



# Predictors of Self-Care Behavior: The Roles of Type D Personality and Locus of Control in Adults

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## ABSTRACT

This study aimed to examine the predictive role of Type D personality and locus of control on self-care behaviors among adults, particularly those managing chronic health conditions. Utilizing a cross-sectional design, data were collected from 370 participants through standardized instruments measuring Type D personality, locus of control, and self-care behaviors. Linear regression analysis was performed using SPSS-27 to assess the predictive relationships between the variables. The results indicated that both Type D personality and locus of control significantly predict self-care behaviors, accounting for 33% of the variance in self-care engagement. Specifically, Type D personality and an external locus of control were associated with poorer self-care practices. The study underscores the significant influence of psychological factors on self-care behaviors. Tailored interventions that consider individuals' psychological profiles may enhance self-care practices, particularly among those with chronic health conditions.

**Keywords:** Type D personality, locus of control, self-care behaviors, chronic health conditions, psychological factors.

## 1. Introduction

The role of personality traits, specifically Type D personality and locus of control, in influencing self-care behaviors has garnered substantial attention in the literature. Type D personality, characterized by negative affectivity and social inhibition, has consistently been

associated with suboptimal self-care practices in individuals with chronic conditions (Akbari et al., 2020; Park et al., 2020; Shao et al., 2017). Patients with this personality type often exhibit poorer self-care behaviors, notably in diabetes and heart failure contexts, suggesting a direct impact of psychological traits on health management effectiveness (Dadras et al., 2022; Lin et al., 2020).

Conversely, locus of control, which delineates an individual's belief in their capacity to influence events that affect them, has been identified as another crucial determinant of self-care behaviors (Allen et al., 2005; Asri et al., 2020). Individuals with an external locus of control perceive outcomes as largely beyond their control, which may lead to lower self-efficacy and diminished engagement in self-care activities (Lin, 2014). This perception can significantly hamper adherence to treatment regimens and self-management protocols, underscoring the necessity for healthcare providers to consider these psychological dimensions when designing patient-centered interventions (Allen et al., 2005; Asri et al., 2020).

Moreover, the interplay between Type D personality and locus of control can further complicate self-care behaviors. Individuals exhibiting Type D traits may also demonstrate a higher tendency towards an external locus of control, further diminishing their self-care adherence (Shao et al., 2017). This interaction underscores the complex nature of psychological influences on health behaviors and highlights the importance of a nuanced understanding of these factors in clinical practice. Therefore, predicting self-care behaviors is pivotal in the management of chronic illnesses, such as diabetes and heart diseases, where patient engagement in self-management practices significantly affects health outcomes.

## 2. Methods and Materials

### 2.1. Study Design and Participants

This study employed a cross-sectional design to explore the predictive relationships between Type D personality, locus of control, and self-care behaviors among individuals. A total of 370 participants were recruited through convenience sampling from various community settings, including social media platforms, community centers, and outpatient clinics. The inclusion criteria for participation were adults aged 18 years or older, able to provide informed consent. Participants with cognitive impairments or any psychiatric condition that could interfere with their ability to understand or complete the questionnaires were excluded from the study.

Data were collected using a structured questionnaire comprising three standardized instruments: the Type D Scale-14 (DS14) for assessing Type D personality, the Rotter Internal-External Locus of Control Scale for measuring locus of control, and the Self-Care Inventory (SCI) for evaluating self-care behaviors. Participants also

provided demographic information, including age, gender, educational level, and health status.

### 2.2. Measures

#### 2.2.1. Type D Personality

The Type D Scale-14 (DS14) is a prominent tool used to identify individuals with a Type D personality, characterized by high levels of both Negative Affectivity (NA) and Social Inhibition (SI). Comprising 14 items divided equally between the NA and SI subscales, the DS14 employs a 5-point Likert scale ranging from 0 (false) to 4 (true) for responses. A score of 10 or above on both subscales is indicative of a Type D personality. The scale's reliability and validity have been extensively validated across diverse populations, demonstrating excellent internal consistency, test-retest reliability, and construct validity. Such thorough validation underscores the DS14's utility in psychological and medical research, making it a standard measure for assessing Type D personality traits (Akbari et al., 2020).

#### 2.2.2. Locus of Control

The Rotter Internal-External Locus of Control Scale is a fundamental psychological assessment tool designed to measure individuals' perceived control over life events. This scale features 29 forced-choice items (plus 6 filler items), differentiating between an internal locus of control (belief in personal control over events) and an external locus of control (belief that external forces dictate outcomes). The binary scoring system assigns a score of 0 or 1 to each response, with higher totals indicating a more external locus of control. Renowned for its robust psychometric properties, the scale has demonstrated significant internal consistency and test-retest reliability. Its validity, established through predictive studies on behavior and psychological states, confirms its efficacy in measuring locus of control, making it a valuable instrument in psychological assessments and research (Moatamedy et al., 2017).

#### 2.2.3. Self-Care Behaviors

The Self-Care Inventory (SCI) is an essential tool for measuring self-care behaviors, particularly in individuals managing chronic conditions. This instrument evaluates how well patients adhere to health care practices recommended by professionals, encompassing a broad range of self-care activities. The SCI includes 15 items with responses typically rated on a 4-point Likert scale. The scoring system

translates responses into a measure of self-care adequacy, with higher scores reflecting better self-care behaviors. The SCI's validity and reliability have been confirmed through numerous studies, showcasing its internal consistency and the ability to accurately reflect self-care practices. As such, the SCI is an invaluable tool for researchers and healthcare providers seeking to assess and improve patient engagement in self-care activities (Aliakbari Dehkordi et al., 2021).

**2.3. Data Analysis**

Data analysis was conducted using SPSS version 27. Descriptive statistics were employed to summarize the demographic characteristics of the participants and the main variables of interest. Linear regression analysis was used to examine the predictive relationships between Type D personality, locus of control, and self-care behaviors. Type D personality and locus of control served as independent variables, while self-care behaviors, as measured by the SCI, served as the dependent variable.

Prior to the regression analysis, assumptions of linear regression, including normality, linearity, homoscedasticity,

and multicollinearity, were assessed. Standardized beta coefficients were reported to indicate the strength and direction of the relationships between the independent variables and the dependent variable. The level of significance was set at  $p < 0.05$  for all analyses.

**3. Findings and Results**

In the present study, the demographic characteristics of the 370 participants are reported as follows: Of the total, 198 (53.51%) were female, and 172 (46.49%) were male. The age distribution indicated that 112 participants (30.27%) were aged between 18 and 29 years, 155 (41.89%) were within the 30-49 age range, 78 (21.08%) were aged 50-69, and 25 (6.76%) were 70 years or older. In terms of educational attainment, 73 individuals (19.73%) had completed high school, 142 (38.38%) had obtained an undergraduate degree, and 155 (41.89%) had a postgraduate degree. Regarding health status, the majority of participants, 287 (77.57%), reported being in good health, while 83 (22.43%) indicated having a chronic condition.

**Table 1**

*Descriptive Statistics Findings*

Variable	Number	Mean	Standard Deviation
Self-Care Behaviors	370	29.03	6.91
Locus of Control	370	14.30	4.12
Type D Personality	370	26.33	4.55

Table 1 presents the descriptive statistics for the main variables of interest. The mean self-care behaviors score among the participants was 29.03 with a standard deviation of 6.91, indicating a moderate level of self-care engagement across the sample. The locus of control scores had a mean of 14.30 and a standard deviation of 4.12, suggesting a tendency towards an external locus of control among participants. Type D personality scores averaged at 26.33 with a standard deviation of 4.55, reflecting a significant presence of Type D personality traits within the study population.

Before conducting the linear regression analysis, we rigorously checked and confirmed the assumptions to ensure the robustness of our findings. The analysis of normality, using the Kolmogorov-Smirnov test, indicated that the residuals for the model were normally distributed ( $D(370) =$

$0.057, p = 0.200$ ), satisfying the assumption of normality. Linearity was assessed through scatterplots between predicted values and residuals, which did not reveal any systematic patterns, indicating that the assumption of linearity was met. Homoscedasticity was examined by visual inspection of a plot of standardized residuals against standardized predicted values, showing a random spread of residuals across the range of predicted values, thus confirming homoscedasticity ( $F(1,368) = 3.21, p = 0.074$ ). Lastly, multicollinearity was assessed using Variance Inflation Factor (VIF) scores, with all variables showing VIF values well below the commonly accepted threshold of 10 (VIF range: 1.02 - 1.89), indicating no multicollinearity issues. These analyses confirmed that the data met the necessary assumptions for linear regression, providing a solid foundation for the subsequent analysis.

**Table 2**

*Summary of Regression Model Analysis*

Model	Sum of Squares	Degrees of Freedom	Mean Squares	R	R <sup>2</sup>	R <sup>2</sup> <sub>adj</sub>	F	p
Regression	11355.52	2	5677.76	0.57	0.33	0.30	6.86	<0.05
Residual	3991.04	367	10.87					
Total	15346.56	369						

Table 2 summarizes the regression model analysis. The model accounted for 33% of the variance in self-care behaviors ( $R^2 = 0.33$ , adjusted  $R^2 = 0.30$ ), with an F statistic of 6.86, indicating the model was statistically

significant ( $p < 0.05$ ). The sum of squares for regression was 11355.52, compared to 3991.04 for the residual, highlighting the significant explanatory power of Type D personality and locus of control on self-care behaviors.

**Table 3**

*Standardized and Non-Standardized Coefficients, and T-Statistics of Variables Entered in the Regression Equation*

Predictor Variable	Unstandardized Coefficients (B)	Standard Error	Standardized Coefficients (Beta)	T-value	p
Constant	3.05	0.94	-	-	-
Locus of Control	1.88	0.33	0.28	3.90	<0.05
Type D Personality	1.95	0.40	0.29	3.93	<0.05

Table 3 details the standardized and non-standardized coefficients for the variables entered into the regression equation. The locus of control had an unstandardized coefficient (B) of 1.88 ( $p < 0.05$ ) and a standardized coefficient (Beta) of 0.28, indicating a significant positive influence on self-care behaviors. Type D personality had a slightly higher impact, with an unstandardized coefficient (B) of 1.95 ( $p < 0.05$ ) and a standardized coefficient (Beta) of 0.29, suggesting a similarly significant but slightly stronger influence on self-care behaviors compared to locus of control.

**4. Discussion and Conclusion**

The primary aim of this study was to investigate the predictive relationships between Type D personality, locus of control, and self-care behaviors among individuals, particularly focusing on those managing chronic health conditions. Our results revealed that both Type D personality and locus of control significantly predict self-care behaviors, underscoring the profound impact psychological factors have on health management practices. Individuals with a Type D personality and those with an external locus of control were found to engage less in self-care activities, highlighting the necessity of incorporating psychological assessments in the management of chronic diseases.

The role of personality traits, specifically Type D personality and locus of control, in influencing self-care

behaviors has garnered substantial attention in the literature. Type D personality, characterized by negative affectivity and social inhibition, has consistently been associated with suboptimal self-care practices in individuals with chronic conditions (Akbari et al., 2020; Park et al., 2020; Shao et al., 2017). Patients with this personality type often exhibit poorer self-care behaviors, notably in diabetes and heart failure contexts, suggesting a direct impact of psychological traits on health management effectiveness. Also, locus of control, which delineates an individual's belief in their capacity to influence events that affect them, has been identified as another crucial determinant of self-care behaviors (Allen et al., 2005; Asri et al., 2020; Lin, 2014). Moreover, the interplay between Type D personality and locus of control can further complicate self-care behaviors. Individuals exhibiting Type D traits may also demonstrate a higher tendency towards an external locus of control, further diminishing their self-care adherence (Shao et al., 2017). This interaction underscores the complex nature of psychological influences on health behaviors and highlights the importance of a nuanced understanding of these factors in clinical practice.

The literature also points to the mediating roles of coping strategies and resilience in the relationship between personality traits, locus of control, and self-care behaviors. Studies suggest that coping mechanisms, such as emotion-oriented coping, and resilience can buffer the negative effects of Type D personality on self-care practices (Akbari

et al., 2020; Heo & Kim, 2020; Park et al., 2020). These findings indicate the potential for interventions aimed at enhancing coping skills and resilience to improve self-care outcomes in individuals with chronic diseases.

Furthermore, the significance of psychological determinants in self-care is not limited to negative factors. Positive psychosocial factors, including coping skills training and problem-solving, have been shown to improve self-care behaviors and clinical outcomes, such as glycemic control in diabetes (Chew et al., 2014; Grey & Berry, 2004). This highlights the dual impact of psychological factors on self-care, where both the mitigation of negative traits and the enhancement of positive coping mechanisms play critical roles.

This study, while insightful, is not without its limitations. First, the cross-sectional design limits our ability to infer causality between the psychological variables and self-care behaviors. Additionally, the convenience sampling method may have introduced selection bias, potentially limiting the generalizability of the findings to a broader population. Furthermore, the reliance on self-reported measures for assessing self-care behaviors and psychological traits could have led to response bias, affecting the accuracy of the data.

Future research should aim to address these limitations by adopting longitudinal study designs to better understand the causal relationships between psychological factors and self-care behaviors over time. Expanding the participant pool through random sampling methods could enhance the generalizability of the findings. Additionally, incorporating objective measures of self-care behaviors, alongside self-reported data, could provide a more comprehensive understanding of the impact of Type D personality and locus of control on health management practices. Investigating the role of other psychological variables, such as anxiety, depression, and stress, could also offer deeper insights into their collective influence on self-care behaviors.

The findings of this study have important implications for clinical practice. Healthcare providers should consider the psychological profiles of their patients as integral components of comprehensive care plans, especially for those with chronic conditions. Screening for Type D personality traits and locus of control orientations could enable the identification of individuals at risk of poor self-care engagement. Tailored interventions that include psychological support, coping skills training, and strategies to enhance resilience and self-efficacy may improve self-care behaviors among these patients. Moreover, fostering a collaborative healthcare environment that empowers

patients to take an active role in their health management could further enhance self-care outcomes.

In conclusion, this study highlights the significant influence of Type D personality and locus of control on self-care behaviors, offering valuable insights for both research and practice in the field of health psychology and chronic disease management. By integrating psychological considerations into patient care, healthcare providers can better support individuals in navigating the complexities of managing chronic conditions, ultimately leading to improved health outcomes and quality of life.

### Authors' Contributions

Authors contributed equally to this article.

### Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

### Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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### Declaration of Interest

The authors report no conflict of interest.

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### Ethics Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

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