

Investing in Student Human Capital through Accessible Mental Health Interventions: Evidence from a Single-Case Behavioral Activation Study in Algeria

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Abstract

Mental health has become an increasingly relevant dimension of human capital development, particularly within higher-education systems where psychological difficulties may affect students' capacity to sustain academic engagement, develop competencies, and prepare for future participation in the labour market. In emerging economies, the challenge is particularly important because university-based psychological services may operate under financial, institutional, and human-resource constraints. Against this background, this study examines the potential contribution of a structured behavioral activation intervention to improving the psychological condition of a university student and discusses its implications for higher-education policy and human capital development in Algeria.

The study employed a quasi-experimental single-case AB design. The participant was a 28-year-old female university student presenting clinically significant depressive symptoms. Data were collected through clinical interviewing, direct behavioral observation, and the Beck Depression Inventory-II (BDI-II), using the Arabic version translated by Maamaria (2010). A structured behavioral activation program comprising 12 individual sessions was implemented, with each session lasting approximately 45–60 minutes and being delivered weekly. The intervention emphasized activity scheduling, engagement in meaningful activities, social interaction, self-monitoring, goal-oriented planning, reduction of avoidance behaviors, and exposure to positive environmental reinforcement.

The BDI-II score decreased from **32 at baseline to 16, 15, and 14 during subsequent measurements**, indicating a substantial decline in reported depressive symptoms following implementation of the intervention. The findings provide preliminary evidence that a structured and relatively resource-conscious intervention may have practical relevance for university student-support systems. From a policy perspective, the results suggest that mental health support can be considered as a complementary component of human capital investment, particularly where institutions require accessible interventions that can be incorporated into existing educational and community structures.

However, the single-case design substantially limits external validity and does not permit causal or population-level conclusions. The study therefore represents preliminary evidence

rather than an estimate of the economic effectiveness of behavioral activation. Future research should employ larger samples, control groups, longitudinal designs, and formal cost-effectiveness analyses to determine whether such interventions can generate measurable educational, labour-market, and institutional benefits.

Keywords: Human Capital; Higher Education; Mental Health Policy; Student Well-Being; Behavioral Activation; Public Policy; Education Economics; Algeria; Social Investment; Institutional Support.

1. Introduction

Human capital is one of the central determinants of long-term economic development. Traditional approaches to human capital formation have primarily emphasized education, professional competencies, knowledge acquisition, and labour-market skills. More recent perspectives, however, recognize that the effectiveness of educational investment also depends on individuals' psychological, behavioural, and social capacities.

Higher education represents a particularly important stage in the accumulation of human capital. Universities develop not only technical and academic competencies but also the behavioural and interpersonal capacities required for participation in modern labour markets. Consequently, factors that reduce students' ability to participate effectively in education may have implications extending beyond individual well-being.

Mental health is one such factor.

Depressive symptoms may influence motivation, concentration, social participation, daily routines, and engagement with academic responsibilities. The original study identifies depression as an important challenge for university students and notes its potential effects on academic and social functioning.

From an economic perspective, this issue can be interpreted through the concept of **human capital preservation**. Educational institutions invest substantial resources in developing students' knowledge and competencies. When psychological difficulties reduce students' capacity to participate in that process, the effectiveness of such investment may also be weakened.

This creates an important policy question: how can universities and public institutions provide accessible psychological support without requiring extensive specialist resources?

Behavioral activation represents one possible response. The approach focuses on increasing engagement with meaningful and rewarding activities while reducing avoidance patterns and strengthening constructive daily routines. The source study describes behavioral activation as an intervention emphasizing activity scheduling, positive reinforcement, motivation, and engagement with personally meaningful activities.

The relevance of this approach extends beyond clinical psychology. Because the intervention can be organized into structured sessions and activity-based exercises, it may have potential relevance for institutional student-support systems, particularly in settings where specialized long-term services are constrained.

Research examining behavioral activation among university populations in Arab and North African settings remains comparatively limited. The original research explicitly identifies this gap and motivates the investigation of the approach among university students.

Accordingly, this study addresses the following research question:

Can a structured behavioral activation intervention contribute to reducing depressive symptoms among university students, and what implications might such an intervention have for higher-education policy and human capital development in emerging economies?

The study is guided by the following hypothesis:

H1: Participation in a structured behavioral activation intervention is associated with a reduction in depressive symptoms among university students.

The study does not attempt to estimate the macroeconomic effect of mental health interventions. Rather, it provides preliminary empirical evidence that can inform future research concerning the relationship between student well-being, educational participation, and human capital development.

2. Theoretical Background

2.1 Human Capital and Student Well-Being

Human capital theory traditionally views education and skills as investments that increase individuals' productive capacity. However, the conversion of educational opportunities into productive capabilities depends on the individual's ability to engage with educational processes.

Student well-being may therefore be regarded as a complementary condition supporting human capital accumulation.

Psychological difficulties can affect motivation, concentration, social interaction, and engagement with everyday activities. From this perspective, mental health is not simply a private or clinical issue. It may also represent a relevant consideration for institutions responsible for developing future human resources.

The original study emphasizes the negative implications of depressive symptoms for psychological and social adjustment as well as university students' academic functioning.

This suggests a broader policy interpretation: investment in student support may contribute to protecting the effectiveness of existing educational investments.

2.2 Mental Health as a Public-Policy Issue

Mental health services frequently require specialized personnel and sustained institutional resources. In environments where such resources are limited, universities may require interventions that are structured, adaptable, and capable of being incorporated into existing support systems.

This is particularly relevant in emerging economies, where public institutions may need to balance increasing demand for student support with constrained budgets and human resources.

The original study recommends strengthening university psychological-support centers and increasing awareness of psychological support among students. It also recommends creating environments that facilitate social and physical activity.

These recommendations can be interpreted within a broader public-policy framework in which universities become important institutional actors in protecting and strengthening human capital.

2.3 Behavioral Activation

Behavioral activation is a behavioral intervention designed to increase engagement with positive and meaningful activities while reducing avoidance patterns. Its theoretical foundation emphasizes the relationship between behaviour, environmental reinforcement, and psychological functioning.

The intervention used in the present study incorporated activity scheduling, daily monitoring, goal setting, feedback, communication, cognitive restructuring, and other structured techniques.

The approach is potentially relevant to institutional settings because its activities can be organized into a clearly defined program. The intervention implemented in this study consisted of 12 sessions, each lasting approximately 45–60 minutes and delivered weekly.

2.4 Previous Empirical Evidence

Previous research cited in the original study has investigated behavioral activation among adults, adolescents, university students, and other populations. The cited literature includes research by Hopko et al. (2003), Kim et al. (2022), Majawer (2023), Owens et al. (2021), Richards et al. (2016), and Turner and Leach (2012).

In particular, research involving undergraduate students has reported effects associated with behavioral activation interventions, while other studies have examined the approach in clinical populations.

However, evidence from North African university settings remains comparatively limited. The present study therefore contributes a context-specific case that can serve as a basis for more rigorous future investigation.

3. Research Methodology

3.1 Research Design

The study employed a **quasi-experimental single-case AB design**.

The design consisted of an initial assessment followed by implementation of a structured intervention and subsequent measurements. The approach allowed the researchers to examine changes in the participant's depressive-symptom score over the intervention period.

Because only one participant was included, the design should be interpreted as an exploratory case study rather than a population-level experiment.

3.2 Research Setting and Participant

The study was conducted at the **Youth Center of Djilali Hamani in the Wilaya of Relizane, Algeria**.

The participant was a **28-year-old female university student** who presented clinically significant depressive symptoms.

The participant's identity was protected throughout the research process.

3.3 Data Collection Instruments

Three principal sources of information were used:

1. **Clinical interview**
2. **Direct behavioral observation**

3. Beck Depression Inventory-II (BDI-II)

The Arabic version of the BDI-II used in the study was translated by **Bashir Maamaria (2010)**.

The combination of self-report measurement, clinical interviewing, and behavioral observation enabled the researchers to monitor changes in the participant throughout the intervention.

4. Intervention Program

4.1 Program Structure

The behavioral activation program consisted of **12 individual sessions**, delivered once per week.

Each session lasted approximately **45–60 minutes**.

The program was designed around the principle that increasing meaningful activity and positive reinforcement can support improvements in psychological functioning.

4.2 Intervention Objectives

The intervention had several objectives:

- increasing participation in meaningful daily activities;
- developing self-monitoring skills;
- strengthening self-efficacy;
- reducing avoidance behaviours;
- improving social interaction;
- establishing constructive daily routines;
- identifying activities associated with positive reinforcement;
- strengthening goal-directed behaviour.

The original intervention framework specifically identifies self-monitoring, self-efficacy, active participation, and behavioural change as central objectives.

4.3 Intervention Techniques

The program incorporated:

- activity scheduling;
- structured discussion;
- reflective dialogue;
- Socratic questioning;
- cognitive restructuring;
- SMART goal setting;
- daily activity monitoring;
- feedback;
- behavioural reinforcement.

These techniques were combined into a structured intervention intended to increase active engagement and reduce behavioural patterns associated with depressive symptoms.

5. Results

5.1 Measurement Results

The principal empirical outcome was the change in the participant's BDI-II score.

Measurement stage	BDI-II score
Baseline / pre-measurement	32
First-stage measurement	16
Second-stage measurement	15
Final dimensional measurement	14

The original study reports a baseline score of 32 followed by measurements of 16, 15, and 14 after implementation of the intervention.

The absolute reduction from baseline to the final measurement was **18 points**, representing a **56.25% reduction** in the observed BDI-II score.

This descriptive change should not, however, be interpreted as a population-level treatment effect because the study involved only one participant and did not include a control group.

5.2 Interpretation of the Results

The pattern of scores shows a substantial decline in reported depressive symptoms over the course of the intervention.

The original analysis attributes the observed improvement to the combination of cognitive, behavioural, emotional, social, and activity-based components incorporated into the program.

The authors also report continued improvement in the intermediate measurements, with scores declining from 16 to 15 and then 14.

The observed pattern is consistent with the study hypothesis, although the research design cannot establish that the intervention alone caused the improvement.

6. Discussion

The findings provide preliminary evidence of an association between participation in the behavioral activation program and reduced depressive symptoms in the examined case.

The result is broadly consistent with previous research cited in the original manuscript. Research has investigated behavioral activation among undergraduate students and other populations, providing a broader theoretical and empirical basis for the intervention.

From the perspective of EEBEJ, however, the principal contribution of the study is not the clinical result alone. Its wider significance lies in the potential relationship between **student psychological well-being and human capital formation**.

University students represent future labour-market participants, professionals, entrepreneurs, researchers, and public-sector employees. Their ability to participate successfully in higher education is therefore relevant to long-term human-resource development.

An intervention that supports student engagement may consequently have institutional relevance even when its immediate outcome is psychological rather than economic.

This interpretation should remain cautious. The present study did not measure:

- academic performance;

- university retention;
- graduation probability;
- employment outcomes;
- labour productivity;
- institutional costs;
- healthcare expenditures;
- return on investment.

Accordingly, the present evidence cannot demonstrate that behavioral activation produces economic gains.

Instead, the study establishes a useful **research pathway**: future research can examine whether improvements in student psychological well-being translate into measurable educational and economic outcomes.

7. Implications for Higher-Education Policy

The findings have several potential implications for policymakers and university administrators.

7.1 Strengthening University Support Systems

Universities may consider expanding psychological-support services and integrating structured behavioural interventions into existing student-support systems.

The original study specifically recommends strengthening university psychological-support centers and developing awareness campaigns concerning psychological support.

7.2 Resource-Conscious Intervention Models

The structured nature of the intervention may make behavioral activation worthy of further investigation as a potentially adaptable model in settings where specialist services are limited.

However, claims concerning cost-effectiveness should only be made after formal economic evaluation.

7.3 Human Capital Protection

Higher-education policy should consider student well-being as one factor supporting successful human-capital formation.

Psychological support should therefore be viewed not only as a welfare service but also as a potential component of broader educational investment strategies.

7.4 Community-University Cooperation

The implementation of this study at a youth center demonstrates the potential role of community institutions in supporting university students.

Cooperation between universities, youth centers, public institutions, and psychological-support providers could expand access to services.

8. Limitations

Several limitations should be acknowledged.

First, the study uses a **single-case design**. Consequently, the findings cannot be generalized to university students as a population.

Second, the absence of a control or comparison group means that alternative explanations for the observed improvement cannot be excluded.

Third, the study relies partly on self-reported depressive symptoms, which may introduce measurement-related limitations.

Fourth, the research does not measure educational or economic outcomes directly.

Fifth, the study does not include a formal cost-effectiveness or cost-benefit analysis.

Finally, the study's context is limited to one participant and one institutional setting in Algeria.

These limitations do not invalidate the observed change but indicate that the findings should be interpreted as **preliminary evidence requiring replication**.

9. Directions for Future Research

Future research should extend the present study in several directions.

First, larger samples should be employed to establish whether the observed pattern is replicated across different university populations.

Second, randomized or controlled designs should be used to improve causal inference.

Third, longitudinal studies should examine whether improvements in psychological well-being are sustained after the intervention.

Fourth, researchers should examine whether improvements in mental health are associated with:

- academic performance;
- attendance;
- retention;
- graduation;
- employability;
- labour-market transition;
- entrepreneurial intention;
- productivity-related outcomes.

Fifth, future studies should conduct formal **cost-effectiveness and cost-benefit analyses** comparing behavioral activation with alternative student-support interventions.

Such research would enable policymakers to determine whether psychological interventions generate measurable returns in addition to their clinical and social benefits.

10. Conclusion

This study examined the potential contribution of a structured behavioral activation intervention to reducing depressive symptoms among a university student in Algeria.

The participant's BDI-II score declined from **32 at baseline to 14 at the final measurement**, with intermediate scores of 16 and 15.

The findings therefore provide preliminary evidence of substantial improvement during the intervention period.

From the perspective of higher-education policy and human capital development, the study suggests that psychological support may represent a relevant complementary component

of educational investment. Accessible and structured interventions may be particularly worthy of investigation in emerging economies where institutional resources are constrained.

Nevertheless, the study's single-case design prevents broad generalization and does not establish the economic impact of behavioral activation. The findings should therefore be regarded as exploratory.

The principal implication for policymakers is not that behavioral activation has already been proven to generate economic returns, but rather that **student mental health represents a potentially important dimension of human capital policy deserving systematic empirical and economic evaluation.**

Future research combining psychological, educational, and economic indicators could provide stronger evidence concerning whether investments in student mental health improve educational outcomes and ultimately contribute to more effective human-capital formation.

Ethical Considerations

The study was conducted in accordance with internationally recognized ethical principles for research involving human participants.

The participant received information concerning the purpose and procedures of the research, and informed consent was obtained before participation. Confidentiality and anonymity were maintained, and the participant was informed of her right to withdraw from the study.

The intervention was conducted in a professional psychological setting under qualified supervision.

Acknowledgements

The authors express their sincere appreciation to the **Youth Center of Djilali Hamani in Relizane, Algeria**, for facilitating the implementation of the research.

The authors also acknowledge the contribution of the participant and express their appreciation to colleagues at the Laboratory of Psychological and Educational Research, University of Djillali Liabes, Sidi Bel Abbes, for their academic support.

Funding

This research received **no specific grant** from any funding agency in the public, commercial, or non-profit sectors.

Conflict of Interest

The authors declare that they have **no conflict of interest** regarding the publication of this article.

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