is contributing significantly to the overconsumption of junk foods among adults as well as in children (Boyland et al., 2016), and thus an escalating global obesity epidemic. In light of this, it is important to understand the factors which drive consumption of these junk foods, as well as the cognitive mechanisms that aid in consumer information processing of junk food marketing advertisements.

2.2. Regulatory focus

According to Higgins (1997) and Higgins et al., (2001), regulatory focus theory distinguishes between two coexisting motivational systems namely promotion and prevention, which serve essential but different survival needs. More importantly, the two foci are conceptualized as two independent dimensions (Gorman et al., 2012). "Promotion focused individuals are drawn towards growth and advancement needs which motivates them to bring themselves into

alignment with their ideal selves, thereby heightening the salience of potential gains to be attained" (Hanke et al., 2019, p. 109). Hence, promotion-focused individuals are motivated to employ approach strategic means to attain their goals (Shin et al., 2017). Conversely, "prevention focused individuals are drawn towards security and safety needs which motivates them to bring themselves into alignment with their ought-selves, thereby increasing the salience of potential losses to be avoided" (Hanke et al., 2019, p. 110). Thus, prevention-focused individuals are motivated to employ avoidance strategic means to attain their goals (Higgins et al., 2001).

Within the domain of health and the literature on food behaviours, an 'approach' strategy is usually undertaken to target promotion-focused individuals, while an 'avoidance' strategy best works with prevention-focused individuals (Pillai et al., 2019). For instance, Keller (2006) examined a person's regulatory focus determines the salience of self-efficacy (perceived ease) or response efficacy (perceived effectiveness) of health behaviours. The study found that self-efficacy is weighed more than response efficacy when the regulatory focus is promotion, whereas the reverse is true for prevention focus. While the belief in one's ability to succeed in specific situations or accomplish a task is certainly pivotal in transforming health behaviours, there are several studies within the domain that have also highlighted the importance of the social context and normative influence when it comes to shaping eating habits and behaviours (e.g., Higgs, 2015; Schwartz et al. 2017; Lally et al. 2011; Mollen et al., 2013; Pedersen et al., 2015; Bevelander et al. 2012). Regulatory fit (vs. regulatory nonfit) results in greater processing fluency (Vaughn, 2010; Lee and Aaker 2004) has a greater influence on actual behavior (Daryanto et al. 2010), and is more persuasive (Cesario et al. 2004). For health-related messages that are positively received, this should increase attitudes towards the product the message promotes as consumers confuse the source of feeling right to the product they are evaluating (Kim 2006). In the context of social norms, this implies that a better fit between norm and regulatory focus should increase the attitude towards the promoted product or behaviour. A study by Melnyk et al. (2013) examined sustainable marketing messages using social norms in many situations where different goals are dominant. They found messages with descriptive norms are perceived as more fluent and have a stronger impact on attitudes and intentions when promotion goals are salient than when prevention goals are salient. Furthermore, unlike descriptive norms, the study suggested that injunctive norms were not affected by regulatory focus. Furthermore, health literature emphasises that the application of regulatory focus stimulates an individual to engage in the same behaviour but for various

reason (Bertolotti et al., 2020; Pula et al., 2014). For example, a study by Kees et al. (2010) found that changes in health-related attitudes and intentions were largely motivated as a result of consumer responses to negative consequences of a risky behaviour in health-related advertising. Pula et al. (2014) examined relationships between regulatory focus and food choice motives and found that participants with a prevention focus placed greater importance on mood, convenience, and familiarity than participants with a promotion focus where an emphasis with naturalness and price were key food choice motives. Moreover, Pillai et al. (2019) conducted a large-scale study with Taiwanese consumers to examine the role of regulatory focus as an antecedent of nutrition involvement and found a positive effect of promotion focus and no significant effect of prevention focus on nutrition involvement. Finally, a more recent study by Pichierri et al. (2020) highlighted that consumers react differently to functional (emphasises promotion foci) and risk related (emphasises prevention foci) health claims. They also found that the effect on behavioural intentions towards the health product was significant only among prevention-focused consumers. Therefore, the following is hypothesised:

H_1: Regulatory focus will have a significant positive impact on their intention to avoid junk food.

2.3. Health consciousness

Health consciousness is defined as an indicator of an individual's willingness to a healthier self and takes a necessary action to obtain this goal (Chen 2009; Smit et al., 2018; Sun and Liang, 2020). This means that possessing relevant knowledge in relation to the nutritional benefits of various food products can facilitate a positive effect on food selection, which leads to a healthy lifestyle (Pillai et al., 2019). In a recent study by Sakib et al. (2020), health consciousness emerged as a significant factor in attaining motivational drive for healthy behaviour compliance or health-related behaviour change. Moreover, studies have suggested that being health consciousness and adopting a healthy lifestyle are correlated, and the positive relationship between the two will lead to enhancing the overall consumer's health and well-being (Smit et al., 2018; Sun and Liang, 2020). It is important to note the role of motivational orientation towards health goal pursuits needs to align with the individual's interest and beliefs in order to successfully develop healthy behaviours (Cornwell et al., 2019). Studies also revealed that people with a positive belief and attitude towards healthy food products are more

likely to accept similar food products with similar attributes (e.g., organic, natural) without much resistance (Kapoor and Munjal, 2017; Cornwell et al., 2019; Sakib et al., 2020). It has also been evident that individuals with a higher level of health consciousness are more likely to engage in health-promoting behaviours (Florack et al., 2013; Chang, 2020). On the contrary, individuals who do not find a congruent alignment with their motivation will tend to exhibit low self-efficacy and thus less likely to engage in a particular behaviour (Tudoran et al., 2012). Therefore, the following is hypothesised:

H_2: Consumers' health consciousness mediates the relationship between regulatory focus and intention to avoid junk food.

2.4. Perceived risk

According to health studies, perceived risk is defined as people's perceptions about their susceptibility or vulnerability to disease and is thought to be a significant predictor of preventive health behaviour (Rundmo, 1999; Rimal, 2001; Rimal and Real, 2003). More specifically, health campaign literature suggests that perceived risk of a disease is thought to be a motivator of change (Mckinley and Limbu, 2020; Lopez-Quintero and Neumark, 2010; Dosman et al., 2001; Setbon et al., 2005). Perceived risk is often raised when consumers' health consciousness is compromised (Chou et al. 2020), suggesting that consumer's awareness of harmful diseases or unhealthy eating practices are likely to inform decision making and influence behavioural intention. However, several studies have also argued that by highlighting the perceived risk or health consequences, this may impede on the effectiveness of health communication and messages due to strong emotional appeals such as fear, guilt or embarrassment (Lopez-Quintero and Neumark, 2010) as a response to these advertisements and thus would likely have a negative influence on individuals' self-efficacy and their intention towards healthy eating (Tudoran et al., 2012). According to the *Prospect Theory* and negative bias studies (Kahneman and Tversky, 1979; Nickerson, 1998; Rozin and Royzman, 2001), the choices people make will differ depending on whether they (i.e., choices) are framed as a loss or a gain. The displeasure of a loss is perceived as greater than the pleasure of a gain. Therefore, decision makers are more willing to make choices involving risk to prevent a loss than to acquire a gain (McKinley and Limbu, 2020). Therefore, the following is hypothesised:

H_3: The positive relationship between regulatory focus and health consciousness is strengthened by consumers' perceived risk of junk food.

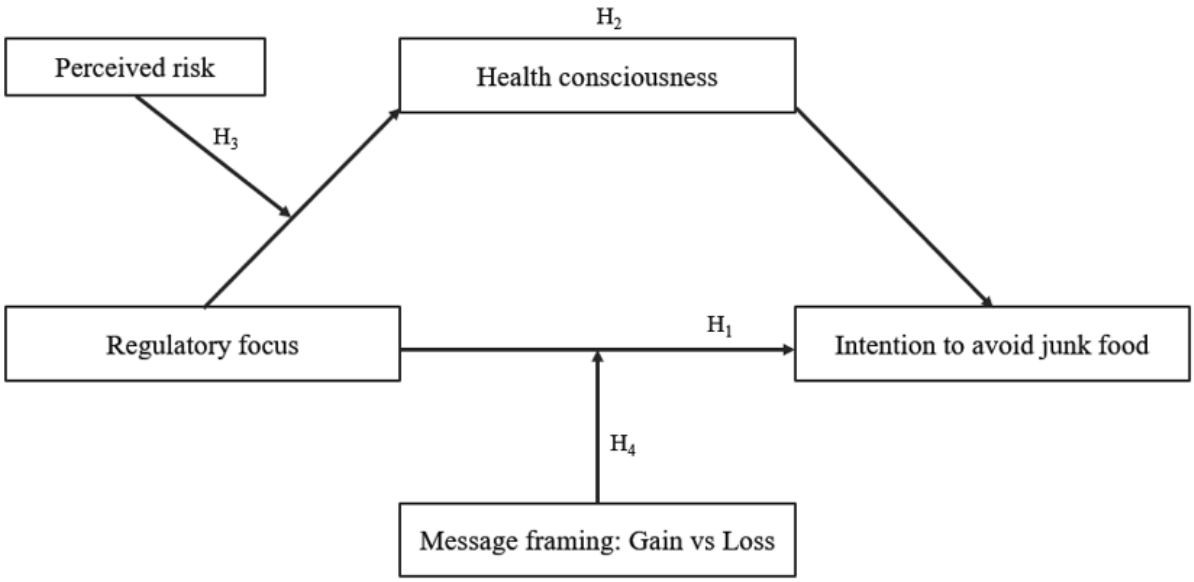
2.5. Message framing: Gain vs loss

Message framing is described as manipulation a message that emphasises on a positive or negative orientation (Quick et al., 2016). It is a communications strategy that influences a persons' attitude, judgement and behaviour (Kuo et al. 2018). For instance, health communications can be framed in terms of the "benefits of engaging in a particular behaviour (a gain frame), or in terms of the costs of failing to engage in the behaviour (a loss frame)" (Sherman et al., 2006, p. 165). The differential effects of gain and loss frames on behaviours are predicted by prospect theory (Kahneman and Tversky, 1979), which proposes that individuals are risk-seeking in the domain of losses and risk-averse in the domain of gains (McKinley and Limbu, 2020). Health researchers have taken advantage of this framework to strategies ways in which loss frames can be leveraged, and to identify moderators to understand when gain frames may be more powerful (Persky et al., 2019). While this framework and associated empirical findings present important implications for the impacts of framed health messages on multiple health domains, it is also important for studies to continue to validate these framing effects across contemporary health related issues and topics (Persky et al., 2019; Quick et al., 2016; Kuo et al., 2018). Most studies (i.e. Mann et al., 2004; Sherman et al., 2006; Kuo et al., 2018; Ratcliff et al., 2019) have found that health messages framed to be congruent with individuals' approach/avoidance motivations. The regulatory fit (Higgins, 1997; Higgins et al., 2001) has been found to be more effective in promoting health behaviours with a combination of approach/avoidance motivations. Therefore, the following is hypothesised:

H_4: Message framing can strengthen the relationship between regulatory focus and intention to avoid junk food. In particular, promotion focus consumers show stronger intention to avoid junk food in gain framing situation. By contrast, prevention focus consumers will show stronger intention in loss framing situation.

The hypothesised relationships are presented in Figure 1.

Figure 1. Research framework



3. STUDY 1

Study 1 examines the impact of regulatory focus on the consumers' intention to avoid junk food (H_1). In addition, the mediating role of health consciousness on the relationship between regulatory focus and intention to avoid junk food is tested (H_2).

3.1. Method, design, and procedure

A self-administered online survey questionnaire was employed to collect data from a consumer panel (i.e., Qualtrics) in Australia. The survey questionnaire included five sections. The first section briefly noted the purpose and confidentiality of the survey. The second section included the measurement items for regulatory focus (Haws et al. 2010) and health consciousness (Ophuis 1989; Chen 2009). Then, the notion of junk food was briefly described and the participants' junk food eating habit was enquired. Next, the participants' intention to avoid junk food (Sun and Lang 2020; Jun and Arendt 2016) was measured. The constructs were measured through a 7-points scale, ranging from 1 = strongly disagree, 7 = strongly agree. All the measurement items and corresponding reliability are presented in Table 1. The final section included the participants' demographic profile. Of the collected 160 responses, 12 were discarded due to incomplete in nature. Thus, 148 responses (51.4% Male, 50% aged 18-40 years, and 54% had a university degree) were considered into final analysis. Data were analysed through IBM SPSS 26.0.

Table 1. Measurement constructs and reliability

Measurement constructs	Reliability (α)
Regulatory focus *(Haws et al. 2010)*	0.78
I feel like I have made progress toward being successful in my life.	
When I see an opportunity for something I like, I get excited right away.	
I frequently imagine how I will achieve my hopes and aspirations.	
When it comes to achieving things that are important to me, I find that I perform as well as I would ideally like to do.	
I see myself as someone who is primarily striving to reach my "ideal self"—to fulfil my hopes, wishes, and aspirations.	
I usually obeyed rules and regulations that were established by my parents.	
Not being careful enough has gotten me into trouble at times.	
I worry about making mistakes.	
I frequently think about how I can prevent failures in my life.	
I see myself as someone who is primarily striving to become the self I "ought" to be—fulfil my duties, responsibilities and obligations.	
Health consciousness *(Ophuis, 1989; Chen, 2009)*	0.76
I have the impression that I sacrifice a lot for my health.	
I consider myself health conscious.	
I think that I take health into account a lot in my life.	
I think it is important to know well how to eat healthy.	
I often dwell on my health.	
Intention to avoid junk food *(Sun and Lang, 2020; Jun and Arendt, 2016)*	0.92
I consider avoiding junk food.	
I intend to avoid junk food.	
I am willing to avoid junk food in near future.	
I will avoid junk food.	
Perceived risk *(Yarimoglu et al., 2019)*	0.80
Junk food ingredient is not fresh.	
Junk food storage is not appropriate.	
Junk food nutrition is unbalanced.	
Junk food makes people obese.	

3.2. Results and discussion

A Pearson's correlation test was conducted to test H_1. The results show a moderate and statistically significant ($r = 0.23$, $n = 148$, $p < 0.01$) relationship between regulatory focus and intention to avoid junk food. Therefore, H_1 was supported.

H_2 postulated that health consciousness would mediate the relationship between regulatory focus and junk food avoidance intention. This hypothesis was examined with the PROCESS macro (Model 4), developed by Hayes (2013), with a bootstrapping of 5,000 times and 95% confidence interval. The result showed that regulatory focus had a significant positive impact on health consciousness ($\beta = 0.21$, $t = 3.30$, $p < 0.01$, CI: 0.83, 0.33) and health consciousness was positively related to junk food avoidance intention ($\beta = 0.47$, $t = 5.12$, $p < 0.01$, CI: 0.29, 0.65).

The mediation analysis induced a statistically significant indirect effect of regulatory focus on avoidance intention through health consciousness (indirect effect = 0.10, CI = 0.03, 0.17). This mediation effect accounted for the total effect of 0.22, $SE = 0.08$, $t = 2.86$, $p < 0.01$ and CI: 0.07, 0.37. Thus, health consciousness mediated in the relationship between regulatory focus and junk food avoidance intention. Hence, H_2 was supported as well.

Study 1 finds that regulatory focus positively influences the consumers' intention to avoid junk food. This finding mirrors the notion that individuals who are aligned on a positive outlook and aim at ideals, growth, and achievement are the promotion-oriented focus (Higgins, 1997). Previous research on regulatory focus further emphasises that promotion focus on the enthusiasm and optimistic attitude facilities the individual's hopes and desires in life (Zarouali et al. 2019). Also, a strong positive effect on behavioural intention (e.g. avoiding junk food) occurs when health consciousness is assisted by regulatory focus. This outcome is similar to previous relevant studies that have found mediating role of health consciousness on the relationship between emotional intelligence and health behaviour (Espinosa and Maglajlic, 2018).

4. STUDY 2

Study 2 examines the moderating influence of perceived risk on the relationship between regulatory focus and health consciousness (H_3).

4.2. Method, Design, and Procedure

The survey design and data collection procedure for study 2 were replicated from the study 1. The five-item scale for measuring perceived risk (Yarimoglu et al. 2019) was included in the survey next to the participants' intention to avoid junk food. A total of 132 responses (64% female, 58% aged 18-40 years, and 62% had a university degree) deemed valid and useable.

4.3. Results and discussion

To test the H_3, a moderated mediation model was tested through Hayes's (2013) PROCESS macro (Model 7) with a bootstrapping of 5,000 times and 95% confidence interval. The results for the moderation effect of perceived risk on the relationship between regulatory focus and health consciousness are summarised in Table 2. The results show that interaction term between regulatory focus and perceived risk is positive ($\beta = 0.18$, SE = 0.05, $p < 0.01$). Figure 2 suggests that for the consumers' with high perceived risk, regulatory focus is more positively correlated with health consciousness than for those who have less perceived risk. Thus, the H_3 is supported.

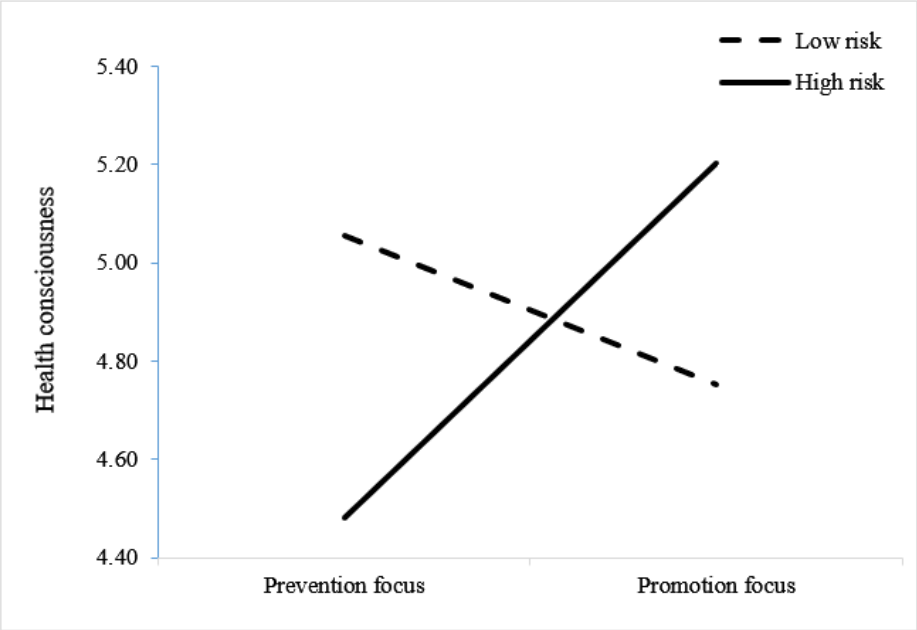
Table 2. The moderation effect of perceived risk for regulatory focus on health consciousness

	β	SE	*t*	*p*	95% bias-corrected bootstrap CI
Constant	5.00	0.35	14.33	0.000	[4.31, 5.69]
Regulatory focus	-0.74	0.28	-2.68	0.008	[-1.29, -0.19]
Perceived risk	-0.03	0.07	-0.39	0.700	[-0.17, 0.11]
Regulatory focus × Perceived risk	0.18	0.05	3.26	0.001	[0.07, 0.28]

The result of study 2 indicates that the perceived risk moderates the relationship between regulatory focus and health consciousness. This finding aligns with past studies that show that perceived risk is a critical factor in influencing consumers' health related behaviour (e.g., Van't Riet et al., 2016; Mckinley and Limbu, 2020). This impact prevails when individuals evaluate

the gravity of risk to health and subsequently prompt for behavioural change (Chou et al., 2020).

Figure 2. The moderating influence of perceived risk on junk food avoidance intention



5. STUDY 3

Study 3 examines the interaction of message framing and regulatory focus on the junk food avoidance intention. It is expected that promotion (vs. prevention) focus consumers will show stronger intention to avoid junk food in gain (vs. loss) framing situation.

5.1. Stimulus design and pre-test

Two informational flyers containing gain versus loss message type were developed. Both materials contained the similar visual elements; the writing style and theme detailing were held constant across the materials (Orazi et al., 2015). Both flyers contained the heading "Avoid Junk Food". In addition, the same photo of junk food with a fast-food menu theme, and information about health benefit (cost) on the gain (loss) frame were integrated (Ratcliff et al., 2019; Orazi et al. 2015). Information on the flyers were employed from NDTV Food (Rana,

2017) and Healthline (Pietrangelo, 2014). The participants were primed with a vignette of the following situational context *"Imagine you are going for your annual health check-up. After your appointment, the doctor suggests that you reconsider your junk food intake and gives you the following information flyer"*. Based on the 4-item, 7-point Likert scale, manipulation check questions adapted from Kim (2010) and a pre-test (n = 19) was conducted to ensure the expected triggering of the message framing. The results were statistically significant for both gain (M_{gain} = 6.50, M_{loss} = 2.94, t = 5.34, $p < 0.01$) and loss (M_{loss} = 6.00, M_{gain} = 2.40, t = -0.63, $p < 0.01$) message framing. The survey questionnaire and data collection procedure were replicated from study 1. The vignette, flyer(s) and manipulation check questions were placed after health consciousness and before intention to avoid junk food construct.

5.2. Experimental protocol

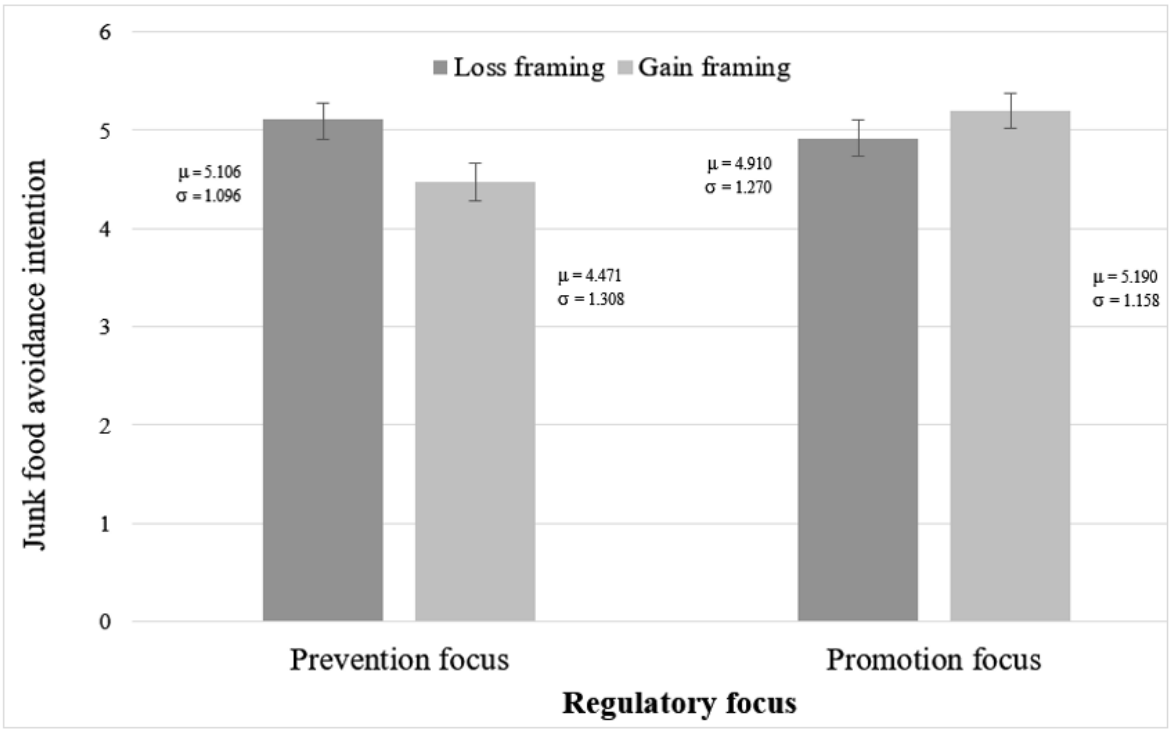
A 2×2 between-subjects experimental design was used with regulatory focus (promotion vs. prevention focused) and two types of message framing (gain vs. loss). The experiment was conducted online using a consumer panel (i.e., Qualtrics). A total of 168 valid responses (52% female, 62% aged 18-40 years, and 56% had a university degree) were analysed. At first, the participants were briefly introduced with the purpose of this research. In the next section, they responded to the regulatory focus measures. Next, they read the vignette and were randomly assigned to either gain or loss framing message and answered to the junk food avoidance intention items. Finally, basic demographics were enquired. In the main study, the manipulation check results were also statistically significant for both gain (M_{gain} = 6.61, M_{loss} = 2.31, t = 17.68, $p < 0.01$) and loss (M_{loss} = 6.19, M_{gain} = 3.28, t = -9.09, $p < 0.01$) message framing.

5.3 Results and discussion

A 2×2 ANOVA revealed that the interaction of message framing and regulatory focus type was significant: F (3, 164) = 5.96, p = 0.02. However, the main effects of regulatory focus type (F = 1.95, p = 0.16) and message framing (F = 0.90, p = 0.35) were statistically non-significant. The result for the promotion focused individuals indicated that they have a higher intention to avoid junk food when provided with gain framing message (M = 5.19, SD = 1.16) than a loss-framing message (M = 4.91, SD = 1.27). On the other hand, prevention focused individuals reported a higher intention to avoid junk food for a loss-framing message (M = 5.11, SD =

1.10) than the gain-framing message (M = 4.47, SD = 1.31). Overall, the results suggest that the appropriate combination of regulatory focus and message framing increases the junk food avoidance intention (Figure 3).

Figure 3. The influence of message framing and regulatory focus on junk food avoidance intention



The findings of the study 3 suggest that an individual will positively process health information when presented with long term benefits (Orazi et al. 2015; Chang 2020). In the present study, the gain-framing message focuses on the healthy weight loss, robust immune system, improved muscle tone, healthy skin and hair, and a better mood. These benefits activate the promotion focused individual's intention to avoid junk food. By contrast, in line with the prospect theory, the potential health risks (e.g., obesity, weak cardiovascular system, diabetes and heart disease) would motivate the prevention focused individual's junk food avoidance intentions. The interaction outcome of regulatory focus and message framing is consistent with past similar studies (e.g., Cui et al., 2019). Few other studies also indicate that freedom threats and

reactance theory are possible factors to consumers' cognitive response to message framing in health-related campaigns (Ratcliff et al. 2019; Kees et al. 2010).

6. GENERAL DISCUSSION

The purpose of this research was to investigate the impact of consumers' regulatory focus on their intention to avoid junk food. Built on that, the mediating role of health consciousness and the moderating role of perceived risk were tested. Finally, the influence of regulatory focus on an individual's intention to avoid junk food was examined under the conditions of gain/loss message framing. The results across the three studies show that compared to avoiding negative consequences (e.g., health risks), consumers' desire for achieving positive health benefits has a stronger impact on junk food avoidance intention. Also, the promotion focused consumers who are more goal orientated demonstrated (to a larger degree) a stronger health consciousness then their counterparts (i.e., prevention focused consumers). This finding deviates from past studies (Keller, 2006; Uskul et al. 2008; Kees et al. 2010; Florack et al. 2013; Pillai et al. 2019) and disputes the notion that preventive (or implied prevention foci) techniques such as negatively framed stimuli (i.e. risk related health claims) are superior in motivating attitude, judgement and behavioural change, especially in persuading health related goals and outcomes. Moreover, the consumers' perceived risk strengthens the relationship between regulatory focus and health consciousness. This finding shows a positive correlation between consumers' understanding of the risks (resulted from junk food consumption) and being conscious about physical wellbeing. In line with past studies on health-related behaviour (e.g., Carcioppolo, 2016), the notion of health consciousness has been found to enhance consumers' intention to avoid junk food. Finally, this research finds that message framing combined with the appropriate regulatory focus positively influences the consumers' intention to avoid junk food. In particular, the study 3 indicates that promotion focus fits well to gain framing, and the prevention focus fits well to loss-framing. This finding aligns with the past studies that find that when there is a "fit" between consumers' regulatory focus and the message framing, the message appeal is evaluated positively and consumers demonstrate a stronger behavioural intention (Chou 2020; Kees et al. 2010; Mckinley and Limbu 2020). Moreover, according to the protection motivation theory, the prospect theory and negative bias studies (Rogers, 1975, Kahneman and Tversky, 1979; Nickerson, 1998; Rozin and Royzman, 2001) a person may tend to assign more weight to negative aspects over positive aspects as a prevention mechanism to

justify attitude or behavioural change. As such, a plausible explanation for this asymmetry might be that negatively framed messages generally incorporates risk related elements and emphasises potential losses. This unequal weight assignment could also explain why prevention-focused individuals are more sensitive to risk-related health information than promotion-focused consumers are to functional health information (Cui et al. 2019; Pichierri et al. 2020).

7. IMPLICATIONS

7.1. Conceptual implications

This research provides empirical support toward the understanding of regulatory focus, health consciousness, perceived risk and message framing within the context of consumers' intention to avoid junk food. By applying the regulatory focus theory (Higgins et al., 2003) as well as providing an emphasis on gains or losses used to manipulate regulatory fit in assessing health communication messages provides a substantial contribution toward the marketing communications literature. More importantly, this study suggest that such an impact depends on consumer's health regulatory focus (Gomez, Borges and Pechmann, 2013), which is an individual difference that has rarely been examined in prior food consumption research. The findings validate and extend the current theoretical framework in relation to unhealthy eating behaviours (e.g., junk food consumption). This research also found that the mediating effect of health consciousness led to higher intention towards junk food avoidance for individuals whose outcome expectations are focused on promotion rather than prevention. Perceived risk further amplified the relationship between an individual's regulatory fit and their health consciousness. Overall, the study has confirmed that personal, psychological and social factors play an important role in the formation and alteration of dietary decisions. More specifically, the study has successfully integrated social psychological theories to help better understand these dietary decisions based on individual's motivations to avoid junk food consumption.

7.2 Managerial implications

From a practical point of view, this research provides some meaningful insights for food companies, health professionals and policy makers that are involved, directly or indirectly, in

the healthcare and medical industry in Australia. The main results suggest that health professionals and practitioners should initiate the facilitating of regulatory fit when developing health communication and messages in order to pre-emptively abate unhealthy eating behaviours. Given that regulatory fit is effective when promotion-focus consumers being in gain-framing situations or prevention-focus consumers being in loss-framing situations, it is important that the type of motivation foci and priming approach is identified and reinforce in the message elements. For example, health professionals should design the message framing so that it appeals to each target audience segments with different regulatory focus and fit. While aligning the right intervention methods to the situation is ideal, health communication and messages should not be a standardised "one size fits all" concept. Health professionals and policy makers are therefore advised to (a) source for online tools (e.g., google analytics, consumer barometers) that provides analytical information which will aid in identifying priority through important market segmentation bases such as psychographic and geographic, (b) utilise the correct type of health information or claims for the appropriate consumer segment (whether prevention or promotion foci) to effectively implement campaigns and programs. For example, the results have indicated that in gain-framing situations to be more prevalent when it comes to facilitating a health behavioural change. This might suggest that marketing communications should highlight the potential benefits, in terms of strengthen immunity, deriving from avoiding junk food consumption as opposed to highlighting the aversive consequences, in terms of disease risks. This strategy may capitalise on a person's level of health consciousness and improve the perceived benefits of a gain-framing situation or message (such as new knowledge) among promotion focused consumers who are inclined to avoid junk food consumption or general unhealthy behaviours. In other words, and more so in this case, health professionals and policy makers interested in curbing the consumption of junk food should utilise "functional health information over risk-related ones" (Pichierri et al. 2020). Finally, the importance of health consciousness and perceived risk play a significant mediating and moderating role in facilitating the relationship towards avoiding junk food consumption. Therefore, individual dispositions and perceptions of health and risk are important to consider when it comes to formulating health communication and messages as they form the basis on how this information will be evaluated. Practitioners can utilise appropriate graphic compositions and advocacy programs to enhance the effectiveness of the health communications (e.g., Donnelly et al., 2018; Rekhy and Mcconchie, 2014).

7.3. Limitations and future research

Future research may consider developing upon the limitations of this study. First, examining health promotion efforts toward an antithetical health behaviour such as the promotion of fruit and vegetable consumption (Wright et al. 2020) would provide an alternative to obesity prevention. Second, the notion of interpersonal influence (subjective norms) on food choice is interesting and has the potential influence how individuals feel about healthy eating, this socially influenced construct would provide an extension to the current research model. Thirdly, a longitudinal study that examines commitment towards healthy eating (e.g., dieters) and those who are not committed would assist in validating current research propositions. Fourth, a diverse socio-cultural group to collect data could be considered as part of further research as this will result in a more conclusive result (Wang and Lei 2019). Future research may include comparison analysis of different age, gender, and other socio-demographic as a factor that leads to differential effects on the measurement construct of this research. For instance, there might be specific communication campaigns, either focusing on promotion of prevention focus, based on the target audience's RFT, health consciousness and perceived risk. Fifth, the participants'' intention to avoid junk food was examined within a hypothetical situation in this research. Additional research may examine the intention in a real-life context which would provide more rigour to the findings. Also, an innovative approach such as application of biometric methods (e.g. eye tracker and heart rate) could be applied to identify key elements and factors that influence the effectiveness of a health campaign. This will strengthen and identify specific stimuli that differentiate a promotion focus to a prevention focus. Further study should include the source credibility of the information (e.g. doctor, private health organisation, and insurance company) and its effect. Finally, future research could also consider the influence of emotional appeal, negative emotional variables, and regulatory focus on intention (Leshner et al. 2011; Yarimoglu et al. 2019). Therefore, further research is warranted on the psychological mechanism that influences the responses toward targeted message framing on consumers and affect marketing communication (Zarouali et al. 2019).

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