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# Financial Self-Control, Financial Stress, and Risk Attitudes as Predictors of Impulsive Spending Behaviour among University Students

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**Abstract**

Impulsive spending is increasingly relevant among university students as digitalised consumption environments provide convenient access to purchasing and payment mechanisms. This study examines the associations of financial self-control, financial stress, and financial risk attitude with impulsive spending behaviour among university students. A quantitative cross-sectional survey was conducted using convenience sampling, yielding 129 complete responses for analysis. The measurement properties were assessed using internal consistency reliability and exploratory factor analysis, while Pearson correlation and multiple linear regression were employed to examine the relationships among the study variables. Regression robustness was further evaluated using HC3 heteroskedasticity-consistent standard errors and bootstrap confidence intervals based on 10,000 resamples. The conventional regression model explained 47.2% of the variance in impulsive spending behaviour. Financial self-control was negatively associated with impulsive spending and remained statistically significant across OLS, HC3, and bootstrap analyses. Financial stress showed a positive association under conventional OLS estimation, but the relationship was not sustained under the robustness analyses. Financial risk attitude was positively associated with impulsive spending under OLS estimation; however, the evidence was mixed across the HC3 and bootstrap procedures. The findings identify financial self-control as the most statistically stable correlate of impulsive spending and demonstrate that the unique associations of financial stress and financial risk attitude require more cautious interpretation. The study highlights the importance of behavioural self-regulation in understanding university students' impulsive spending while demonstrating the value of robustness analysis in financial-behaviour research.

**Keywords:** Financial Self-Control, Financial Stress, Financial Risk Attitude, Impulsive Spending Behaviour, University Students, Financial Behaviour

## Introduction

The increasing accessibility of digital commerce and cashless payment systems has transformed the spending environment faced by university students. Online shopping platforms, e-wallets, digital payment services, promotional campaigns, and deferred payment facilities have reduced many of the practical barriers traditionally associated with purchasing, while recent evidence indicates that digital payment methods and promotional mechanisms can shape impulsive buying tendencies (Djamhari et al., 2024). While these developments provide convenience and flexibility, they may also create an environment in which purchasing decisions can be made rapidly and with limited prior planning. University students represent a particularly relevant population in this context because increasing financial independence coincides with substantial exposure to digitally facilitated consumption environments.

One behavioural concern within this environment is impulsive spending. Impulsive spending involves purchasing behaviour that occurs spontaneously or with limited prior planning and may include purchases made in response to immediate desires, promotional stimuli, or short-term satisfaction rather than carefully evaluated financial needs (Rook, 1987). Among university students, such behaviour is particularly relevant because repeated unplanned spending may compete with essential expenditures and other financial priorities. Students who manage limited financial resources may face competing demands between essential expenses and discretionary purchases, making unplanned spending a potentially important concern for personal financial management. The convenience of digital payment systems and continuous exposure to promotional stimuli may further increase opportunities for spontaneous purchasing, even when students recognise the importance of budgeting and expenditure planning. Recent studies of university students continue to document the relevance of impulsive buying in digital and online shopping environments, including contexts involving promotional exposure, social-media influences, and increasingly convenient payment mechanisms (Damayanti & Sagoro, 2024; Fitriani et al., 2024). However, understanding this phenomenon requires examining not only the external conditions that facilitate purchasing but also the financial and psychological characteristics associated with students' ability to regulate their spending decisions.

Recent studies have examined impulsive buying in relation to external and situational factors within contemporary consumption environments. Promotional stimuli, digital payment mechanisms, fear of missing out, and the perceived ease of online purchasing have been associated with impulsive buying tendencies among consumers and university students (Damayanti & Sagoro, 2024; Djamhari et al., 2024). These findings indicate that contemporary digital environments can provide conditions that facilitate spontaneous purchasing behaviour.

However, impulsive spending should not be understood solely as a response to external marketing or technological stimuli. Individual financial and psychological characteristics may also shape the extent to which students engage in spontaneous spending. One such characteristic is financial self-control. Self-control reflects an individual's capacity to regulate immediate impulses and align behaviour with longer-term considerations. In a financial context, this includes the ability to delay unnecessary purchases, plan expenditure, resist promotional pressure, and consider financial consequences before spending (Strömbäck et al., 2017). Empirical research among university students has demonstrated a negative

association between self-control and impulsive buying, suggesting that students with greater capacity to regulate their behaviour tend to report lower tendencies towards spontaneous and unplanned purchases (Fajri et al., 2024; Fitriani et al., 2024).

Financial stress represents another potentially relevant factor. University students may experience financial pressure arising from limited allowances or income, difficulty meeting daily expenses, and concerns about managing available financial resources. Such pressure may affect financial decision-making and spending behaviour, although the relationship between financial stress and impulsive spending remains less straightforward. Existing research has linked psychological stress with impulsive buying among university students, although evidence has also considered impulse purchasing as a potential antecedent of financial stress (Fitrah et al., 2024; Nobre & Nobre, 2022). Consequently, the association between perceived financial strain and students' impulsive spending warrants further examination without assuming a predetermined causal direction.

Financial risk attitude provides a further perspective on impulsive spending behaviour. Financial decisions frequently involve trade-offs between immediate satisfaction and potential future financial consequences. Individuals who are more willing to tolerate financial uncertainty or accept financial risk for immediate satisfaction may be more inclined to make purchases without extensive planning or consideration of future financial conditions (Ha & Byun, 2018). In the context of university students, such risk orientation may be particularly relevant because financial resources are often constrained, making the consequences of poorly planned expenditure potentially more salient.

Although previous research has examined various determinants of impulsive buying, existing studies have approached the phenomenon from different perspectives, leaving several issues requiring further investigation. Damayanti and Sagoro (2024) and Djamhari et al. (2024) examined impulsive buying in relation to promotional stimuli, online shopping environments, fear of missing out, and digital payment mechanisms, highlighting the relevance of external consumption conditions. In contrast, Fajri et al. (2024) and Fitriani et al. (2024) emphasised self-control as an individual behavioural factor associated with impulsive purchasing. However, these perspectives do not fully explain how financial self-regulation operates alongside financial strain and willingness to tolerate financial uncertainty. Furthermore, Fitrah et al. (2024) examined academic stress rather than specifically financial stress, while Nobre and Nobre (2022) considered impulse purchasing as a potential antecedent of financial stress, indicating uncertainty regarding the relationship between financial strain and impulsive spending. Similarly, Ha and Byun (2018) examined risk attitude in relation to impulse buying, but the role of spending-related financial risk orientation among university students requires further examination. Consequently, the research gap concerns the limited integrated evidence on the unique associations of financial self-control, financial stress, and financial risk attitude with impulsive spending behaviour when these factors are examined simultaneously. Addressing this gap may provide a more differentiated understanding of whether students' impulsive spending is associated primarily with behavioural self-regulation, perceived financial pressure, or willingness to tolerate financial uncertainty.

Accordingly, the present study examines the associations of financial self-control, financial stress, and financial risk attitude with impulsive spending behaviour among university

students. Specifically, the study aims to: (1) examine the association between financial self-control and impulsive spending behaviour; (2) examine the association between financial stress and impulsive spending behaviour; and (3) examine the association between financial risk attitude and impulsive spending behaviour. By considering these three factors simultaneously, the study seeks to integrate regulatory, financial-strain, and risk-orientation perspectives in explaining variations in students' impulsive spending behaviour.

**Literature Review and Hypotheses Development**

*Impulsive Spending Behaviour among University Students*

Impulsive spending refers to expenditure that occurs spontaneously, with limited prior planning or consideration of longer-term financial consequences (Rook, 1987). Although the literature more commonly uses the term impulsive buying, the present study uses impulsive spending behaviour to reflect the specific operationalisation adopted in the questionnaire. In the present study, impulsive spending behaviour encompasses spontaneous purchasing, purchasing without prior planning, responsiveness to promotional offers, purchasing unnecessary items, and regret following particular purchases.

University students represent a particularly relevant population for examining impulsive spending behaviour. During the transition towards greater financial independence, students increasingly manage personal expenditure while often operating with limited income, allowances, or other financial resources. At the same time, contemporary spending environments provide convenient access to online shopping, digital payments, promotional offers, and other mechanisms that reduce the effort required to complete a purchase (Djamhari et al., 2024). These conditions may increase opportunities for unplanned expenditure.

Recent research continues to demonstrate the relevance of impulsive buying to students' financial behaviour. Studies have examined impulsive buying alongside financial technology, self-control, financial management, promotional exposure, and other behavioural factors. For example, Amalia and Yuliati (2025) examined financial technology, financial self-efficacy, self-control, and impulsive buying in relation to university students' personal financial management. Such evidence indicates that impulsive purchasing forms part of a broader financial-behaviour context rather than representing an isolated consumer response.

Understanding impulsive spending therefore requires consideration of both external spending opportunities and individual characteristics. The present study focuses on three financial and behavioural characteristics that may be particularly relevant: financial self-control, financial stress, and financial risk attitude.

*Financial Self-Control and Impulsive Spending Behaviour*

Financial self-control refers to an individual's ability to regulate spending impulses and align immediate purchasing behaviour with broader financial considerations. It involves the capacity to delay unnecessary purchases, plan expenditure, resist promotional pressure, and consider financial consequences before committing financial resources (Strömbäck et al., 2017).

Self-control is particularly relevant to impulsive spending because impulsive behaviour frequently involves tension between immediate gratification and longer-term financial objectives. An individual may experience an immediate desire to purchase a product while simultaneously recognising that the expenditure is unnecessary or inconsistent with available financial resources. Greater self-control may enable the individual to inhibit the immediate response and evaluate the purchase more deliberately.

Empirical research provides substantial support for the relevance of self-control to impulsive purchasing among university students. Fajri et al. (2024) directly examined self-control and impulsive buying among university students, while Fitriani et al. (2024) similarly highlighted the role of self-control in impulsive purchasing among student users of TikTok Shop. Related evidence also indicates that self-control is relevant to students' broader personal financial management (Amalia & Yuliati, 2025).

This relationship is particularly relevant in environments characterised by convenient payment systems and frequent promotional exposure. Students with stronger financial self-control may be better able to distinguish between desired and necessary purchases, postpone expenditure, and resist immediate purchasing cues. Conversely, weaker financial self-control may increase vulnerability to spontaneous expenditure because immediate purchasing desires are less effectively regulated.

Accordingly, the following hypothesis is proposed:
**$H_1$:** Financial self-control is negatively associated with impulsive spending behaviour among university students.

*Financial Stress and Impulsive Spending Behaviour*
Financial stress refers to psychological strain and concern arising from perceived difficulties in managing financial needs, obligations, and available resources. Among university students, financial stress may arise from inadequate allowances or income, difficulty managing daily expenses, uncertainty regarding available financial resources, and broader concerns about personal financial circumstances.

The relationship between financial stress and spending behaviour is potentially complex. Financial pressure may encourage some individuals to restrict expenditure and exercise greater caution. For others, however, psychological strain may coexist with less deliberate spending behaviour, particularly when consumption provides immediate emotional satisfaction or temporary relief from negative feelings. Consequently, financial stress cannot automatically be assumed to produce more prudent spending.

Evidence from the broader stress literature suggests that psychological strain may be positively associated with impulsive buying. For example, Fitrah et al. (2024) reported a positive relationship between academic stress and impulsive buying among university students. However, this evidence concerns academic rather than specifically financial stress. Moreover, the direction of the relationship remains theoretically uncertain, as previous research has also examined impulse purchasing as an antecedent of financial stress (Nobre et al., 2022).

This uncertainty provides an important basis for examining financial stress alongside other behavioural factors. Although previous research suggests that financial stress and impulsive spending may be related in either direction, the present study focuses on financial stress as a potential statistical predictor rather than establishing a causal relationship. Specifically, the study investigates whether students reporting greater financial stress also demonstrate higher levels of impulsive spending behaviour after accounting for financial self-control and financial risk attitude. Given the cross-sectional research design, the findings are interpreted as associations rather than evidence of causality.

Based on the possibility that financial strain may be associated with less regulated spending behaviour, the following hypothesis is proposed:
**$H_2$:** Financial stress is positively associated with impulsive spending behaviour among university students.

*Financial Risk Attitude and Impulsive Spending Behaviour*
Financial risk attitude reflects an individual's orientation towards uncertainty and potential adverse financial consequences when making financial decisions. In the context of spending, a greater willingness to tolerate financial risk may be reflected in prioritising immediate satisfaction despite uncertainty regarding future financial circumstances.

Financial risk attitude is conceptually relevant to impulsive spending because unplanned purchases may involve an implicit trade-off between immediate consumption and future financial security. When individuals spend without detailed planning, they commit financial resources despite uncertainty regarding subsequent needs or constraints. Individuals who are relatively comfortable accepting such uncertainty may therefore be more willing to engage in spontaneous expenditure.

The present study conceptualises financial risk attitude specifically in relation to spending decisions. It captures willingness to accept financial risk for immediate satisfaction, willingness to spend despite uncertainty regarding future financial circumstances, comfort with financial decisions made without extensive planning, willingness to try new experiences involving financial risk, and the extent to which perceived financial risk affects spending decisions. This conceptualisation therefore differs from investment-specific risk tolerance, which primarily concerns willingness to accept variability or potential losses in investment returns. Nevertheless, spending-related financial risk attitude should be conceptually distinguished from impulsive spending behaviour. While financial risk attitude concerns an individual's willingness to tolerate uncertainty and potential financial consequences, impulsive spending behaviour refers to the actual tendency to make spontaneous or insufficiently planned purchases.

Direct empirical evidence concerning financial risk attitude and impulsive purchasing remains comparatively limited. Earlier consumer research has nevertheless examined risk attitude in relation to impulse buying, providing a conceptual basis for considering individuals' willingness to accept uncertainty as relevant to spontaneous purchasing behaviour (Ha & Byun, 2018).

This distinction is important because students may not necessarily participate extensively in investment activities but may nevertheless encounter financial risk through everyday consumption decisions. A student who is relatively unconcerned about future financial uncertainty may be more willing to prioritise immediate consumption, whereas a student who is more sensitive to financial risk may evaluate potential consequences more carefully before spending.

Accordingly, the following hypothesis is proposed:
**$H_3$:** Financial risk attitude is positively associated with impulsive spending behaviour among university students.

*Conceptual Framework*
Based on the preceding literature and conceptual arguments, the study proposes that financial self-control, financial stress, and financial risk attitude are independently associated with impulsive spending behaviour among university students. The framework distinguishes three different dimensions of students' financial behaviour: the capacity to regulate expenditure, perceived strain arising from financial circumstances, and willingness to tolerate financial uncertainty.

The proposed relationships are as follows:

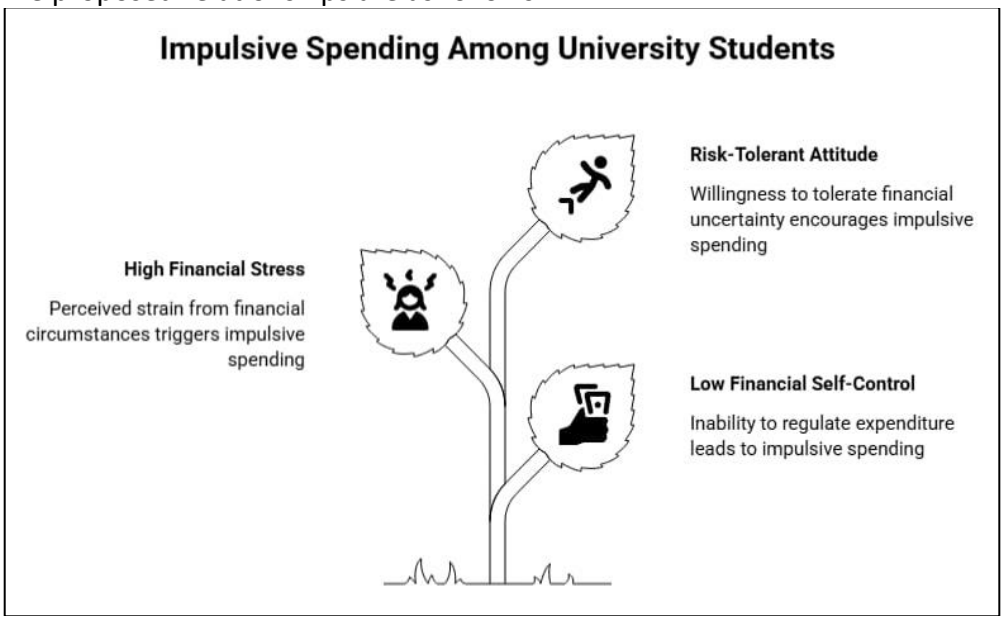


Figure 1. Conceptual Framework

The model enables the unique association of each factor with impulsive spending behaviour to be examined while statistically accounting for the other predictors.

## Methodology

*Research Design and Participants*
This study employed a quantitative cross-sectional survey design to examine the associations of financial self-control, financial stress, and financial risk attitude with impulsive spending behaviour among university students. Data were collected using a self-administered online questionnaire distributed through Google Forms.

A non-probability convenience sampling technique was employed, whereby respondents were recruited based on their accessibility and willingness to participate. The initial dataset contained 131 responses. Following data screening, two respondents were excluded from the construct-level analyses because responses to the measurement items were incomplete. The final analytical sample therefore consisted of 129 university students.

Among the 129 respondents, 52 (40.3%) were male and 77 (59.7%) were female. Most respondents were aged between 18 and 20 years (62.0%), followed by those aged 21–23 years (27.9%) and 24 years or above (10.1%). In terms of level of study, 58 respondents (45.0%) were diploma students, 44 (34.1%) were foundation students, and 27 (20.9%) were bachelor's degree students.

The respondents also reported different primary payment methods for their everyday spending. E-wallets were the most commonly reported primary payment method, used by 100 respondents (77.5%). This characteristic reflects the substantial presence of digital payment methods within the spending environment of the study sample.

*Research Instrument*

Data were collected using a structured questionnaire consisting of three main sections. Section A collected demographic and financial-background information, including gender, age, level of study, semester, estimated monthly allowance, employment status, and primary payment method.

Section B measured three factors potentially associated with impulsive spending behaviour: financial self-control, financial stress, and financial risk attitude. Section C measured impulsive spending behaviour. Each construct was assessed using five items, resulting in a total of 20 measurement items. Responses to the measurement items were recorded using a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree.

Financial self-control was measured using items reflecting respondents' ability to control spending desires, postpone unnecessary purchases, plan expenditure, resist promotional or discount-related influences, and consider financial consequences before making purchases.

Financial stress was assessed through respondents' concerns about their financial circumstances, perceived insufficiency of monthly allowance, stress associated with daily expenditure, difficulty managing available financial resources, and the extent to which financial issues created pressure in their lives as students.

Financial risk attitude was measured through items reflecting willingness to accept financial risk for immediate satisfaction, willingness to spend despite uncertainty regarding future financial circumstances, comfort with making financial decisions without extensive planning, willingness to engage in new activities involving financial risk, and the extent to which financial risk influenced spending decisions.

Impulsive spending behaviour was measured through tendencies to purchase items spontaneously, make purchases without prior planning, respond to promotional offers,

purchase items that were not genuinely needed, and experience regret following particular purchases.

*Data Screening and Preparation*

The dataset was screened prior to the main statistical analyses. The initial dataset comprised 131 responses. Examination of the measurement items identified two respondents with incomplete construct-level responses. Because the missing information affected the measurement of the principal study constructs, these cases were excluded from the construct-level analyses using a complete-case approach. The final analytical sample comprised 129 respondents.

Composite scores for financial self-control, financial stress, financial risk attitude, and impulsive spending behaviour were subsequently calculated from their respective measurement items. Higher composite scores represented higher levels of the corresponding construct.

*Data Analysis*

The data were analysed using a series of statistical procedures to assess measurement quality and examine the associations among the study variables. Descriptive statistics were first used to summarise the demographic characteristics of the respondents and the distributions of the principal study constructs. Frequencies and percentages were reported for categorical variables, while means and standard deviations were calculated for the four study constructs.

Internal consistency reliability was assessed using Cronbach's alpha. Exploratory factor analysis (EFA) was subsequently conducted to examine the underlying factor structure of the 20 measurement items. The Kaiser–Meyer–Olkin (KMO) measure and Bartlett's Test of Sphericity were used to assess sampling adequacy and the suitability of the correlation matrix for factor analysis. The extracted factor solution and potential cross-loadings were examined to evaluate the empirical distinction among the four constructs.

Pearson's correlation analysis was used to examine the bivariate associations among financial self-control, financial stress, financial risk attitude, and impulsive spending behaviour. Multiple linear regression analysis was then performed to estimate the unique associations of financial self-control, financial stress, and financial risk attitude with impulsive spending behaviour. The three predictors were entered simultaneously into the regression model. Variance inflation factors (VIFs) were examined to assess multicollinearity.

Regression diagnostics were conducted to evaluate the underlying assumptions of the model. Residual normality was assessed using the Shapiro–Wilk test, while heteroskedasticity was examined using the Breusch–Pagan test. As the diagnostic tests indicated departures from residual normality and homoskedasticity, supplementary sensitivity analyses were conducted. Specifically, heteroskedasticity-consistent HC3 robust standard errors were estimated to provide inference that is less sensitive to heteroskedasticity (Long & Ervin, 2000). In addition, non-parametric bootstrap analysis with 10,000 resamples was performed to obtain 95% confidence intervals for the regression coefficients. The conventional ordinary least squares (OLS) estimates were retained as the primary regression results, while the HC3

and bootstrap results were used to assess the robustness of the statistical conclusions. Statistical significance was evaluated at the 5% level ($p < .05$).

## Results

*Respondent Profile*

A total of 131 responses were initially obtained. Following data screening, two cases with incomplete responses across the construct measurement items were excluded, resulting in a final analytical sample of 129 respondents.

Of the 129 respondents, 77 (59.7%) were female and 52 (40.3%) were male. Most respondents were aged between 18 and 20 years (62.0%), followed by those aged 21–23 years (27.9%) and 24 years or above (10.1%). In terms of level of study, diploma students represented the largest group (45.0%), followed by foundation students (34.1%) and bachelor's degree students (20.9%). E-wallets were the predominant primary payment method, reported by 77.5% of respondents.

Table 1
*Respondent Profile*

| Characteristic | Category | n | % |
|---|---|---|---|
| Gender | Male | 52 | 40.3 |
| | Female | 77 | 59.7 |
| Age | 18–20 years | 80 | 62.0 |
| | 21–23 years | 36 | 27.9 |
| | ≥24 years | 13 | 10.1 |
| Level of study | Foundation | 44 | 34.1 |
| | Diploma | 58 | 45.0 |
| | Bachelor's degree | 27 | 20.9 |
| Primary payment method | E-wallet | 100 | 77.5 |

*Note. N = 129. Only the predominant payment method is presented.*

*Descriptive Statistics and Reliability*

Table 2 presents the descriptive statistics and internal consistency coefficients for the four study constructs. Financial self-control recorded the highest mean (M = 3.571, SD = 0.806), followed by financial stress (M = 3.127, SD = 0.750), impulsive spending behaviour (M = 2.664, SD = 0.769), and financial risk attitude (M = 2.384, SD = 0.876).

Cronbach's alpha coefficients ranged from .780 to .922, indicating acceptable to high internal consistency across the four constructs.

Table 2
*Descriptive Statistics and Reliability*

| Construct | Items | Mean | SD | Cronbach's α |
|---|---|---|---|---|
| Financial Self-Control (FSC) | 5 | 3.571 | 0.806 | .881 |
| Financial Stress (FS) | 5 | 3.127 | 0.750 | .780 |
| Financial Risk Attitude (FRA) | 5 | 2.384 | 0.876 | .922 |
| Impulsive Spending Behaviour (ISB) | 5 | 2.664 | 0.769 | .842 |

*Note. N = 129.*

*Exploratory Factor Analysis*

Exploratory factor analysis was conducted on the 20 measurement items. The Kaiser–Meyer–Olkin measure of sampling adequacy was .815, while Bartlett's Test of Sphericity was statistically significant, $\chi^2(190) = 2006.13$, $p < .001$, indicating that the correlation matrix was suitable for factor analysis.

The four-factor solution accounted for approximately 71.9% of the total variance. The extracted structure generally corresponded to the four proposed constructs, although some cross-loading was observed among conceptually related items, particularly those concerning promotional influence and spending without careful planning. Given the satisfactory internal consistency of the four scales and their conceptual relevance to the study, all items were retained for subsequent analyses.

*Correlation Analysis*

Pearson's correlation analysis was conducted to examine the bivariate relationships among the four constructs. As shown in Table 3, financial self-control was moderately and negatively associated with impulsive spending behaviour ($r = -.598$, $p < .001$). Financial stress showed a weaker positive association with impulsive spending behaviour ($r = .205$, $p = .020$), while financial risk attitude was moderately and positively associated with impulsive spending behaviour ($r = .589$, $p < .001$).

Financial self-control was also negatively associated with financial risk attitude ($r = -.553$, $p < .001$). Financial stress was positively but weakly associated with financial risk attitude ($r = .179$, $p = .042$) and was not significantly associated with financial self-control ($r = -.015$, $p = .862$).

Table 3
*Pearson Correlations among Study Variables*

| Variable | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 1. Financial Self-Control | 1 | | | |
| 2. Financial Stress | −.015 | 1 | | |
| 3. Financial Risk Attitude | −.553*** | .179* | 1 | |
| 4. Impulsive Spending Behaviour | −.598*** | .205* | .589*** | 1 |

*Note. N = 129. * p < .05.* ** p < .001.***

*Multiple Regression Analysis*

Multiple linear regression was conducted to examine the unique associations of financial self-control, financial stress, and financial risk attitude with impulsive spending behaviour. The overall model was statistically significant, $F(3, 125) = 37.31$, $p < .001$, and explained 47.2% of the variance in impulsive spending behaviour ($R^2 = .472$, adjusted $R^2 = .460$).

Under conventional OLS inference, financial self-control demonstrated a significant negative association with impulsive spending behaviour (B = −.390, *β* = −.409, $p < .001$). Financial stress showed a smaller positive association (B = .142, *β* = .138, $p = .039$), while financial risk attitude demonstrated a significant positive association (B = .297, *β* = .338, $p < .001$).

The VIF values ranged from 1.044 to 1.504, indicating no evidence of problematic multicollinearity among the predictors.

Table 4
*Multiple Regression Predicting Impulsive Spending Behaviour*

| Predictor | B | SE | β | t | p | VIF |
|---|---|---|---|---|---|---|
| Financial Self-Control | −.390 | .075 | −.409 | −5.221 | <.001 | 1.456 |
| Financial Stress | .142 | .068 | .138 | 2.086 | .039 | 1.044 |
| Financial Risk Attitude | .297 | .070 | .338 | 4.242 | <.001 | 1.504 |

*Note. N = 129. Dependent variable = Impulsive Spending Behaviour. $R^2$ = .472; adjusted $R^2$ = .460; F(3,125) = 37.31, p < .001.*

*Regression Diagnostics and Robustness Analysis*

Regression diagnostics indicated departures from two conventional OLS assumptions. The Shapiro–Wilk test indicated that the residuals deviated significantly from normality (W = .901, $p$ < .001). In addition, the Breusch–Pagan test indicated statistically significant heteroskedasticity ($p$ < .001). Therefore, supplementary HC3 heteroskedasticity-robust standard errors and non-parametric bootstrap confidence intervals based on 10,000 resamples were examined.

As shown in Table 5, financial self-control remained statistically significant when HC3 robust standard errors were applied (B = −.390, robust SE = .188, p = .040). In contrast, financial stress ($p$ = .156) and financial risk attitude ($p$ = .115) were no longer statistically significant under HC3 inference.

The bootstrap analysis similarly supported the negative coefficient for financial self-control, with its 95% confidence interval excluding zero. The bootstrap interval for financial stress included zero, whereas the interval for financial risk attitude narrowly excluded zero. Thus, the statistical evidence for financial stress and financial risk attitude was less stable across inferential approaches than that for financial self-control.

Table 5
*Robustness Analysis of Regression Coefficients*

| Predictor | B | HC3 Robust SE | HC3 p | Bootstrap 95% CI | Predictor |
|---|---|---|---|---|---|
| Financial Self-Control | −.390 | .188 | .040 | [−.688, −.086] | Financial Self-Control |
| Financial Stress | .142 | .100 | .156 | [−.033, .324] | Financial Stress |
| Financial Risk Attitude | .297 | .187 | .115 | [.003, .582] | Financial Risk Attitude |

*Note. HC3 = heteroskedasticity-consistent standard errors. Bootstrap confidence intervals were based on 10,000 resamples.*

Hypothesis Testing

Table 6

*Summary of Hypothesis Testing*

| Hypothesis | Proposed relationship | OLS | Robustness analysis | Conclusion |
|---|---|---|---|---|
| $H_1$ | FSC → ISB (−) | Significant | HC3 significant; bootstrap CI excludes zero | **Consistently supported** |
| $H_2$ | FS → ISB (+) | Significant | HC3 non-significant; bootstrap CI includes zero | **Limited/mixed support** |
| $H_3$ | FRA → ISB (+) | Significant | HC3 non-significant; bootstrap CI narrowly excludes zero | **Mixed support** |

Overall, H1 received consistent empirical support across conventional and sensitivity analyses. Financial self-control was negatively associated with impulsive spending behaviour, and this relationship remained statistically significant under HC3 robust inference and bootstrap analysis. H2 received limited support: although financial stress was positively associated with impulsive spending behaviour under conventional OLS estimation, the relationship was not statistically significant under HC3 inference and its bootstrap confidence interval included zero. H3 received mixed support. Financial risk attitude demonstrated a positive and statistically significant coefficient under conventional OLS estimation and its bootstrap confidence interval narrowly excluded zero; however, the relationship was not statistically significant when HC3 robust standard errors were applied. Accordingly, the findings for financial stress and financial risk attitude should be interpreted with greater caution.

**Discussion**

The present study examined the associations of financial self-control, financial stress, and financial risk attitude with impulsive spending behaviour among university students. The conventional OLS model explained 47.2% of the variance in impulsive spending behaviour, indicating that the three financial and behavioural factors collectively accounted for a substantial proportion of differences in students' reported impulsive spending. However, the robustness analyses revealed that the strength of evidence differed across the three predictors. Financial self-control demonstrated the most consistent association, whereas the findings for financial stress and financial risk attitude were more sensitive to the inferential method applied.

*Financial Self-Control and Impulsive Spending Behaviour*

Financial self-control demonstrated a significant negative association with impulsive spending behaviour. Students reporting greater ability to regulate their spending desires, postpone unnecessary purchases, plan expenditure, resist promotional influences, and consider financial consequences tended to report lower levels of impulsive spending. Importantly, this relationship remained statistically significant under conventional OLS estimation, HC3 robust inference, and bootstrap analysis. H1 therefore received consistent empirical support.

This finding is consistent with recent evidence positioning self-control as an important regulatory mechanism in students' financial and consumption behaviour. Previous research has shown that self-control is negatively associated with impulsive buying among university students, particularly in digital shopping environments where consumers are continuously

exposed to promotional stimuli and convenient purchasing mechanisms. Recent research has similarly highlighted the role of self-control in students' personal financial management, suggesting that behavioural regulation is important in maintaining more deliberate financial behaviour (Fajri et al., 2024; Fitriani et al., 2024; Amalia & Yuliati, 2025).

The present findings extend this reasoning to impulsive spending behaviour more broadly. Students with stronger financial self-control may be better able to create a psychological pause between the desire to purchase and the actual spending decision. Such regulation may be particularly important in contemporary spending environments where e-wallets, online shopping platforms, promotional campaigns, and deferred payment facilities can reduce the effort involved in completing a transaction (Djamhari et al., 2024).

The prominence of financial self-control is also relevant to the characteristics of the present sample, in which e-wallets represented the predominant primary payment method. Although the present study did not test whether payment method moderated the relationship between self-control and impulsive spending, the widespread use of digital payments illustrates a spending environment in which transactions can be completed rapidly. Accordingly, the findings suggest that internal financial regulation remains relevant even within highly convenient payment environments.

*Financial Stress and Impulsive Spending Behaviour*

Financial stress was positively correlated with impulsive spending behaviour at the bivariate level and showed a statistically significant positive coefficient under conventional OLS estimation. However, the relationship was no longer statistically significant when HC3 robust standard errors were applied, and the bootstrap confidence interval included zero. H2 therefore received only limited support.

This finding suggests that the relationship between financial stress and impulsive spending may be less straightforward than initially hypothesised. Students experiencing greater financial strain do not necessarily respond uniformly through greater impulsive expenditure. Financial pressure may encourage some students to restrict expenditure and become more cautious, while others may continue to engage in spontaneous consumption. Consequently, financial stress alone may not be sufficient to explain differences in impulsive spending once other behavioural characteristics are considered.

The direction of the relationship also requires caution. Existing literature has considered impulsive buying as a potential contributor to subsequent financial stress, rather than exclusively treating financial stress as an antecedent of impulsive behaviour (Nobre & Nobre, 2022). Thus, financial strain and impulsive spending may potentially operate within a reciprocal behavioural process. Because the present study employed a cross-sectional design, it cannot determine whether financial stress precedes impulsive spending, results from such behaviour, or reflects a broader financial condition associated with both.

The instability of the financial stress coefficient across inferential methods further reinforces the need for cautious interpretation. Rather than concluding that financial stress independently predicts impulsive spending, the present findings provide evidence of a

modest positive bivariate association whose unique contribution becomes less certain under robust regression inference.

*Financial Risk Attitude and Impulsive Spending Behaviour*

Financial risk attitude demonstrated a relatively strong positive bivariate association with impulsive spending behaviour and was statistically significant under conventional OLS estimation. However, the coefficient was not statistically significant when HC3 robust standard errors were applied. In contrast, the bootstrap confidence interval narrowly excluded zero. H3 therefore received mixed support.

One possible explanation is the conceptual proximity between financial risk attitude and impulsive spending behaviour in the present measurement framework. Financial risk attitude was operationalised through willingness to accept financial uncertainty for immediate satisfaction, spending despite uncertainty regarding future financial circumstances, and comfort with financial decisions made without extensive planning. These characteristics are conceptually relevant to impulsive spending because both involve a trade-off between immediate consumption and consideration of future financial consequences.

At the same time, this conceptual proximity may partly account for the relatively strong observed association. The exploratory factor analysis also indicated some cross-loading among items related to spending without careful planning. Therefore, the positive relationship between financial risk attitude and impulsive spending should not automatically be interpreted as evidence that a general willingness to take financial risks produces impulsive consumption. Instead, the findings suggest that a spending-related orientation towards financial uncertainty is associated with impulsive spending tendencies, while the independence of these constructs warrants further measurement validation. This interpretation is broadly consistent with earlier consumer research examining risk attitude in relation to impulse buying (Ha & Byun, 2018).

This distinction is particularly important because the financial risk attitude examined in the present study differs from conventional investment risk tolerance. The construct concerns risk orientation in everyday spending decisions rather than willingness to accept volatility or potential losses in investment portfolios. Future studies may therefore benefit from further refining the measurement of spending-related financial risk attitude and examining whether it remains distinct from impulsivity and lack of financial planning.

*Overall Interpretation of the Findings*

Taken together, the findings suggest that impulsive spending among university students cannot be attributed to a single financial characteristic. Financial self-control, perceived financial strain, and financial risk orientation were each associated with impulsive spending at the bivariate level, but their unique associations differed considerably when examined simultaneously and subjected to robustness analysis.

Financial self-control emerged as the most statistically stable factor across the different analytical approaches. In contrast, the evidence concerning financial stress and financial risk attitude depended more strongly on the inferential procedure applied. This distinction is important because reliance solely on conventional OLS significance tests would have

suggested that all three hypotheses were supported. The supplementary robust and bootstrap analyses provide a more nuanced interpretation by demonstrating that some conclusions are sensitive to violations of conventional regression assumptions.

The findings therefore reinforce the importance of distinguishing between bivariate relationships and unique multivariable associations. A factor may correlate significantly with impulsive spending without necessarily demonstrating a stable independent association after other relevant characteristics and statistical uncertainty are taken into account.

## Conclusion and Implications

### *Summary of Findings*

This study examined the associations of financial self-control, financial stress, and financial risk attitude with impulsive spending behaviour among university students. The findings showed that all three factors were significantly associated with impulsive spending behaviour at the bivariate level. However, their unique associations differed when the predictors were examined simultaneously and when alternative inferential procedures were applied.

Financial self-control demonstrated the most consistent evidence across the analyses. Higher financial self-control was associated with lower impulsive spending behaviour under conventional OLS estimation, HC3 robust inference, and bootstrap analysis. In contrast, the evidence for financial stress and financial risk attitude was less stable. Financial stress showed a positive association under conventional OLS estimation, but this relationship was not statistically significant under HC3 inference and its bootstrap confidence interval included zero. Financial risk attitude was positively associated with impulsive spending under conventional OLS estimation and its bootstrap confidence interval narrowly excluded zero, but the relationship was not statistically significant under HC3 inference.

These findings indicate that the evidence for financial self-control is comparatively robust, whereas the unique associations of financial stress and financial risk attitude with impulsive spending require more cautious interpretation. Overall, the results highlight the importance of considering both behavioural regulation and broader financial characteristics when examining impulsive spending among university students.

### *Theoretical Implications*

This study contributes to the literature on student financial behaviour by examining financial self-control, financial stress, and financial risk attitude simultaneously within a common model of impulsive spending behaviour. In doing so, the study considers three conceptually different dimensions: the ability to regulate spending behaviour, perceived strain arising from financial circumstances, and orientation towards financial uncertainty in spending decisions.

The findings particularly reinforce the relevance of financial self-control in understanding impulsive spending. Its negative association remained statistically significant across the different inferential approaches employed, suggesting that students' capacity to regulate immediate spending desires is consistently related to lower impulsive spending behaviour even when financial stress and financial risk attitude are considered simultaneously.

The study also demonstrates the importance of distinguishing between bivariate relationships and unique multivariable associations. Financial stress and financial risk attitude were positively correlated with impulsive spending behaviour, but their unique associations were less stable under robustness analysis. This suggests that statistically significant bivariate relationships should not automatically be interpreted as stable independent associations when other relevant financial characteristics are considered.

Finally, the findings highlight the need for greater conceptual precision in examining financial risk attitude within a spending context. In the present study, financial risk attitude reflects an orientation towards financial uncertainty in everyday spending decisions rather than conventional investment risk tolerance. Further research is therefore needed to establish the conceptual and empirical distinctiveness of spending-related financial risk attitude from related constructs such as impulsivity, financial planning, and self-control.

*Practical Implications*

The findings provide several practical considerations for financial education initiatives targeting university students. In particular, financial education may benefit from extending beyond the transmission of financial knowledge to include strategies that strengthen students' ability to regulate spending decisions. These strategies may include planning expenditure, distinguishing between needs and wants, delaying non-essential purchases, establishing personal spending limits, and evaluating the financial consequences of a purchase before completing a transaction.

Such behavioural strategies may be particularly relevant in increasingly digitalised spending environments. In the present sample, e-wallets were the predominant primary payment method. Rather than implying that e-wallet use causes impulsive spending, this pattern indicates that many respondents operate within a payment environment where transactions can be completed conveniently and rapidly. Financial education programmes could therefore incorporate practical approaches to managing digitally facilitated expenditure, such as monitoring cumulative transactions, establishing spending budgets, and critically evaluating promotional purchasing cues.

The findings concerning financial stress should be interpreted more cautiously. Financial stress was not consistently associated with impulsive spending across the robustness analyses. Accordingly, students experiencing financial strain should not be assumed to engage in impulsive spending. Universities may instead address financial stress as part of broader financial well-being initiatives involving budgeting, financial planning, and access to appropriate financial support.

*Limitations and Future Research*

Several limitations should be considered when interpreting the findings. First, the cross-sectional design does not permit causal or temporal conclusions. The observed relationships indicate statistical associations at a single point in time and cannot establish whether financial self-control, financial stress, or financial risk attitude leads to subsequent changes in impulsive spending. This issue is particularly relevant to financial stress because the relationship may potentially operate in either direction: financial strain may be associated with spending

behaviour, while repeated impulsive expenditure may also contribute to subsequent financial difficulties.

Second, the study employed convenience sampling within a single university. The findings therefore should not be generalised to the broader university-student population without caution. Future research could employ larger multi-institutional samples involving students from different types of universities, geographical locations, socioeconomic backgrounds, and academic disciplines.

Third, the study relied on self-reported questionnaire responses. Consequently, the measurements may be affected by recall error, response tendencies, and socially desirable responding. Future research could complement questionnaire measures with expenditure diaries, transaction records, or other behavioural indicators where ethically and practically feasible.

Fourth, the exploratory factor analysis indicated some cross-loading among conceptually related items. Of particular relevance is the conceptual proximity between certain financial risk attitude items and aspects of impulsive spending, especially those involving limited planning and acceptance of financial consequences. Although the constructs demonstrated satisfactory internal consistency, future studies should refine the measurement of spending-related financial risk attitude and assess its discriminant validity using confirmatory factor analysis or other appropriate measurement-model approaches.

Fifth, the regression diagnostics indicated departures from residual normality and homoskedasticity. The study therefore supplemented conventional OLS inference with HC3 robust standard errors and bootstrap confidence intervals. Importantly, the conclusions for financial stress and financial risk attitude were not fully consistent across these procedures. These relationships should therefore be regarded as requiring replication rather than as conclusive evidence of stable independent associations.

Future research could extend the present study through longitudinal designs that clarify the temporal relationship between financial characteristics and impulsive spending. Larger and more diverse samples would also permit examination of potential moderators or mediators, including financial literacy, allowance adequacy, digital payment behaviour, promotional exposure, and other characteristics that may explain when or why financial self-control, financial stress, and financial risk orientation are associated with impulsive spending.

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