

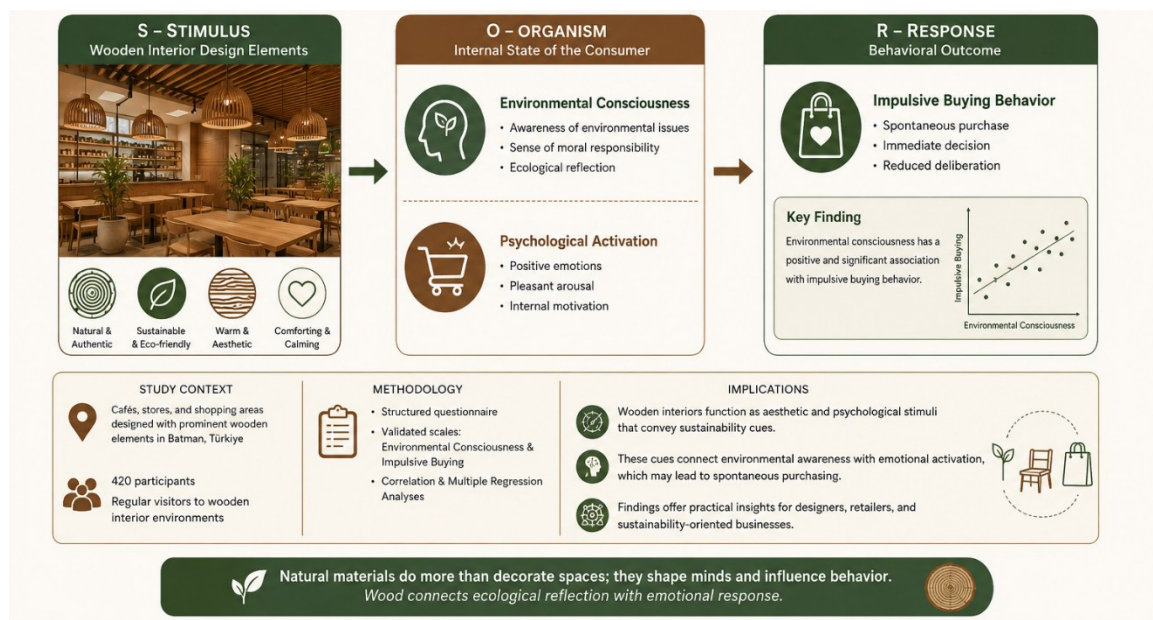
The Impact of Wooden Interior Design Elements on Consumers' Environmental Consciousness and Impulsive Buying Behavior: An S-O-R Model Approach

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GRAPHICAL ABSTRACT



The Impact of Wooden Interior Design Elements on Consumers' Environmental Consciousness and Impulsive Buying Behavior: An S-O-R Model Approach

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Wood is increasingly appreciated not only for its aesthetic and tactile qualities but also for the sense of naturalness and sustainability it conveys. Grounded in the Stimulus–Organism–Response (S-O-R) framework, this study examines the association between environmental consciousness and impulsive buying behavior in interior environments characterized by wooden design elements. The model is employed as a conceptual lens to interpret how sustainability-related cues may be associated with cognitive and behavioral responses. Data were collected from 420 participants living in Batman, Türkiye, who regularly visit cafés, stores, and shopping areas designed with prominent wooden features. A structured questionnaire including validated scales for environmental consciousness and impulsive buying was administered. Correlation and multiple regression analyses were conducted to explore the relationships between the constructs. The results revealed a positive and statistically significant association between environmental consciousness and impulsive buying tendencies. The findings extend the applicability of the S-O-R perspective to sustainable material contexts. Wooden interiors can be interpreted as aesthetic and psychological stimuli that may connect environmental awareness with spontaneous purchasing tendencies. This duality offers valuable insights for designers, retailers, and sustainability researchers, demonstrating how natural materials can encourage both ecological reflection and emotional activation in everyday consumer behavior.

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Keywords: *Wooden interiors; Consumer behavior; Environmental consciousness; Impulsive buying; S-O-R framework*

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INTRODUCTION

Sustainability has gradually moved beyond being a marketing trend to become a shared moral and aesthetic value that influences how people engage with materials, products, and spaces. Natural materials are now appreciated not only for their technical qualities but also for the emotions and meanings they evoke. Among these materials, wood holds a particularly meaningful place. It conveys a sense of authenticity and calmness while symbolizing environmental care and responsibility (Değirmençtepe and Çolak 2021).

Recent studies have shown that visual or tactile contact with wood can create feelings of relaxation, warmth, and harmony, reinforcing perceptions of ecological integrity (Ikei *et al.* 2017a,b; Yin *et al.* 2020; Yang *et al.* 2023). As sustainable design increasingly enters everyday life, understanding how wooden environments may be associated with consumers' thoughts, emotions, and behavioral responses has become an important topic at the intersection of design and consumer research.

The stimulus–organism–response (S-O-R) framework provides a useful way to explain how environmental conditions influence people's mental and emotional states, which in turn shape behavior. Within this framework, external stimuli—whether visual, sensory, or symbolic—act as cues that guide internal reactions and lead to observable responses. In sustainable design, wooden elements are often perceived as natural stimuli that communicate ecological meaning through a multisensory experience (Steenis *et al.* 2017; Yu *et al.* 2023). Exposure to such elements can enhance individuals' environmental awareness and at the same time, encourage spontaneous behavioral tendencies. Recognizing this relationship is valuable not only for theory building but also for improving sustainable design and retail practices.

Environmental consciousness is generally understood as people's awareness of ecological issues and their sense of moral responsibility to behave in environmentally responsible ways. It has long been associated with sustainable consumption, as consumers increasingly make choices guided by ethical and ecological considerations (White *et al.* 2019; Zhuang *et al.* 2021; Okay 2026). Yet recent evidence suggests that sustainability cues do not always encourage restraint; rather, they can stimulate positive emotions that may lead to spontaneous buying decisions (Acuti 2022; Sun *et al.* 2023).

In wooden or nature-inspired environments, these cues seem to generate a subtle psychological duality. On the one hand, individuals may engage in thoughtful reflection about sustainability; on the other, they may experience emotional impulses that drive quick, affect-based choices (Pirc Barčić *et al.* 2021). Understanding how these cognitive and emotional processes interact provides insight into how natural materials quietly influence consumer behavior in sustainable contexts.

This study explores the relationship between environmental consciousness and impulsive buying tendencies in sustainability-oriented interior environments. The Stimulus–Organism–Response (S-O-R) framework is used as a conceptual lens to interpret this relationship, rather than as a fully operationalized empirical model. Accordingly, the present study does not aim to provide a full empirical test of the S-O-R model, but rather to examine the association between environmental consciousness and impulsive buying behavior within sustainability-oriented interior environments. Although the “stimulus” (wooden cue) is treated conceptually rather than measured directly, this approach allows for examining how material-based sustainability signals activate awareness (organism) and influence behavior (response). By combining theories of sustainability perception with consumer psychology, this research expands the study of environmental behavior into the domain of material experience. It also offers practical guidance for designers and retailers aiming to create spaces that balance ecological authenticity with emotional engagement. Based on this theoretical background, a research hypothesis is proposed in the following section.

EXPERIMENTAL

Materials and Methods

Research design and conceptual framework

A quantitative and cross-sectional design was employed to examine the relationship between consumers' environmental consciousness and impulsive buying behavior within the context of wooden interior design. The S-O-R model was adopted as the theoretical foundation of the study. In this conceptual structure, environmental stimuli (S) are assumed to activate internal cognitive processes (O), which subsequently result in behavioral responses (R).

In the present research, wooden interior elements were regarded as conceptual stimuli that symbolically communicate sustainability cues. It should be noted that wooden interior environments were not operationalized as a directly measured stimulus variable in the statistical model. Instead, they represent the contextual setting in which the participants' responses were observed. Consequently, the empirical analysis focuses on the relationship between environmental consciousness (organism) and impulsive buying behavior (response), while the S-O-R framework is employed primarily as a conceptual perspective to interpret this context. Environmental consciousness was treated as the organismic component, while impulsive buying behavior was considered the behavioral response. The model served as a guiding framework rather than a fully tested structural equation, reflecting the study's exploratory nature. It is important to note that the S-O-R framework is utilized here as a theoretical guide to interpret the context of wooden interiors, rather than testing the direct statistical impact of physical wood stimuli. Therefore, the 'Stimulus' is assumed as a contextual constant for the participants who frequent these spaces, allowing the study to focus specifically on the Organism-Response (O-R) cognitive pathway.

Hypothesis development

Within the stimulus–organism–response perspective, wooden interior elements were conceptualized as sustainability-oriented environmental cues (stimulus) that are assumed to activate consumers' cognitive states (organism) and, in turn, shape behavioral outcomes (response). In this study, the “stimulus” component was employed as a conceptual lens rather than an empirically measured variable; consequently, the testable path focused on the cognitive–behavioral linkage. Building on recent evidence that natural design features can simultaneously foster environmental reflection and positive affect, a directed association from environmental consciousness to impulsive buying behavior was posited (Yang *et al.* 2023).

H1 (Directed effect). Environmental consciousness exerts a positive and significant effect on impulsive buying behavior.

This hypothesis operationalizes the organism→response pathway predicted by S-O-R. Conceptually, it also reflects a cognitive mechanism through which sustainability cues embedded in wooden interiors may translate into spontaneous purchasing tendencies, even though the stimulus was not directly measured. The empirical test therefore concentrates on verifying the O→R link, while the S component is theorized and discussed based on the literature.

Sample and data collection

The research data were obtained from a total of 420 voluntary participants residing in Batman, Türkiye. Participants were individuals who reported regularly visiting cafés, restaurants, and retail spaces incorporating visible wooden interior design elements such as wooden furniture, wall panels, or decorative features. These wooden interior elements typically included wooden furniture, wall panels, decorative wooden features, or combinations of these materials within the interior space. A convenience sampling technique was preferred, since it enabled efficient data collection within limited time and resource constraints (Etikan *et al.* 2016). Prior to participation, respondents were informed about the purpose and confidentiality of the research, and consent was obtained electronically through the online survey. The questionnaire was distributed *via* Google Forms and completed over a four-week period in 2025. Participants were approached in person in cafés, restaurants, and retail environments characterized by visible wooden interior design elements and were invited to complete the questionnaire voluntarily via a mobile-accessible online form. Ethical approval for the study was granted by the Ethics Committee of Sakarya University of Applied Sciences (Approval No: E-26428519-050.99-195904, Date: 23.10.2025).

Measurement instruments

Data were gathered using a structured questionnaire composed of three sections: demographic information and two validated scales.

The Environmental Consciousness Scale, developed by Dikmenli and Konca (2016), consisted of 28 items and four subdimensions (Sensitivity, Behavior, Social Pressure, Prejudice). Items were rated on a 5-point Likert scale ranging from 1 (“Strongly Disagree”) to 5 (“Strongly Agree”).

The Impulsive Buying Scale, developed by Günel (2024), included 25 items distributed across several dimensions such as Unplanned Behavior, Emotional Impulse, and Neglect of Consequences, also measured on a 5-point Likert scale.

Reliability analyses were performed, and Cronbach’s alpha coefficients were found to be 0.81 and 0.85, indicating high internal consistency (Nunnally and Bernstein 1994). Table 1 summarizes the characteristics of the scales used in the study. A summary of the questionnaire structure and representative survey items is provided in the Appendix.

Table 1. Measurement Scales Used in the Study

Scale	Source	Number of Items	Dimensions	Example Item	Response Format	Cronbach’s α
Environmental Consciousness	Dikmenli and Konca (2016)	28	Sensitivity, Behavior, Social Pressure, Prejudice	“I care about buying products that do not harm the environment”.	5-point Likert	0.81
Impulsive Buying	Günel (2024)	25	Unplanned Behavior, Emotional Impulse, Neglect of Consequences	“I often buy things spontaneously without thinking about the outcomes”.	5-point Likert	0.85

Data Analysis

The collected data were analyzed using SPSS 25.0 software. All incomplete or inconsistent responses were removed prior to analysis. Descriptive statistics were calculated to summarize demographic characteristics. Reliability was examined through Cronbach's " α " coefficients, while construct validity was assessed using the Kaiser–Meyer–Olkin (KMO) measure and Bartlett's test of sphericity. Exploratory factor analysis (EFA) was conducted, and the dimensional structures of both scales were confirmed (KMO > 0.80, $P < 0.001$). Relationships among variables were examined through Pearson's correlation coefficients. The proposed hypothesis was tested by means of multiple linear regression analysis, with the level of statistical significance set at $P < 0.05$. The conceptual research model based on the S-O-R framework is presented in Fig. 1.

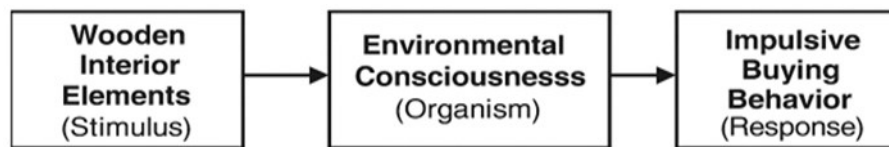


Fig. 1. Conceptual research model based on the Stimulus–Organism–Response framework. Wooden interior elements function as environmental stimuli that evoke environmental consciousness (organism), which subsequently influences impulsive buying behavior (response)

RESULTS

Descriptive Overview

The final dataset consisted of valid responses from 420 participants residing in Batman, Türkiye. The descriptive analysis indicated that respondents generally displayed moderately high levels of environmental consciousness ($M = 3.82$, $SD = 0.69$) and moderate levels of impulsive buying behavior ($M = 3.27$, $SD = 0.73$). These averages reflect a participant group that is environmentally aware yet behaviorally responsive in purchasing contexts.

Gender distribution was balanced, with 54% female and 46% male participants, while the majority (38%) were between 25 and 34 years of age. Educational attainment was also relatively high, as more than half of the respondents held a university degree. Overall, the demographic profile suggests that the sample represents a young, educated, and environmentally conscious consumer segment.

Reliability and Validity

The reliability of the two measurement instruments was assessed using Cronbach's " α " coefficients, both of which indicated strong internal consistency. The environmental consciousness scale produced an α value of 0.80, while the impulsive buying scale yielded 0.84, exceeding the accepted minimum threshold of 0.70 (Nunnally and Bernstein 1994). Sampling adequacy was verified through Kaiser–Meyer–Olkin (KMO) values of 0.88 and 0.90, confirming the appropriateness of the data for factor analysis. In addition, Bartlett's test of sphericity was significant for both instruments ($P < 0.001$), indicating sufficient inter-item correlations. Collectively, these results demonstrate that the scales were psychometrically sound and valid for use within the Turkish sample (Hair *et al.* 2019).

Correlation Analysis

A Pearson correlation analysis was performed to examine the relationship between environmental consciousness and impulsive buying behavior. The test revealed a positive and statistically significant correlation ($r = 0.36$, $P < 0.001$). This finding suggests that individuals with a heightened awareness of environmental issues may still experience spontaneous purchase tendencies—particularly in contexts enriched with natural or sustainability-related cues. Rather than being mutually exclusive, environmental sensitivity and impulsivity appeared to coexist within the same behavioral framework.

Table 2. Correlation between Environmental Consciousness and Impulsive Buying Behavior

Variable	1	2	Mean	SD
1. Environmental Consciousness	1.00	—	3.82	0.69
2. Impulsive Buying Behavior	0.36***	1.00	3.27	0.73

*Note: ** $P < 0.001$

Regression Analysis

To test the proposed hypothesis (H1), a simple linear regression was conducted. The analysis indicated that environmental consciousness showed a positive and statistically significant association with impulsive buying behavior ($\beta = 0.38$, $t = 6.74$, $P < 0.001$).

The model accounted for approximately 14% of the variance in impulsive buying tendencies ($R^2 = 0.14$), suggesting a moderate yet meaningful level of explanatory power.

These findings indicate that individuals with higher environmental awareness may also report stronger impulsive buying tendencies in sustainability-oriented interior environments when exposed to wooden or eco-symbolic environments, where sustainability cues evoke both moral satisfaction and emotional engagement.

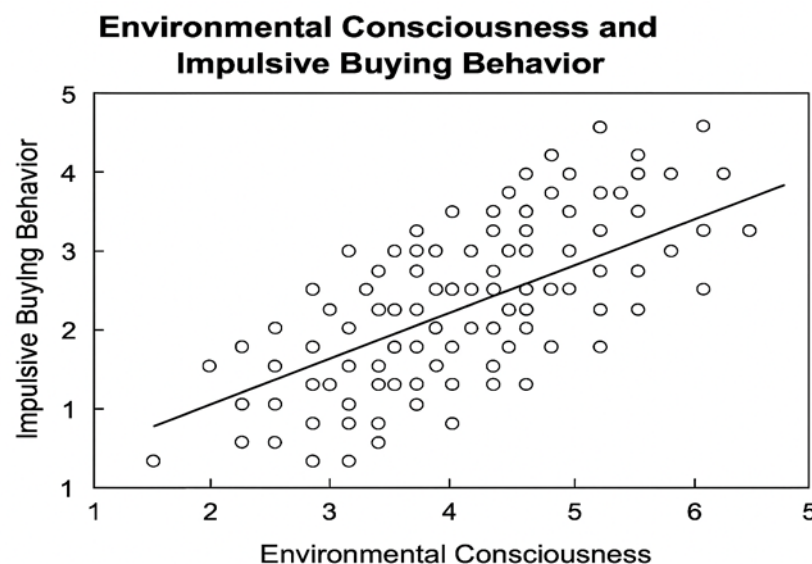


Fig. 2. Scatterplot illustrating the positive relationship between Environmental Consciousness and Impulsive Buying Behavior ($r = 0.36$, $P < .001$).

Table 3. Regression Results for H1

Predictor	β	t	P	R ²	Result
Environmental Consciousness → Impulsive Buying Behavior	0.38	6.74	<0.001	0.14	Supported

Narrative Interpretation

The statistical findings consistently indicate that environmental consciousness serves as a meaningful cognitive antecedent of impulsive behavior. Although this association may appear counterintuitive, it aligns with the notion that sustainability cues can evoke affective arousal and moral resonance, which together enhance approach-oriented actions.

Participants who reported higher ecological awareness were not necessarily restrained consumers; rather, they appeared more emotionally responsive within sustainability-oriented interior contexts characterized by natural materials. These results, taken together, reinforce the psychological complexity of sustainable consumer behavior, where cognition and emotion intersect to shape purchase spontaneity.

Interpretation within the S-O-R model

The findings suggest that environmental consciousness serves as a cognitive pathway through which sustainability cues are transformed into observable behavioral outcomes. While the stimulus was not empirically measured, wooden design elements were conceptually regarded as natural symbols that evoke associations with ecological responsibility. This interpretation aligns with previous studies showing that natural environments can simultaneously stimulate emotional arousal and evoke a sense of moral fulfillment.

Rather than constraining impulsive tendencies, environmental consciousness appears to interact with them in a complementary manner within positive environmental settings. Experiences of sustainable consumption thus seem to be grounded not only in reflective thought but also in emotional engagement, underscoring the dual nature of consumer responses. These insights highlight that effective sustainable marketing should integrate ethical awareness with affective resonance, fostering consumer behaviors that are both emotionally meaningful and environmentally aligned.

DISCUSSION

The results indicate that environmental consciousness is meaningfully related to impulsive buying behavior in sustainability-oriented interior environments. Contrary to the expectation that ecological awareness necessarily restrains spontaneous consumption, the findings suggest that impulse tendencies may remain present even among environmentally conscious consumers. Similar observations have been reported in earlier research, where atmospheres rich in sensory and symbolic cues were shown to elicit approach-oriented responses alongside ethical considerations (Donovan *et al.* 1994; Magnier and Schoormans 2015).

When interpreted through the stimulus–organism–response framework, the results point to the role of internal cognitive states in shaping behavioral outcomes. Although wooden interior elements were not directly measured as stimuli, they were conceptually positioned as contextual cues associated with naturalness and ecological responsibility. Prior studies have demonstrated that contact with wood and other natural materials can foster emotional comfort and physiological relaxation while reinforcing perceptions of environmental integrity (Ikei *et al.* 2017a,b; Yang *et al.* 2023). Within this setting, environmental consciousness appears to function as an organismic process through which such cues are translated into observable purchasing behavior.

The positive association observed between environmental consciousness and impulsive buying behavior is also consistent with evidence suggesting that sensory-rich environments intensify emotional responsiveness. Materials perceived as organic, warm, or authentic may encourage immediate behavioral reactions, even when consumers possess a high level of ethical awareness (Steenis *et al.* 2017). In this respect, cognitive reflection and affective engagement do not seem to operate in opposition; instead, they coexist within the same consumption experience. This pattern may also reflect a belief-based behavioral orientation, where individuals act in ways that align with their internalized environmental values while simultaneously responding to affective cues present in the consumption environment.

The regression model explained a moderate proportion of variance in impulsive buying behavior ($R^2 = 0.14$), which is in line with expectations for behavioral research conducted in naturalistic settings. Consumer decisions are typically shaped by multiple situational and psychological influences, and environmental consciousness represents one contributing factor within this broader structure. Comparable effect sizes have been reported in studies examining sustainability-related behavior under real-world conditions (Yang *et al.* 2023). It should also be acknowledged that impulsive buying behavior may be influenced by additional factors such as product characteristics, emotional arousal, involvement level, baseline impulsivity, and self-control capacity. These variables were beyond the scope of the present study and may account for additional variance in impulsive buying behavior.

Taken together, the findings support the applicability of the S–O–R framework to interior environments designed around sustainability cues. Environmental consciousness was found to be positively associated with impulsive buying behavior when contextual signals associated with natural materials are present. This outcome underlines the relevance of material-based design elements in influencing consumer responses through intertwined cognitive and affective processes. It should also be acknowledged that wooden interior features were not empirically measured as a stimulus variable in the present model. Therefore, the findings should be interpreted as reflecting associations within a sustainability-oriented interior context rather than direct causal effects of wooden design elements. It should be emphasized that the present findings do not imply that environmentally conscious consumers are inherently impulsive buyers. Rather, the results indicate that environmental consciousness may coexist with impulsive purchasing tendencies within sustainability-oriented interior contexts. Future research could also explore the use of machine learning or artificial intelligence-based analytical approaches to identify additional variables and dependencies influencing impulsive buying behavior in sustainability-oriented interior environments.

CONCLUSIONS

1. This study demonstrated that environmental consciousness shows a positive and statistically significant association with impulsive buying behavior in sustainability-oriented interior environments.
2. The results showed that higher levels of environmental awareness do not eliminate impulsive purchasing tendencies, but rather coexist with spontaneous buying behavior.
3. Within the stimulus–organism–response framework, environmental consciousness functioned as a cognitive mechanism linking sustainability-related contextual cues to behavioral responses.
4. The regression analysis revealed a moderate explanatory power ($R^2 = 0.14$), indicating that environmental consciousness contributes meaningfully, though not exclusively, to impulsive buying behavior.
5. Wooden interior environments were found to support the simultaneous presence of ethical awareness and affect-driven purchasing responses, highlighting the role of material-based sustainability cues in shaping consumer behavior.

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APPENDIX

Survey Questionnaire Structure Used in the Study

The questionnaire used in this study consisted of three sections including demographic questions and two validated measurement scales: the Environmental Consciousness Scale developed by Dikmenli and Konca (2016) and the Impulsive Buying Scale developed by Günel (2024). All items were evaluated using a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

Section A. Demographic Information

Participants were asked to provide basic demographic information, including:

- 1 Gender
- 2 Age
- 3 Education level
- 4 Frequency of visiting cafés, restaurants, or retail spaces that contain

visible wooden interior design elements (e.g., wooden furniture, wall panels, decorative wooden features).

Section B. Environmental Consciousness Scale

(Source: Dikmenli and Konca 2016)

This scale measures individuals' awareness and attitudes toward environmental responsibility. The original scale consists of 28 items and includes four dimensions: sensitivity, behavior, social pressure, and prejudice.

Representative items include:

- I care about buying products that do not harm the environment.^[1]
- Environmental protection should be a priority for society.^[1]
- I feel responsible for contributing to environmental protection.

Section C. Impulsive Buying Scale

(Source: Günel, 2024)

This scale measures consumers' tendency toward spontaneous purchasing behavior. The original scale consists of 25 items related to unplanned buying, emotional impulse, and neglect of consequences.

Representative items include:

- I often buy things spontaneously without thinking about the outcomes.^[1]
- Sometimes I purchase items immediately when I feel a sudden desire to buy.^[1]
- I occasionally buy products without prior planning.