



Akademik Eğitim ve Sosyal Bilimler Dergisi (AJESS Journal)

Locus of Control Orientation Among Algerian University Students: Evidence of External Control Predominance Across Gender and Academic Specialization

Boutheyna Yahiaoui, Dr., Department of Psychology, Si El-Haouès University Center, Barika, Algeria, bouthaynayahiaoui@gmail.com

Walid Azzeddine, Dr., Department of Sports Physical Preparation, Ziane Achour University of Djelfa, Algeria. walidoazze@gmail.com

Wafaa Bouamli, PhD Student in Sociology of Work and Organization, University Center Si El-Haouès (Barika), Algeria. wafa.bouamli@cu-barika.dz

Abdelrazak Ben Ammar, PhD Student in Clinical Psychology, University Center Si El-Haouès (Barika), Algeria. abderrazak.benammar@cu-barika.dz

Article History

Received: 01/08/2026, Accepted: 24/09/2026, Published: 05/10/2026

Abstract

This study aims to identify the predominant locus of control orientation among Algerian university students, with a particular focus on examining potential differences based on gender and academic major. Understanding these orientations is crucial for gaining a deeper insight into students' psychological functioning and academic adjustment. To achieve this objective, a descriptive survey research design was adopted. Data were collected using Rotter's Internal-External Locus of Control Scale from a random sample consisting of 168 male and female students enrolled at the Si El Haoues Barika University Center and Batna 1 University in Algeria. The validity and reliability of the instrument were verified, and the data were analyzed using descriptive statistics and independent samples t-tests.

The results indicated that students generally demonstrate a tendency toward an external locus of control. Furthermore, no statistically significant differences were recorded based on gender or academic major, suggesting a level of homogeneity in locus of control orientations across these demographics. These findings imply that shared academic and contextual experiences may play a more influential role in shaping students' perceptions of control than individual demographic characteristics. In light of these outcomes, the study underscores the importance of developing educational and psychological strategies aimed at fostering an internal locus of control among university students.

Keywords: Educational Psychology, Locus of Control, Internal Locus of Control, External Locus of Control, University Students.

Introduction

Locus of control is considered one of the most influential variables within the framework of Social Learning Theory. It plays a pivotal role in analyzing and explaining individual differences in motivation, academic adjustment, and psychological functioning within the context of the educational environment and higher education. (Rotter, 1966) was the first to formulate this concept, which refers to individuals' generalized expectancies regarding the degree of control they possess over the outcomes of their actions. This variable has been extensively utilized to understand variations in students' academic performance levels, coping strategies, and stress management.

The locus of control reflects the attributional patterns individuals adopt to explain success and failure. Based on their method of explanation, individuals are divided into two categories: those with an internal locus of control, who tend to take ownership of the outcomes of their actions and attribute them to internal personal factors such as effort and ability; and those with an external locus of control, who attribute these outcomes to the external world and perceive them as being beyond their personal control (Yahiaoui, 2025,p.49).

Contemporary educational psychology focuses on the locus of control variable as a predictive indicator and a cornerstone of academic success and adaptive behavior in education. Empirical evidence and studies indicate that students

who lean toward internal attributions exhibit higher levels of achievement and psychological resilience. In contrast, those with external attributions justify outcomes by pointing to constraints and circumstances beyond their control (Findley & Cooper, 1983p.419).

The impact of the locus of control is not confined to the academic domain; it is also significantly linked to mental health and life satisfaction. An external locus of control has been associated with lower levels of life satisfaction and poor academic adjustment, whereas an internal locus of control contributes directly to enhancing psychological adaptation and promoting a positive self-regulation image (Cheng et al., 2013).

Furthermore, the locus of control influences numerous cognitive processes and behaviors associated with educational success, such as perseverance, goal orientation, and procrastination (Steel, 2007,p.72). Additionally, an external locus of control has been frequently linked to elevated levels of anxiety, stress, and depressive symptoms, while an internal locus of control serves as a protective factor supporting emotional stability (Kurtović & Gajić, 2018).

Comparative studies have revealed cognitive and psychological differences between individuals with internal and external locus of control. Ducette and Wolk (1973) found that internally oriented individuals are characterized by ego strength, a greater sense of responsibility, and the ability to effectively analyze and utilize information for problem-solving. Conversely, externally oriented individuals demonstrated a lower capacity to process and effectively apply information to solve their problems (Musharraf, 2009,p.130).

Despite numerous studies on this subject, findings remain inconsistent regarding the role of certain demographic variables such as gender and academic major. Aoubah and Daoudi (2018, p. 248) reported that previous studies had yielded inconsistent findings regarding gender differences in locus of control. Some studies reported significant differences in external locus of control orientation between males and females, with males showing a greater tendency toward external locus of control, whereas other studies found no statistically significant gender differences. These discrepancies suggest that locus of control may be influenced by various contextual and environmental factors rather than by gender alone (Aoubah & Daoudi, 2018, p. 248).

Examining and studying the locus of control among university students has become essential for understanding their perceptions regarding certain psychological characteristics, self-efficacy, and their expectations concerning available opportunities, particularly in light of the numerous rapid transformations affecting all aspects of educational, social, and economic life that they have experienced.

Although extensive research has addressed locus of control within educational psychology, empirical findings remain divergent concerning the predominant control orientation among university students and the extent to which demographic variables like gender and academic major impact this orientation. Consequently, investigating the predominant locus of control orientation among university students and uncovering differences associated with gender and major remains a research problem worthy of investigation.

In light of these considerations, the present study seeks to answer the following research questions:

1. What is the predominant locus of control orientation among university students?
2. Are there statistically significant differences in locus of control attributable to gender?
3. Are there statistically significant differences in locus of control attributable to academic major?

Accordingly, this study aims to determine the predominant locus of control among university students, detect differences in their control beliefs attributable to gender, and uncover differences attributable to academic major. Furthermore, it aims to discuss the obtained results in light of empirical evidence to support the development of psychological and educational interventions that contribute to fostering adaptive control beliefs among university students.

The significance of this study stems from its contribution to both theoretical and applied domains. Theoretically, it expands the existing literature on locus of control within the context of higher education. In practical terms, understanding university students' locus of control orientations helps guide educators and psychological counselors in designing intervention protocols that facilitate the enhancement of an internal locus of control and improve academic adjustment.

Based on previous studies, the hypotheses of this study are formulated as follows:

- **Hypothesis 1:** University students tend to possess an internal locus of control.
- **Hypothesis 2:** There are statistically significant differences in the locus of control among university students attributable to gender.
- **Hypothesis 3:** There are statistically significant differences in the locus of control among university students attributable to academic major.

Method

Research Design

This study adopted a descriptive survey research design to investigate the locus of control among university students and to uncover differences associated with gender and academic major. The descriptive method was deemed appropriate for determining the predominant locus of control orientation and testing differences between groups.

Sample

The study sample consisted of 168 university students selected via random sampling from the Si El Haoues Barika University Center and Batna 1 University (Algeria). Participants were randomly selected from students who were

present in the classrooms during their free time at the two participating institutions. Students were invited to participate voluntarily, and those who agreed completed the questionnaire. The sampling procedures aimed to ensure adequate representation across the categories of gender and academic major.

Table 1*Demographic Characteristics of the Study Sample (N = 168)*

Variable	Category	n (%)
Gender	Male	48 (28.6%)
	Female	120 (71.4%)
Specialization	Literary	110 (65.5%)
	Scientific	58 (34.5%)

Research Instrument***Rotter's Locus of Control Scale***

The study utilized Rotter's Locus of Control Scale (1966) to measure students' orientations regarding their predominant perception of control. The scale consists of 29 pairs of statements, of which 23 items are scored, and 6 are filler items designed to minimize response bias. Participants were required to choose one statement from each pair that reflects either internal or external control beliefs.

According to the scoring method of the scale, responses reflecting an external locus of control were awarded one point (1), while responses reflecting an internal locus of control were awarded zero points (0). Consequently, higher scores indicate a stronger orientation toward an external locus of control. Scores indicating an internal locus of control range from 0 to 8, whereas scores spanning from 9 to 23 indicate an external locus of control.

Psychometric Properties of the Scale

The psychometric properties of Rotter's Locus of Control Scale were verified prior to testing the study hypotheses. Reliability was evaluated using Cronbach's alpha coefficient, and discriminant validity was examined using the extreme groups method (the upper 27% versus the lower 27%). Additionally, item-total correlation coefficients were calculated to verify the internal consistency validity of the scale.

Table 2*Psychometric Properties of Rotter's Locus of Control Scale*

Psychometric Property	Value
Cronbach's Alpha	.52
Split-Half Reliability (Spearman–Brown)	.47
Number of discriminating items	17
Number of weak items	6

Study Procedures

The scale was administered in a group format within classrooms after obtaining the students' consent for voluntary participation in the study. The objectives of the research were explained to the participants, and they were assured that their responses would remain confidential and be utilized strictly for scientific research purposes.

Ethical Considerations

The study was conducted in accordance with the ethical principles of voluntary participation, informed consent, confidentiality, and respect for participants. Before data collection, all participants were informed about the scientific purpose of the study and were assured that the information collected would be used solely for scientific purposes and would not serve any personal objectives. They were also informed that their responses would be treated with strict confidentiality and that participation was voluntary. Data were collected only after obtaining participants' consent.

Statistical Analyses

Data were analyzed using a combination of descriptive and inferential statistical methods. Arithmetic means and standard deviations were calculated to determine the predominant locus of control orientation among the students. A one-sample t-test was employed to verify whether students leaned toward an internal or external locus of control. Additionally, independent samples t-tests were conducted to uncover differences associated with gender and academic major. The effect size was also calculated using Cohen's d coefficient to estimate the magnitude of the observed differences.

Normality was assessed using the Shapiro–Wilk test. The total locus of control scores were approximately normally distributed, $W = 0.987$, $p = .111$. Therefore, parametric tests, including the one-sample t-test and independent-samples t-test, were considered appropriate for the analysis.

Results**Testing the First Hypothesis**

The study hypothesized that university students tend to possess an internal locus of control. To test this hypothesis, a one-sample t-test was conducted by comparing the arithmetic mean of the sample against the upper limit of the internal locus of control category (Test Value = 8), in accordance with the scale's scoring criteria.

Table 3*Descriptive Statistics for Locus of Control Scores*

Variable	N	Mean	SD	Minimum	Maximum
Locus of Control	168	10.51	3.24	0	23

Table 4*One-Sample t-Test Comparing the Sample Mean With the Internal Locus Threshold*

Variable	Test Value	Mean	SD	t	df	p	Cohen's d
Locus of Control	8	10.51	3.24	10.06	167	< .001	.78

Table 5*Distribution of Students Across Locus of Control Categories*

Category	Score Range	n	%
Internal Locus of Control	0–8	42	25.00%
External Locus of Control	9–23	126	75.00%

Results

A one-sample t-test was conducted to verify whether university students lean toward an internal locus of control by comparing the arithmetic mean of the sample to the upper limit of the internal locus of control category (Test Value = 8). The results revealed that the arithmetic mean of the participants' scores ($M = 10.51$, $SD = 3.24$) was significantly higher than the reference value of 8, $t(167) = 10.06$, $p < .001$. The results also indicated a large effect size (Cohen's $d = 0.78$). Furthermore, the categorical distribution of the scores demonstrated that 75.00% of the students were classified within the external locus of control category, whereas 25.00% were classified within the internal locus of control category.

Decision Regarding the Hypothesis: The findings indicate that students demonstrate a stronger tendency toward an external locus of control than an internal locus of control. Consequently, we reject the research hypothesis stating that "university students tend to possess an internal locus of control."

Testing the Second Hypothesis

The study hypothesis states that "there are statistically significant differences in the locus of control among university students attributable to gender." To test this hypothesis, an independent samples t-test was utilized to compare the locus of control scores between male and female students.

Table 6*Descriptive Statistics of Locus of Control Scores by Gender*

Gender	N	Mean	SD
Male	48	10.65	3.35
Female	120	10.46	3.20

Table 7*Independent Samples t-Test Comparing Locus of Control Scores by Gender*

Variable	t	df	p	Cohen's d
Locus of Control	.33	83.12	.741	.06

Results

An independent samples t-test was conducted to detect gender differences in the locus of control among university students. The results revealed no statistically significant differences between male students, whose mean score was ($M = 10.65$, $SD = 3.35$), and female students, whose mean score was ($M = 10.46$, $SD = 3.20$), with a t-value of:

$$t(83.12) = 0.33, p = .741$$

The results also indicated a negligible effect size ($d = 0.06$), demonstrating that gender did not exert a meaningful impact on the locus of control among members of the current sample.

Decision Regarding the Hypothesis: Based on the aforementioned findings, we reject the hypothesis stating that "there are differences in the locus of control attributable to gender."

Testing the Third Hypothesis

The third hypothesis states that "there are statistically significant differences in the locus of control among university students attributable to academic major." To test this hypothesis, an independent samples t-test was calculated to compare students belonging to humanities and scientific majors.

Table 8*Descriptive Statistics of Locus of Control Scores by Academic Specialization*

Specialization	N	Mean	SD
Literary	110	10.55	3.34
Scientific	58	10.43	3.06

Table 9*Independent Samples t-Test Comparing Locus of Control Scores by Academic Specialization*

Variable	t	df	p	Cohen's d
Locus of Control	.24	125.46	.810	.04

Results

An independent samples t-test was employed to detect differences in the locus of control based on the academic major of university students. The results revealed no statistically significant differences between students in humanities majors, whose mean score was ($M = 10.55$, $SD = 3.34$), and students in scientific majors, whose mean score was ($M = 10.43$, $SD = 3.06$), with a t-value of:

$$t(125.46) = 0.24, p = .810$$

The results also indicated a negligible effect size ($d = 0.04$), demonstrating that academic major did not exert a meaningful impact on the locus of control among the sample members.

Decision Regarding the Hypothesis: Consequently, the hypothesis stating that "there are differences in the locus of control attributable to academic major" is rejected.

Summary of Hypothesis Testing

Overall, the findings provided support for the first hypothesis only in the opposite direction. The results showed that university students had a significantly stronger tendency toward an external rather than an internal locus of control, with 75.00% of participants classified as having an external locus of control. Therefore, the hypothesis that university students would tend to have an internal locus of control was rejected. In contrast, no statistically significant differences were found in locus of control according to gender or academic specialization. Accordingly, the hypotheses proposing differences in locus of control based on gender and academic specialization were not supported.

Discussion**Integrated Discussion of the Study Hypotheses**

The present study aimed to examine the predominant locus of control orientation among university students and to determine whether statistically significant differences exist based on gender and academic major. The findings revealed that students demonstrate a significant tendency toward an external locus of control. Furthermore, no statistically significant differences were recorded attributable to gender or academic major. These results provide critical insights for understanding the nature of perceived control beliefs among university students within contemporary academic environments.

Regarding the first hypothesis, the dominance of an external locus of control indicates that students tend to attribute life outcomes to external factors such as chance, contextual constraints, or powerful others rather than to personal, internal effort. This finding aligns with Julian Rotter's Social Learning Theory (Rotter, 1966), which posits that the locus of control develops through reinforcement experiences and expectancies shaped by environmental conditions. In modern university environments characterized by uncertainty regarding employment opportunities and intense academic competition, students may perceive their personal influence over future outcomes to be limited, thereby reinforcing external control beliefs.

Additionally, contemporary shifts in higher education, particularly the transition toward distance learning, may explain the dominance of an external locus of control among university students. This mode of education requires technological resources and digital skills that are not uniformly accessible to all students due to socioeconomic disparities. Consequently, students may perceive academic success as being contingent upon external circumstances rather than personal effort. This challenge appears more pronounced among first year students who frequently experience a state of uncertainty while adapting to novel university requirements, thereby reinforcing their external control beliefs. Furthermore, an external locus of control may reflect individuals' realistic appraisal of their circumstances rather than functioning as a stable, fixed personality trait (Levenson, 1988, as cited in Al-Asimi, 2016, p. 273).

In alignment with these interpretations, Ovais (2023) indicated that a substantial proportion of students viewed life events as being beyond their personal control, reflecting a clear orientation toward an external locus of control. This result supports the view that students' control beliefs are not shaped solely by individual characteristics, but are also influenced by broader contextual and environmental factors. Similarly, Kurtović, Vuković, and Gajić (2021) reached comparable conclusions, finding that university students' perception of control is strongly associated with contextual stressors and psychological adjustment variables.

Gender was included as a demographic variable because previous research has examined whether locus of control differs between males and females, with findings remaining inconsistent across studies and contexts. In addition, gender-related socialization experiences, cultural expectations, and patterns of responsibility may potentially shape individuals' perceptions of personal control. Examining gender was therefore considered relevant for determining whether such differences were evident among university students in the present Algerian context.

Regarding the second hypothesis, the absence of statistically significant differences between genders in locus of control indicates that male and female students share convergent perceptions regarding control over life events. This finding is also consistent with previous research reporting limited gender differences in locus of control within higher education contexts (Cheng et al., 2013); (Chang, 2023). In this context, Chang (2023) found no statistically significant differences between male and female students in locus of control, suggesting that control beliefs are influenced by shared academic experiences and environmental factors to a greater extent than by gender.

This outcome can also be interpreted in light of the social and cultural shifts occurring in Algerian society; locus of control may not be strongly linked to the gender variable (male/female), particularly given the significant lifestyle changes that have fostered greater gender equality. Instead, locus of control appears more closely related to individuals' cognitive styles, their methods of interpreting life events, and their self-evaluation of experiences. Additionally, the relative homogeneity of the study sample regarding age and shared cultural background may contribute to the similarity in control beliefs between genders. In particular, socialization patterns that emphasize the acceptance of fate and belief in predetermined outcomes may reinforce external control orientations in both males and females. This interpretation aligns with Social Learning Theory (Rotter, 1966), which indicates that gender differences in locus of control are often limited and typically do not reach statistical significance (Al-Baaj, 2011, p. 11).

By the same token, the findings related to the third hypothesis revealed no statistically significant differences in locus of control based on academic major. This result suggests that academic major may not be a major differentiating factor in students' perceived control orientations within the present sample. Theoretically, this finding is consistent with Julian Rotter's framework, which conceptualizes locus of control as a generalized expectancy formed through a cumulative history of reinforcement experiences, rather than as an outcome of structural academic variables such as a field of study. Empirical evidence also provides support for this interpretation, as locus of control has been linked to psychological adjustment variables and academic engagement rather than primarily to differences in academic background (Kurtović & Gajić, 2018).

Overall, these findings suggest that locus of control among the university students in the present sample may be more closely related to shared academic experiences and contextual conditions than to gender or academic major. However, this interpretation should be considered cautiously, as the present study did not directly examine the specific factors underlying students' locus of control. Moreover, the dominance of external control beliefs underscores the importance of designing psychological and educational interventions aimed at fostering an internal locus of control among students, given its well-documented positive correlation with academic motivation, perseverance, and mental health. Finally, the study recommends conducting future research that addresses additional variables that may contribute to explaining locus of control, such as socioeconomic background, academic achievement, and employment opportunity expectations, in order to achieve a deeper understanding of the determinants of university students' control beliefs.

Applied and Theoretical Implications, Limitations of the Study, and Future Research Perspectives

The findings of the present study carry several important implications on both educational and psychological levels. First, the dominance of an external locus of control among university students highlights the urgent need to develop structured interventions aimed at fostering internal control beliefs. Educational counseling programs, academic skills training, and self-regulation workshops could significantly enhance students' perceptions of personal agency and responsibility for their academic outcomes. Furthermore, promoting an internal locus of control has consistently been linked to heightened academic motivation, perseverance, and mental health within higher education settings.

Second, the absence of statistically significant differences associated with gender suggests that intervention programs can be designed at a collective, institutional level rather than being tailored separately for male and female students. This supports the implementation of comprehensive psychological support strategies that address shared academic stressors and contextual influences affecting students' control beliefs.

Third, the lack of differences related to academic major indicates that locus of control orientations are shaped to a greater extent by institutional and environmental experiences rather than by disciplinary affiliation. Consequently, universities should consider integrating cross-disciplinary programs designed to reinforce adaptive coping strategies, self-efficacy beliefs, and goal-directed behavior among students.

Limitations of the Study

Despite the contributions made by the present study, several methodological limitations must be acknowledged. First, the internal consistency coefficient of the scale was relatively low:

$$\alpha = 0.5$$

Although this value may be considered provisionally acceptable in exploratory social science research, it may stem from cultural variations in interpreting the scale items, as well as variations in sample characteristics. Therefore, future research is recommended to utilize culturally adapted instruments or alternative scales to improve reliability.

Second, the study relied on a single self-report measure to assess locus of control, which may expose the data to response biases or social desirability effects. Future studies would benefit from combining self-report instruments with behavioral observations or longitudinal measurement designs.

Third, the study sample was limited to university students from specific academic contexts, which may restrict the generalizability of the findings to broader student populations or different educational systems. Consequently, replicating the study across diverse university settings and institutional frameworks is recommended.

Fourth, the study focused exclusively on gender and academic major as independent variables. Additional variables such as socioeconomic status, academic achievement levels, employment opportunity expectations, and psychological resilience might provide a deeper explanatory capacity regarding variances in locus of control orientations.

Future Research Perspectives

Future research is encouraged to explore additional psychological and contextual variables that may predict locus of control among university students. In particular, longitudinal designs would help clarify the developmental trajectory of control beliefs across different college years. Investigating the relationship between locus of control and variables such as academic self-efficacy, motivation, stress management strategies, and perceived career uncertainty could provide a more comprehensive understanding of student control orientations.

Furthermore, conducting cross-cultural comparative studies is recommended to examine whether sociocultural differences influence the formation of internal and external control beliefs within higher education environments. Finally, experimental studies could be carried out to evaluate the efficacy of training programs specifically designed to enhance an internal locus of control and improve academic adjustment and mental health among students.

Conclusion

The present study aimed to determine the predominant locus of control orientation among Algerian university students, and to examine whether statistically significant differences exist based on gender and academic major. The findings revealed that students demonstrate a clear tendency toward an external locus of control. Furthermore, no statistically significant differences in locus of control were recorded attributable to gender or academic major.

These results suggest that university students' locus of control orientations are primarily shaped by shared academic experiences and contextual conditions rather than being influenced by demographic or disciplinary variables. Moreover, the dominance of external control beliefs may reflect students' perception of the uncertainty surrounding future opportunities and their limited personal influence over academic and professional outcomes within contemporary higher education environments.

This study contributes to enriching the growing literature on locus of control in university contexts by providing empirical evidence derived from the Algerian higher education environment, which remains relatively underrepresented in international literature. Additionally, the findings underscore the importance of developing counseling and educational interventions aimed at fostering an internal locus of control among students, thereby contributing to enhanced academic motivation, perseverance, and psychological adjustment.

Finally, future research is recommended to examine additional variables associated with locus of control among university students, such as academic achievement levels, socioeconomic background, employment opportunity expectations, and psychological resilience. Longitudinal and cross-cultural studies would also contribute to clarifying how control beliefs evolve across different educational contexts.

References

- Al-Asimi, R. N. (2016). *Clinical health psychology* (st1 ed.). Al-I'sar Al-'Ilmi Publishing and Distribution.
- Al-Baaj, M. J. R. (2011). *Self-efficacy and its relationship with locus of control among university students* [Master's thesis]. University of Baghdad.
- Aoubah, A., & Daoudi, M. (2018). Locus of control and its relationship to burnout among secondary school teachers. *Journal of Social Sciences*, 16(1), 239–250.
- Chang, G. (2023). How is university students' paid work associated with their locus of control? *Research in Social Stratification and Mobility*, 83. <https://doi.org/10.1016/j.rssm.2023.100764>
- Cheng, C., Cheung, S.-F., Chio, J. H.-M., & Chan, M.-P. S. (2013). Cultural meaning of perceived control: A meta-analysis of locus of control and psychological symptoms across 18 cultural regions. *Psychological Bulletin*, 139(1), 152–188. <https://doi.org/10.1037/a0028596>
- Findley, M. J., & Cooper, H. M. (1983). Locus of control and academic achievement: A literature review. *Journal of Personality and Social Psychology*, 419–427. <https://doi.org/10.1037/0022-3514.44.2.419>
- Kurtović, A., & Gajić, M. (2018). The effect of locus of control on university students' mental health and academic engagement. *J Psychol*, 152(6), 341–357. <https://doi.org/10.1080/00223980.2018.1463962>
- Musharraf, M. (2009). *Moral thinking and its relationship to social responsibility and some variables* [Master's thesis]. Islamic University of Gaza.
- Ovais, D. (2023). Students' sustainability consciousness with the three dimensions of sustainability: Does the locus of control play a role? *Regional Sustainability*, 4(1), 13–27. <https://doi.org/10.1016/j.regus.2023.02.002>
- Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General and Applied*, 80(1), 1–28. <https://doi.org/10.1037/h0092976>

Steel, P. (2007). The nature of procrastination: A meta-analytic and theoretical review of quintessential self-regulatory failure. *Psychological Bulletin*, 133(1), 65–94. <https://doi.org/10.1037/0033-2909.133.1.65>

Yahiaoui, B. (2025). *Health locus of control and defensive optimism among individuals with psychosomatic disorders* [Doctoral dissertation]. Si El-Haouès University Center, Barika.