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Psychological reactance in advertising - validity and reliability of the HPRS

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Abstract

Background and aim: Psychological reactance influences how consumers perceive advertising messages, particularly when these messages contain restrictions or directives. The aim of this study is to develop and validate a reliable instrument for measuring young consumers' psychological reactance toward healthy food advertising. *Scope:* The research examines how restrictive advertising messages evoke perceptions of a lack of choice and threats to freedom among consumers aged 18 to 35. *Methods:* A survey was conducted among 209 consumers. The Hong Psychological Reactance Scale (HPRS), comprising four subscales, and an additional questionnaire measuring advertising-induced reactance through three subscales (perceived threat to freedom, lack of choice, and perceived constraints) were employed. Principal component analysis (PCA) confirmed a four-factor solution for the HPRS. Scale reliability was assessed using internal consistency coefficients, and Pearson correlation analysis was applied to examine relationships between dispositional and advertising-induced reactance. *Results:* Significant linear relationships were identified between dispositional reactance and advertising reactance. Reactance to compliance was positively associated with perceived threat to freedom and lack of choice, while Reactance to advice and recommendations showed strong positive relationships with lack of choice and perceived constraints. The advertising reactance subscales were moderately to strongly interrelated. Overall, restrictive advertising messages intensified perceptions of limited freedom and triggered resistance toward advertised products. When consumers experienced a lack of choice, compliance tendencies were observed, whereas clearly stated constraints occasionally led to more favorable attitudes toward healthy recommendations. *Conclusions:* Elevated levels of psychological reactance among young consumers are associated with negative responses to restrictive healthy food advertising. Advertising strategies should therefore minimize perceived pressure and control to reduce resistance. *Originality:* This study provides a validated instrument for assessing psychological reactance in advertising contexts and advances understanding of the mechanisms underlying consumer responses to health-related messages. *Practical implications*: Advertisers should frame healthy food recommendations in ways that support autonomy and provide choice in order to enhance campaign effectiveness.

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Key words: Psychological reactance, Healthy food advertising, Perceived threat to freedom, Lack of choice, HPRS.

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1. Introduction

In the field of communication, a wide range of persuasive mechanisms are employed to influence audiences, and advertising remains one of the most powerful and pervasive forms of persuasive communication. Advertising messages frequently aim to encourage behavioural change, such as reducing smoking and alcohol consumption, avoiding unhealthy foods, or adopting healthier lifestyles. While many of these messages support public health objectives, others primarily serve commercial interests and may conflict with consumers' existing attitudes, expectations, and personal values. As a result, individuals often exhibit resistance to persuasion, rejecting, avoiding, or counterarguing the intended influence of advertising content (Fransen et al., 2020; Rains, 2013).

One of the most influential theoretical frameworks for explaining resistance to persuasion is Psychological Reactance Theory (PRT), which conceptualizes reactance as a motivational state that arises when individuals perceive their freedom of choice to be threatened or restricted (Brehm, 1966; Brehm & Brehm, 1981). When such threats are perceived, individuals are motivated to restore their autonomy, often by opposing the persuasive source or rejecting the advocated behaviour. Psychological reactance has been widely applied in communication, psychology, and marketing research, particularly in the context of health-related persuasion, where messages often contain directive, normative, or restrictive elements (Quick et al., 2013; Rains, 2013; LaVoie et al., 2015).

Despite its theoretical importance, a central debate in reactance research concerns how psychological reactance should be conceptualized and measured. Some scholars argue that reactance is too subjective and context-dependent to be reliably quantified (Rains, 2013), while others propose multidimensional models that conceptualize reactance as a combination of cognitive responses (e.g., counter-arguing, perceived freedom threat) and affective reactions (e.g., anger, irritation), which can be systematically assessed using validated measurement instruments (Dillard & Shen, 2005; Fransen et al., 2020). Recent empirical work increasingly supports the latter view, demonstrating that well-designed scales can capture stable individual differences in reactance proneness as well as situationally triggered resistance to persuasion (LaVoie et al., 2015; Mühlberger et al., 2019).

In advertising research, psychological reactance has gained renewed attention due to the growing prevalence of highly personalized, normative, and algorithmically driven persuasive messages in digital media environments. Studies suggest that young consumers, in particular, are highly sensitive to perceived control, manipulation, and restrictions imposed by advertising messages, especially in domains related to health, lifestyle, and self-identity (Appel et al., 2020; Duffett, 2020; Yang et al., 2022). Healthy food advertising represents a particularly relevant context for examining reactance processes, as such messages often promote socially desirable behaviours while simultaneously limiting perceived choice through moral appeals, prescriptive recommendations, or fear-based framing. These characteristics make healthy food advertising a fertile domain for investigating how and when persuasion triggers resistance rather than compliance.

Against this backdrop, the present study revisits key theoretical and methodological issues in psychological reactance research by evaluating measurement instruments used in advertising contexts and testing the validity and reliability of the Hong Psychological Reactance Scale (HPRS) among young consumers exposed to healthy food advertising. In addition, the study develops and applies a context-specific measure of advertising-induced reactance, capturing perceived threat to freedom, lack of choice, and perceived constraints (Dillard & Shen, 2005). The overarching aim is to contribute to a more nuanced understanding of how dispositional reactance translates into resistance to restrictive advertising messages and how such resistance may undermine persuasion effectiveness.

Based on these theoretical and practical considerations, the study addresses the following research questions:

1. To what extent can the Hong Psychological Reactance Scale (HPRS) reliably measure psychological reactance among young consumers exposed to healthy food advertising?

2. How is psychological reactance manifested in response to advertising messages that include restrictive elements such as perceived threat to freedom, lack of choice, or constraints?

3. What relationships exist between individual differences in dispositional reactance and perceptions of restrictive persuasive strategies in healthy food advertising?

Building on Psychological Reactance Theory and prior empirical findings, these research questions are further specified through the following hypotheses, which guide the empirical analysis.

H1: The Hong Psychological Reactance Scale (HPRS) demonstrates satisfactory construct validity and internal reliability when applied to young consumers exposed to healthy food advertising.

H2: Higher levels of dispositional psychological reactance are positively associated with stronger perceptions of advertising-induced reactance, including perceived threat to freedom, lack of choice, and perceived constraints.

H3: Dispositional reactance dimensions related to resistance to compliance and reactance toward advice and recommendations are more strongly associated with advertising-induced reactance than emotional reactance dimensions.

H4: There are no statistically significant differences in psychological reactance toward healthy food advertising across age groups within young adulthood.

To fully understand why individuals resist persuasive advertising messages and how this resistance can be systematically examined, it is essential to review the theoretical foundations and empirical developments surrounding psychological reactance. Over time, the concept has evolved in response to diverse perspectives regarding its nature, triggers, and measurable outcomes. Contemporary research increasingly applies reactance theory across health-related behavioural domains, highlighting the importance of examining how young audiences respond to persuasive strategies that limit perceived autonomy (Fransen et al., 2020; Yang et al., 2022). Accordingly, the following literature review synthesizes key contributions to the study of psychological reactance, focusing on its conceptualization, measurement approaches, and relevance within advertising communication, thereby establishing a clear theoretical framework for the hypotheses tested in the present study.

2. Literature Review

According to Psychological Reactance Theory, individuals place a high value on their freedom, autonomy, and ability to make independent choices; consequently, they tend to respond negatively when these freedoms are threatened or restricted. Brehm (1966) originally conceptualized psychological reactance as a motivational state arising from perceived restrictions of freedom, arguing that the intensity of reactance depends on both the magnitude of the threat and the subjective importance of the threatened freedom (Brehm, 1966; Brehm & Brehm, 1981). Subsequent research has confirmed that reactance is not a uniform response but varies across individuals and situational contexts, reflecting differences in autonomy needs and sensitivity to external control (Rains, 2013; Fransen et al., 2020).

As psychological reactance increases, so does the individual's motivation to restore freedom and eliminate the perceived threat. This motivation may manifest in behaviors such as message avoidance, counter-arguing, source derogation, or outright rejection of persuasive attempts. In health communication contexts, for example, individuals may avoid messages about the harmful effects of smoking, alcohol, or drug use, or develop negative attitudes toward public health regulations, as observed during the COVID-19 pandemic (Quick & Bates, 2010; Mühlberger et al., 2019). In such situations, audiences may question the credibility of the message source, reject the authority of experts or opinion leaders, and display the so-called *boomerang effect*, whereby persuasion attempts lead to outcomes opposite to those intended (Byrne & Hart, 2009; Cho & Salmon, 2007).

In advertising contexts, similar processes have been observed. Repeated exposure to persuasive messages, excessive pressure, or overly directive communication styles may increase resistance and reduce message effectiveness, as consumers begin to ignore, discount, or actively counterargue the promoted content. Even

advertising messages designed to support public health goals may therefore fail to produce behavioral change or may generate unintended negative reactions (Fransen et al., 2015; Yang et al., 2022). Psychological Reactance Theory suggests that both message characteristics and message delivery conditions play a critical role in the activation of reactance (Brehm & Brehm, 1981). Empirical studies indicate that highly controlling, repetitive, or imperative language elicits stronger reactance responses than messages framed in autonomy-supportive or neutral terms (Miller et al., 2007; Rains, 2013). Visual message elements can also trigger reactance; for instance, graphic warning labels on cigarette packages have been shown to provoke resistance and message dismissal among certain audience segments (Shen, 2010; LaVoie et al., 2015). Paradoxically, reactance to anti-tobacco or alcohol prevention campaigns has, in some cases, been associated with increased consumption of the discouraged behavior, highlighting the complexity and potential counter productivity of persuasive health communication (Hammond et al., 2007; Yang et al., 2022).

These mixed and sometimes contradictory findings underscore the importance of accurately identifying and measuring reactance responses. Reliable measurement instruments are essential for distinguishing between dispositional tendencies toward reactance and situationally induced resistance to specific persuasive messages. One of the most widely used instruments for assessing individual differences in reactance proneness is the Hong Psychological Reactance Scale (HPRS), (Hong & Faedda, 1996). The HPRS conceptualizes reactance as a relatively stable personality trait that shapes how individuals perceive and respond to persuasive attempts. By employing validated tools such as the HPRS, researchers can more precisely examine maladaptive reactions and resistance mechanisms during message processing, particularly within advertising contexts where subtle forms of control and restriction are common (Quick et al., 2013; Fransen et al., 2020).

3. Psychological Reactance Theory (PRT)

Psychological Reactance Theory proposes that persuasive messages - regardless of whether they are framed positively or negatively—may be perceived as threats to individual freedom, thereby eliciting psychological reactance. Reactance has been defined as "the motivational state that is hypothesized to occur when a freedom is eliminated or threatened with elimination" (Brehm & Brehm, 1981, p. 37). When such threats are perceived, individuals become motivated to restore their threatened autonomy, often by resisting the persuasive attempt, rejecting the message source, or opposing the advocated behavior. Consequently, advertising messages and other forms of media communication may trigger reactance responses, particularly when they are perceived as controlling or restrictive.

Initially, psychological reactance was conceptualized as a situational response that emerges in reaction to specific threats to freedom (Brehm, 1966; Shen & Dillard, 2005). Subsequent theoretical developments, however, suggested that reactance may also function as a relatively stable individual difference variable (Wicklund, 1974). Although this personality-based interpretation diverged from Brehm's original situational focus, later work acknowledged that individuals differ in their general propensity to experience reactance across contexts (Brehm & Brehm, 1981). Individuals high in dispositional reactance typically view themselves as independent, autonomy-oriented, skeptical of authority, and resistant to external influence (Quick et al., 2013; Fransen et al., 2020). For this reason, examining psychological reactance within specific consumer groups is particularly valuable for understanding heterogeneous responses to persuasive advertising.

Research on psychological reactance has increasingly distinguished between situational reactance, triggered by specific message characteristics, and dispositional reactance, reflecting enduring individual tendencies to resist control and coercion (Burgoon et al., 2002; Rains, 2013). Because individuals vary in their need for autonomy and sensitivity to freedom threats (Wicklund, 1974), identical persuasive messages may facilitate information processing for some audiences while provoking resistance, counter-arguing, or message avoidance in others. To capture these differences, scholars have developed multiple measurement instruments designed to assess reactance proneness and reactance-related responses. Within this literature, reactance has been described through four primary dimensions: (1) emotional responses to restricted choice; (2) resistance

to compliance; (3) resistance to interpersonal influence; and (4) reactance toward advice and recommendations (Shen & Dillard, 2005).

Early attempts to operationalize reactance include the Merz Reactance Scale (Merz, 1983), although subsequent studies raised concerns regarding its factor structure and reliability (Donnell et al., 2001). The Therapeutic Reactance Scale (TRS) proposed by Dowd et al. (1991) gained prominence in clinical settings but demonstrated limited theoretical alignment with Psychological Reactance Theory when applied outside therapeutic contexts (Buboltz et al., 2002). Later, the Questionnaire for the Measurement of Psychological Reactance (QMPR) offered improved psychometric properties but continued to face challenges related to subscale reliability and applicability in media and advertising research (Burgoon et al., 2002). These limitations underscore the ongoing need for reliable and context-sensitive reactance measurement tools.

In advertising and health communication research, reactance is most likely to emerge when messages are perceived as restricting autonomy or imposing behavioral norms (Quick & Stephenson, 2007). Advertisements that employ imperative language, moralizing tones, or explicit behavioral directives may be interpreted as attempts to control personal decision-making (Fransen et al., 2015; Yang et al., 2022). In some cases, such restrictive health messages have been shown to provoke opposite behavioral outcomes, particularly among younger audiences. For example, adolescents and young adults may reject anti-smoking messages and increase consumption due to curiosity, identity signaling, or resistance to authority (Shoenberger et al., 2021; Mühlberger et al., 2019). These findings highlight the complex and sometimes counterproductive effects of persuasive communication.

Importantly, contemporary research suggests that psychological reactance may manifest differently across generational cohorts, reflecting variations in socialization, media environments, and attitudes toward authority. Generation Z consumers, for instance, have been shown to exhibit heightened sensitivity to perceived manipulation, inauthenticity, and control in digital advertising, particularly on social media platforms (Djafarova & Bowes, 2021; Priporas et al., 2023). Millennials, while also valuing autonomy, tend to display greater tolerance toward persuasive messages when these provide functional value, personalization, or social relevance (Bolton et al., 2013; Duffett, 2020). Despite these differences in media habits and engagement styles, recent studies indicate that the underlying psychological mechanisms of reactance—such as perceived threats to freedom and lack of choice—remain broadly comparable across younger cohorts (Fransen et al., 2020; Yang et al., 2022). This distinction between generational differences in communication context and similarities in reactance processes is particularly relevant for advertising research.

Psychological Reactance Theory has been widely applied across diverse behavioral domains, including alcohol reduction campaigns (Dillard & Shen, 2005), condom promotion (Quick & Stephenson, 2007), anti–drunk driving messages (Shen, 2010), advertising literacy and consumer empowerment (Miller et al., 2007), smoking prevention (Shen, 2010), sunscreen usage (Quick & Stephenson, 2008), and public attitudes toward drug policy and marijuana legalization (Miller et al., 2013). The adaptability of the theory across contexts has contributed to the development of multiple measurement instruments, each tailored to specific persuasive environments.

The present study applies the Hong Psychological Reactance Scale (HPRS) (Hong & Faedda, 1996) to measure dispositional psychological reactance in the context of healthy food advertising. The HPRS assesses enduring individual differences in reactance proneness and has demonstrated strong theoretical grounding in previous research. However, its application in advertising communication—particularly in relation to healthy food advertising—remains limited. Examining the validity and reliability of the HPRS in this domain, therefore, addresses an important research gap and provides a methodological foundation for future studies investigating resistance to persuasive advertising messages.

Given the diversity of approaches to operationalizing psychological reactance, **Table 1** presents a comparative overview of established measurement instruments, highlighting their strengths and limitations in persuasion and advertising research contexts.

Table 1

Summary of psychological reactance measurement instruments and their application in persuasion research

Instrument / Authors	Primary Context of Application	Strengths	Limitations (Research Gap Indicators)
Merz Reactance Scale (Merz, 1983)	General persuasion / clinical behaviour	First self-report reactance scale: conceptual relevance	Inconsistent factor structure; limited validity evidence in media settings
Therapeutic Reactance Scale – TRS (Dowd, Milne & Wise, 1991)	Clinical environments	Widely used in therapy-related reactance studies	Weak alignment with reactance theory; not suitable for consumer or advertising context
Questionnaire for the Measurement of Psychological Reactance – QMPR (Donnell, Thomas & Buboltz, 2001)	Social influence and communication	Improved psychometric structure; multi-factor approach	Reliability issues across subscales; limited use in media persuasion research
Perceived Threat to Freedom Scales (various adaptations)	Health communication, social behaviour	Sensitive to situational triggers; used in message testing	Measures state reactance only; lacks personality dimension
Hong Psychological Reactance Scale – HPRS (Hong & Faedda, 1996)	Dispositional reactance across populations	Strong theoretical grounding; captures trait reactance; suitable for advertising audiences	Rarely validated in advertising; limited evidence on reliability in consumer persuasion; insufficient application to healthy food advertising

Source: Authors' Compilation, 2026.

Despite the extensive application of Psychological Reactance Theory across multiple behavioural domains, its measurement tools have been only partially examined within advertising communication research, particularly with respect to consumers' responses to healthy food advertising. Existing instruments, such as the HPRS, have not been sufficiently validated for use among advertising audiences, leaving uncertainty regarding their applicability, reliability, and construct validity in this field. Addressing this gap, the present study examines the factor structure, reliability, and external validity of the HPRS in a sample of young consumers exposed to healthy food advertising, thereby contributing to a more precise understanding of resistance mechanisms and supporting the development of more effective persuasion strategies.

4. Material and Methods

4.1. Research Objective and Study Design

The primary objective of this study is to examine the reliability and validity of the Hong Psychological Reactance Scale (HPRS) (Hong & Faedda, 1996) in the context of healthy food advertising, as well as to identify key components of advertising-induced reactance among young consumers. To achieve this objective, the study adopts a quantitative, cross-sectional survey design, which is widely regarded as an appropriate methodological approach for examining psychological constructs and persuasion-related processes in communication research (Creswell & Creswell, 2018).

Data were collected using an online self-administered questionnaire distributed via social media platforms. This approach is commonly used in studies targeting young and digitally active audiences and allows for efficient data collection in naturalistic media environments (Wright, 2005). The survey design enables the examination of associations between dispositional psychological reactance and situational reactance elicited by persuasive advertising messages.

The final sample consisted of 209 respondents aged between 18 and 35 years. Of these, 50.7% were men (n = 106) and 49.3% were women (n = 103). Participants were categorized into three age groups: 18–20 years

(34.4%, n = 72), 21–24 years (34.0%, n = 71), and 25–35 years (31.6%, n = 66). This age distribution allows for exploratory examination of reactance responses across different stages of young adulthood.

4.2. Measurement Instruments

Dispositional psychological reactance was measured using the Hong Psychological Reactance Scale (HPRS) developed by Hong and Faedda (1996). The HPRS consists of 11 items assessed on a five-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The scale captures four dimensions of trait reactance: emotional response to restricted choice, reactance to compliance, resistance to influence from others, and reactance to advice and recommendations. The HPRS has been widely applied as a validated instrument for assessing individual differences in reactance proneness, particularly in research on persuasive communication, resistance, and social influence (Hong & Faedda, 1996; Rains, 2013).

To assess reactance triggered specifically by persuasive healthy food advertising, an author-developed measurement instrument was constructed based on the theoretical foundations of Psychological Reactance Theory (Brehm, 1966; Brehm & Brehm, 1981) and prior applications in health communication research. This context-specific scale comprises three subscales: **perceived threat to freedom** (4 items), **lack of choice** (4 items), and **perceived constraints** (3 items). All items were formulated to refer explicitly to healthy food advertising content encountered on social media platforms and were evaluated using the same five-point Likert scale.

Examples of items include statements such as: *"Healthy food advertising messages threaten my freedom to choose," "Healthy food advertising messages limit my choice between different products,"* and *"Messages in healthy food advertisements are not comprehensive and limit essential information."* The inclusion of these three subscales reflects key components of situational reactance identified in prior literature, namely perceived autonomy threat, restriction of choice, and external constraint (Dillard & Shen, 2005; Rains, 2013).

The combined use of a validated dispositional measure (HPRS) and a context-specific instrument for advertising-induced reactance allows for a comprehensive assessment of both stable reactance proneness and reactive responses elicited by restrictive persuasive messages. This measurement approach enables a precise examination of resistance mechanisms emerging in response to healthy food advertising within contemporary digital media environments.

4.3. Participants and Procedure

The study sample consisted of 209 young consumers aged between 18 and 35 years who actively use social media platforms on which healthy food advertising is present. To ensure the relevance of the sample to the research context, participants were required to meet the following inclusion criteria: (1) active use of Facebook and/or Instagram, (2) prior exposure to healthy food advertising on these platforms, and (3) prior consumption of healthy food products. These criteria ensured that respondents were familiar with both the advertising environment and the product category under investigation.

The gender distribution of the sample was relatively balanced, with 50.7% male respondents (n = 106) and 49.3% female respondents (n = 103). Participants were further categorized into three age groups: 18–20 years (34.4%, n = 72), 21–24 years (34.0%, n = 71), and 25–35 years (31.6%, n = 66). This age segmentation allows for exploratory analysis of potential differences in psychological reactance across different stages of young adulthood.

Data were collected using an online self-administered questionnaire distributed through social media channels. Before participation, respondents were informed about the purpose of the study, the voluntary nature of their involvement, and their right to withdraw at any time. Informed consent was obtained from all participants, and anonymity and confidentiality of responses were ensured. The online survey format was selected as a suitable and effective method for reaching digitally active young consumers who are regularly exposed to advertising messages in a social media environment.

5. Data Analysis

Data analysis was conducted using IBM SPSS Statistics (Version 26). The analytical strategy followed a systematic, multi-step procedure to evaluate the psychometric properties of the Hong Psychological Reactance Scale (HPRS), (Hong & Faedda, 1996) and the newly developed subscales measuring advertising-induced psychological reactance in the context of healthy food advertising. The full dataset comprised 22 items, including 11 items from the HPRS and 11 items assessing reactance toward advertising messages.

To examine construct validity, Principal Component Analysis (PCA) with Varimax rotation and Kaiser normalization was employed, a widely used approach in scale validation research aimed at improving factor interpretability and reducing multicollinearity (Kaiser, 1974; Hair et al., 2018). Consistent with established methodological guidelines, only items with factor loadings above .40 were retained as valid indicators of the underlying constructs (Hair et al., 2018; Hinkin, 1998). Sampling adequacy was assessed using the Kaiser–Meyer–Olkin (KMO) measure and Bartlett's test of sphericity (Bartlett, 1954). All HPRS subscales demonstrated acceptable sampling adequacy, with KMO values ranging from .604 to .657 and statistically significant Bartlett's tests ($p < .001$), indicating suitability for factor analysis (see Table 2). PCA was also conducted on the advertising reactance items to examine the structural coherence of the three proposed subscales: perceived threat to freedom, lack of choice, and perceived constraints. The resulting factor structure supported the theoretical distinction between these dimensions, which aligns with contemporary conceptualizations of situational reactance in health and advertising communication (Dillard & Shen, 2005; Rains, 2013; Fransen et al., 2020).

Internal consistency reliability was assessed using Cronbach's alpha, following commonly accepted benchmarks for exploratory research (DeVellis, 2012; Hinton et al., 2014). The HPRS demonstrated acceptable reliability across all four dimensions: Emotional response to restricted choice ($\alpha = .769$), Reactance to compliance ($\alpha = .706$), Resisting influence from others ($\alpha = .663$), and Reactance to advice and recommendations ($\alpha = .659$). The overall HPRS scale yielded a Cronbach's alpha of .708, exceeding the recommended minimum threshold for research applications. These values are comparable to, and in some cases exceed, reliability estimates reported in recent studies applying the HPRS in communication and persuasion contexts (Quick et al., 2013; LaVoie et al., 2015; Fransen et al., 2020).

Reliability analyses were also performed for the three advertising-induced reactance subscales, demonstrating acceptable internal consistency given the context-specific and situational nature of the construct. Prior research has shown that situational reactance measures often yield moderate reliability coefficients due to contextual sensitivity and message-specific variation (Rains, 2013; Mühlberger et al., 2019). In this respect, the reliability levels obtained in the present study are consistent with those reported in recent health communication research examining reactance toward normative or restrictive messages (Yang et al., 2022; Priporas et al., 2023).

Following scale validation, composite scores for all subscales were computed by averaging item responses. Pearson product–moment correlation analyses were then conducted to examine associations between dispositional psychological reactance and advertising-induced reactance dimensions. Prior to analysis, assumptions of normality, linearity, and homoscedasticity were assessed and met. Statistical significance was evaluated at $\alpha = .05$, and effect sizes were interpreted using Cohen's (1988) guidelines.

This analytical approach reflects contemporary theoretical assumptions that psychological reactance operates both as a stable dispositional trait and as a situational response to perceived autonomy threats in persuasive communication (Shen & Dillard, 2005; Rains, 2013; Fransen et al., 2020). By integrating a validated dispositional measure with a context-specific advertising reactance instrument, the present study responds to recent calls for research that examines reactance in realistic digital advertising environments, particularly in the domain of healthy food promotion (LaVoie et al., 2015; Mühlberger et al., 2019; Yang et al., 2022).

6. Results and Discussions

6.1. Construct Validity of the HPRS

A Principal Component Analysis (PCA) with Varimax rotation was conducted to examine the factor structure of the Hong Psychological Reactance Scale (HPRS). Sampling adequacy was confirmed by the Kaiser–Meyer–Olkin measure (KMO = .678), and Bartlett's test of sphericity was statistically significant ($\chi^2_{(55)} = 277.60$, $p < .001$), indicating that the data were suitable for factor analysis. The analysis yielded a four-factor solution that is consistent with the original theoretical framework proposed by Hong and Faedda (1996).

All items demonstrated factor loadings above the recommended threshold of .40, confirming their relevance to the underlying constructs (Hair et al., 2018). The four extracted factors jointly explained 48% of the total variance, which is comparable to explained variance levels reported in previous validations of multidimensional reactance measures and personality-related scales (Shen & Dillard, 2005; LaVoie et al., 2015; Fransen et al., 2020). The rotated component matrix presented in Table 2 shows a clear and interpretable loading pattern, with each item loading strongly on its intended factor and minimal cross-loadings.

Table 2

Factor loadings for the 11 HPRS items based on PCA with Varimax rotation

Item Label	Item Content (shortened)	Factor 1: ER	Factor 2: RC	Factor 3: RI	Factor 4: RAR
Item 1	Unable to make free decisions	.878	—	—	—
Item 2	Annoyed by obvious remarks	.786	—	—	—
Item 4	Restrictions trigger resistance	.715	—	—	—
Item 3	Angry when choice is limited	.690	—	—	—
Item 8	Role model irritation	—	.797	—	—
Item 11	Opposing advice	—	.786	—	—
Item 9	Doing the opposite when forced	—	.716	—	—
Item 6	Opposing prohibitions	—	—	.770	—
Item 7	Resisting influence	—	—	.590	—
Item 10	Advice as intrusion	—	—	—	.806
Item 5	Contradicting others	—	—	—	.406

Source: Own calculation

The resulting factor structure closely mirrors the original four-dimensional conceptualization of the HPRS, encompassing emotional responses to restricted choice, reactance to compliance, resistance to interpersonal influence, and reactance toward advice and recommendations. This finding provides empirical support for the structural validity of the HPRS within a sample of young consumers exposed to healthy food advertising. The proportion of explained variance and the stability of item loadings are consistent with recent applications of the HPRS in communication and persuasion research, suggesting that the scale retains its psychometric robustness when applied in advertising-related contexts (Quick et al., 2013; Rains, 2013; Fransen et al., 2020).

Importantly, the present results extend prior research by demonstrating that the HPRS can be reliably employed in the domain of healthy food advertising, a context in which dispositional reactance has been less frequently examined. By confirming the scale's construct validity in this setting, the study contributes to the growing body of literature that supports the use of established reactance measures beyond traditional health campaigns and into contemporary advertising environments characterized by subtle forms of normative influence and perceived choice restriction.

6.2. Reliability and Descriptive Results of Advertising Reactance Subscales

To assess psychological reactance elicited specifically by persuasive healthy food advertising, three advertising-induced reactance subscales were analysed: perceived threat to freedom (PTF), lack of choice (LC), and perceived constraints (PC). Internal consistency reliability was evaluated using Cronbach's alpha. All three subscales demonstrated acceptable reliability for exploratory research (DeVellis, 2012; Hinton et al., 2014), with $\alpha = .698$ for PTF (4 items), $\alpha = .628$ for LC (4 items), and $\alpha = .757$ for PC (3 items), based on the full sample (N = 209). The composite scale measuring advertising-induced reactance showed good overall internal consistency ($\alpha = .729$), indicating coherent measurement of consumers' resistance to restrictive persuasive strategies in healthy food advertising.

These reliability estimates are consistent with recent research indicating that situational reactance measures often yield moderate internal consistency due to their context-specific and message-dependent nature (Rains, 2013; Mühlberger et al., 2019; Fransen et al., 2020). In comparison with prior studies examining reactance in health and digital advertising contexts, the obtained alpha coefficients fall within the expected range and are comparable to those reported for similar constructs, such as perceived autonomy threat and resistance to normative persuasion (LaVoie et al., 2015; Yang et al., 2022).

Descriptive statistics revealed moderate levels of advertising-induced reactance across all items, with mean values ranging from 2.86 to 3.41 on a five-point Likert scale. This pattern suggests that healthy food advertising messages are neither uniformly rejected nor uncritically accepted, but instead often evoke ambivalent reactions characterized by mild to moderate perceptions of pressure and control. Standard deviations indicated sufficient variability in responses, supporting the sensitivity of the items in capturing individual differences in reactance. Table 3 presents item-level means and standard deviations for the three advertising reactance dimensions.

Table 3

Mean Values and Standard Deviations for Advertising Reactance Items (N = 209)

Subscale	Item Statement	M	SD
Perceived Threat to Freedom (PTF)	Healthy food advertising messages threaten my freedom to choose.	2.98	1.28
	Healthy food advertising messages try to make final decisions for me.	3.18	1.14
	Healthy food advertising messages try to manipulate me with repulsive images.	2.86	1.40
	Healthy food advertising messages try to manipulate me with threatening statements.	3.19	1.25
Lack of Choice (LC)	Healthy food advertising messages limit my choice between different products.	3.08	1.30
	Healthy food advertising messages always direct me to one product.	2.99	1.54
	Healthy food advertising messages do not clearly present the benefits of the products.	3.16	0.78
	Healthy food advertising messages combined with repulsive messages confuse my choice.	3.07	0.87
Perceived Constraints (PC)	Advertisements confuse me when they indicate limiting food consumption.	2.99	1.02
	Messages in healthy food advertisements should limit imagery.	3.08	1.24
	Messages in healthy food advertisements are not comprehensive and limit essential information.	3.41	1.32

Source: Own elaboration.

At the item level, statements related to perceived manipulation and restriction of informational content yielded relatively higher mean scores, particularly within the perceived constraints dimension. This finding aligns with recent evidence suggesting that subtle forms of informational control and normative framing in

health-related advertising may be especially salient triggers of reactance among young audiences (Fransen et al., 2020; Appel et al., 2020; Priporas et al., 2023).

Across the three predefined age groups (18–20, 21–24, and 25–35 years), advertising-induced reactance was consistently observed, indicating that perceptions of restricted choice and autonomy are common among young consumers exposed to healthy food advertising. While variability within each group confirms that the instrument captures individual differences in reactance responses, no clear age-related pattern emerged at the descriptive level. This finding is in line with contemporary research suggesting that, although Generation Z and Millennials differ in media usage and engagement styles, their sensitivity to perceived control and autonomy restriction in persuasive messages is often comparable (Djafarova & Bowes, 2021; Fransen et al., 2020). Further inferential analyses are therefore required to examine whether age functions as a moderating factor in the relationship between advertising characteristics and psychological reactance.

6.3. Correlations Between Dispositional and Advertising Reactance

Pearson product–moment correlation analyses were conducted to examine the associations between the four dimensions of dispositional psychological reactance measured by the HPRS and the three dimensions of advertising-induced reactance. Prior to analysis, assumptions of normality, linearity, and homoscedasticity were assessed and met. The full correlation matrix is presented in Table 4. This analysis aimed to determine whether dispositional reactance translates into heightened resistance when persuasive advertising messages are perceived as limiting personal freedom or constraining choice, thereby linking trait-level tendencies with situational responses in the context of healthy food advertising.

Table 4

Significant Pearson Correlations Between Trait Reactance (HPRS) and Advertising Reactance (N = 209)

HPRS Subscale	PTF (Threat to Freedom)	LC (Lack of Choice)	PC (Perceived Constraints)
ER – Emotional Response	n.s.	n.s.	n.s.
RC – Reactance to Compliance	.329**	.508**	.224**
RI – Resisting Influence	.238**	.138*	n.s.
RAR – Reactance to Advice & Recommendations	.207**	.570**	.601**
Advertising Subscales	**PTF**	**LC**	**PC**
PTF	—	.583**	.415**
LC	.583**	—	.872**
PC	.415**	.872**	—

*Note. Only statistically significant correlations are shown in the table. *p < .05, **p < .01. "n.s." indicates a non-significant correlation (p ≥ .05). Source: Own calculations.*

The results revealed significant positive associations between several HPRS dimensions and advertising-induced reactance. Reactance to compliance demonstrated weak-to-moderate positive correlations with perceived threat to freedom ($r = .329$, $p < .001$) and lack of choice ($r = .508$, $p < .001$). These findings are consistent with prior research indicating that individuals who strongly resist external demands and obligations are more likely to perceive persuasive messages as autonomy-threatening (Quick & Stephenson, 2007; Fransen et al., 2020).

Similarly, reactance to advice and recommendations exhibited moderate-to-strong positive correlations with lack of choice ($r = .570$, $p < .001$) and perceived constraints ($r = .601$, $p < .001$). This pattern suggests that individuals who are generally sceptical of guidance from others are particularly sensitive to subtle forms of normative control and informational restriction in advertising messages. Recent studies in health and digital advertising contexts report comparable patterns, in which reactance toward advice is a strong predictor of

resistance to normative persuasion and moralized messaging (LaVoie et al., 2015; Yang et al., 2022; Priporas et al., 2023).

In contrast, emotional response to restricted choice was not significantly correlated with any of the advertising-induced reactance dimensions, indicating that emotional reactance components may be less salient in the context of healthy food advertising than in domains characterized by fear appeals or graphic warnings. This finding aligns with contemporary research suggesting that healthy food advertising typically elicits cognitive evaluations of autonomy and choice rather than intense affective responses (Fransen et al., 2015; Mühlberger et al., 2019).

Strong positive intercorrelations were also observed among the advertising-induced reactance dimensions themselves, particularly between lack of choice and perceived constraints ($r = .872$, $p < .001$). This result supports theoretical models that conceptualize situational reactance as a multidimensional but closely interconnected construct, in which perceived autonomy threat, restriction of choice, and external constraints jointly contribute to resistance responses (Dillard & Shen, 2005; Rains, 2013; Fransen et al., 2020).

Overall, these findings provide empirical support for a core assumption of Psychological Reactance Theory, namely that individuals with higher levels of dispositional reactance are more likely to perceive persuasive advertising messages as restrictive and autonomy-threatening. By demonstrating systematic links between trait reactance and advertising-induced reactance, the present study extends previous research and highlights the relevance of dispositional factors in shaping consumer responses to healthy food advertising in contemporary digital environments.

6.4. Age-related differences in advertising reactance

To examine whether respondents' age influences levels of psychological reactance toward healthy food advertising, a comparative analysis was conducted across the three age groups included in the sample (18–20, 21–24, and 25–35 years). A one-way analysis of variance (ANOVA) revealed no statistically significant differences between the age groups across any of the examined variables, including the four HPRS dimensions and the three subscales of advertising-induced reactance ($p > .05$). These findings indicate a relative homogeneity in responses to restrictive advertising messages among young consumers, regardless of age differences within the examined range. Psychological reactance toward healthy food advertising appears to manifest in a similar manner across different stages of young adulthood, particularly when advertising messages are perceived as limiting autonomy and freedom of choice. This result suggests that dispositional sensitivity to autonomy threats may outweigh minor age-related differences within this demographic group.

The findings are consistent with recent research showing that young adults often exhibit comparable resistance patterns toward persuasive digital advertising, even though their media usage intensity and platform preferences may differ (Mühlberger et al., 2019; Fransen et al., 2020; Yang et al., 2022). While previous studies frequently distinguish between Generation Z and Millennials in terms of media habits, content formats, and interaction styles, emerging evidence suggests that reactions to perceived control, restriction, and normative pressure in advertising messages are largely similar across younger cohorts (Djafarova & Bowes, 2021; Priporas et al., 2023).

Importantly, this finding does not contradict generational research but rather complements it by indicating that generational differences may be more pronounced at the level of media engagement and communication channels than in the underlying psychological mechanisms of reactance. From a theoretical perspective, this supports the notion that autonomy threat is a fundamental psychological trigger that operates consistently across young consumer segments, regardless of generational labels.

Nevertheless, the absence of significant age-related differences also highlights the need for future research to extend beyond young adulthood and include broader age ranges or clearly defined generational cohorts. Such research could further clarify whether psychological reactance toward advertising varies meaningfully across the life course or remains relatively stable in response to perceived autonomy threats.

7. Results and Discussions

The purpose of this study was to validate the Hong Psychological Reactance Scale (HPRS) (Hong & Faedda, 1996) in the context of healthy food advertising and to examine whether dispositional psychological reactance predicts resistance to persuasive advertising messages among young consumers. The findings confirm that the HPRS retains its theoretical four-factor structure and demonstrates satisfactory psychometric properties in an advertising context. The explained variance and item loadings are consistent with previous validation studies, supporting the applicability of the scale for assessing individual differences in reactance proneness within communication and advertising research (Hong & Faedda, 1996; Shen & Dillard, 2005; Hair et al., 2018).

In addition, the newly developed subscales measuring advertising-induced reactance - perceived threat to freedom, lack of choice, and perceived constraints—exhibited acceptable reliability. This result is consistent with prior research indicating that situational measures of psychological reactance often yield moderate internal consistency due to the context-dependent nature of reactance activation (Dillard & Shen, 2005; Rains, 2013). The observed mean values indicate a moderate level of perceived persuasive pressure in healthy food advertising, suggesting that messages encouraging dietary change may be interpreted as autonomy-restrictive and therefore elicit resistance. These findings align with broader evidence in health communication research showing that highly controlling or directive messages may undermine persuasion effectiveness and produce counterproductive outcomes (Miller et al., 2007; Fransen et al., 2015; Cho & Salmon, 2007).

The correlation analysis further demonstrated that specific dispositional components — particularly resistance to compliance and reactance toward advice and recommendations — are strongly associated with heightened perceptions of freedom restriction and reduced choice in advertising contexts. This finding supports a central assumption of Psychological Reactance Theory, namely that individuals who are more sensitive to external control are more likely to resist persuasive attempts perceived as threatening their autonomy (Brehm, 1966; Quick & Stephenson, 2007). Moreover, the strong interrelationships among the advertising reactance dimensions suggest that perceived threats to autonomy constitute a key psychological mechanism underlying negative responses to health-related persuasive strategies (Rains, 2013; LaVoie et al., 2015). This pattern is particularly relevant for young adults, who tend to place high value on independent decision-making and exhibit heightened sensitivity to perceived social influence (Wicklund, 1974; Quick et al., 2013).

The additional analysis of age-related differences revealed no statistically significant variation across the examined age groups within young adulthood. This finding suggests a relative homogeneity in responses to restrictive advertising messages among young consumers and indicates that psychological reactance toward healthy food advertising manifests in a similar manner across different stages of young adulthood. Although generational research frequently distinguishes between Generation Z and Millennials in terms of media habits and preferred communication formats, contemporary studies suggest that reactions to perceived control and autonomy restriction often follow similar psychological patterns across younger cohorts (Mühlberger et al., 2019; Fransen et al., 2020; Yang et al., 2022). Differences between these generations appear to be more pronounced at the level of media usage and content engagement rather than in the underlying mechanisms of reactance.

From a broader comparative perspective, much of the existing reactance research has focused on health communication domains such as anti-smoking campaigns, alcohol reduction initiatives, condom promotion, and other high-risk behaviors. In these contexts, persuasive messages frequently rely on fear appeals, graphic imagery, or explicit behavioral directives, which often provoke strong emotional reactions, message avoidance, and boomerang effects (Dillard & Shen, 2005; Hammond et al., 2007; Shen, 2010; Yang et al., 2022). Healthy food advertising, however, represents a distinct persuasive domain. Rather than prohibiting behavior or emphasizing immediate personal risk, such messages are typically framed as preventive, normative, or educational. The present findings indicate that reactance in healthy food advertising is more closely associated with perceived lack of choice and subtle forms of normative control than with overt threat or fear-based

communication, distinguishing this domain from other health-related contexts in which reactance is primarily driven by explicit restrictions or high perceived personal risk (Fransen et al., 2020; Mühlberger et al., 2019).

Furthermore, unlike anti-smoking or alcohol prevention campaigns — where reactance has been linked to defensive processing and outright message rejection — reactance in the context of healthy food advertising may coexist with ambivalent attitudes or partial compliance. Consumers may resist the persuasive tone of such messages while still accepting the general recommendation when it aligns with social norms or personal values. This highlights the unique psychological dynamics of food-related persuasion, where autonomy support, perceived flexibility, and choice provision play particularly important roles in shaping consumer responses (Cho & Salmon, 2007; Yang et al., 2022).

Taken together, the findings demonstrate both theoretical and practical implications. The study provides empirical evidence that dispositional psychological reactance is a significant factor shaping persuasion outcomes in healthy food advertising, and illustrates how reactance mechanisms operate differently across health communication domains. From a practical standpoint, the results reinforce the importance of autonomy-supportive advertising strategies that emphasize choice, provide multiple behavioral options, and avoid overly controlling or moralizing language in order to reduce resistance and enhance the effectiveness of healthy food promotion efforts.

Conclusion and Recommendations for Future Research

The present study examined psychological reactance among young consumers in the context of healthy food advertising by validating the Hong Psychological Reactance Scale (HPRS) and developed additional subscales measuring advertising-induced reactance. The findings confirm that the HPRS demonstrates satisfactory construct validity and reliability in this application, supporting its suitability for assessing individual differences in reactance proneness within advertising audiences (Hong & Faedda, 1996; Shen & Dillard, 2005; Rains, 2013). In response to the first research question, the results indicate that the HPRS reliably captures dispositional psychological reactance among young consumers exposed to healthy food advertising.

Addressing the second and third research questions, the findings demonstrate that psychological reactance in healthy food advertising is primarily manifested through perceived threat to freedom, lack of choice, and perceived constraints. Correlation analyses further demonstrate that dispositional reactance—particularly resistance to compliance and reactance toward advice and recommendations—is significantly associated with stronger perceptions of autonomy restriction in advertising messages. These results are consistent with Psychological Reactance Theory, which posits that persuasive attempts perceived as controlling elicit motivational resistance aimed at restoring threatened autonomy (Brehm, 1966; Brehm & Brehm, 1981). They also align with prior empirical research showing that individuals high in trait reactance are more likely to resist health-related persuasive communication perceived as restrictive (Quick & Stephenson, 2007; LaVoie et al., 2015; Fransen et al., 2020).

Concerning the proposed hypotheses, the results provide substantial empirical support for the theoretical model. Hypotheses predicting positive relationships between dispositional reactance and perceived lack of choice as well as perceived constraints, were supported, while the hypothesis concerning perceived threat to freedom received partial support, as significant effects emerged for specific dispositional dimensions. The hypothesis predicting positive intercorrelations among the advertising-induced reactance dimensions was fully supported, confirming that situational reactance operates as an interconnected multidimensional construct, as suggested in previous reactance research (Dillard & Shen, 2005; Rains, 2013).

From a practical perspective, the findings indicate that restrictive advertising strategies may undermine message effectiveness by generating resistance, skepticism, and message avoidance among young consumers. This result is consistent with prior studies demonstrating that highly controlling or directive health messages can produce counterproductive outcomes and boomerang effects (Cho & Salmon, 2007; Miller et al., 2007;

Fransen et al., 2015). Accordingly, healthy food advertising should prioritize autonomy-supportive communication approaches that emphasize consumer choice, present multiple behavioral options, and avoid moralizing or overly prescriptive language.

The additional age-related analysis revealed no statistically significant differences in psychological reactance across the examined age groups within young adulthood (18–35 years), indicating relative homogeneity in responses to restrictive advertising messages. Although generational research frequently distinguishes between Generation Z and Millennials in terms of media habits, platform use, and content engagement, recent studies suggest that reactions to perceived control and autonomy restriction in advertising messages follow similar psychological patterns across younger cohorts (Mühlberger et al., 2019; Djafarova & Bowes, 2021; Yang et al., 2022). This finding underscores the importance of distinguishing between media-related differences and underlying psychological mechanisms when interpreting generational effects in advertising research.

Several limitations should be acknowledged. The sample was limited to young adults, which restricts the generalizability of the findings to older populations. The reliance on self-reported measures may introduce response biases, and the cross-sectional design does not allow for causal inference. Future research should employ experimental and longitudinal designs to clarify causal pathways between message framing and reactance responses, extend analyses to broader age ranges and clearly defined generational cohorts, and further validate the advertising-induced reactance scale across diverse cultural and media contexts. Incorporating behavioral outcome measures, such as actual food choices or purchase behavior, would further strengthen the practical relevance of reactance research in healthy food advertising.

Overall, this study contributes to a more nuanced understanding of resistance mechanisms in persuasive health communication. By empirically demonstrating how autonomy-threatening advertising cues activate psychological reactance and by highlighting the effectiveness of autonomy-supportive strategies, the findings provide theoretically grounded and practically relevant guidance for designing more effective and ethically responsible healthy food advertising.

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