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Systematic Review

Factors Associated with Psychological Flexibility in Higher Education Students: A Systematic Review

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Abstract: Background: This systematic review examined factors associated with psychological flexibility in higher education students. Objectives: This study aims to provide a comprehensive understanding of factors associated with psychological flexibility among higher education students. Methods: Following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) methodology, a systematic search was conducted in the Web of Science and Scopus databases. Several inclusion criteria were employed in the study, such as sample characteristics and study design. As a synthesis method, the qualitative narrative synthesis method was used. Results: Thirty-one studies were included in the review for detailed analysis. Our findings indicated positive associations between psychological flexibility and numerous variables that enhance the mental health and academic success of university students. In addition, individuals characterized by high psychological flexibility demonstrated better adjustment to university life and experienced higher levels of well-being. In the meantime, some studies found negative associations between psychological flexibility and several variables that hinder student success and negatively impact their mental health. Among them, the screened studies reported COVID-19 burnout, disordered eating cognitions, severity of posttraumatic stress symptoms, anxiety and depressive symptoms, and others. Discussion: Examining psychological flexibility in such a broad review provides insights into this construct and its potential applications in enhancing student success and contributing to economic and social sustainability by reducing dropout rates, lowering the costs of psychological and medical care, and fostering a more resilient human capital. The main limitations in the reviewed articles were the absence of studies employing longitudinal designs, small sample sizes, and the limited investigation of relationships in online and hybrid learning models.

Keywords: psychological flexibility; higher education; systematic review; stress; anxiety; academic performance; economic and social sustainability

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1. Introduction

Psychological flexibility (PF) refers to the inclination to respond to situations in ways that support the pursuit of valued goals. The original conceptualization defines PF as "the ability to change or persist with functional behavioral classes when doing so serves valued ends" [1] (p. 15), emphasizing its importance in navigating challenging situations that could otherwise disrupt valued living. Therefore, it is particularly beneficial when challenges emerge during goal pursuit, causing distress [1,2].

In acceptance and commitment therapy, PF is regarded as the pinnacle of emotional well-being. It encompasses a range of human abilities, including recognizing and adapting to situational demands, adjusting mindsets or behavioral repertoires when necessary, maintaining balance among different life domains, and being aware, open, and committed to behaviors in line with deeply held values. It involves dynamic processes unfolding over time, such as adapting to changing situational demands, reconfiguring mental resources, shifting perspectives, and balancing competing desires, needs, and life domains. Consequently, definitions of PF need to consider the ongoing transactions between individuals and their environmental contexts, rather than focusing solely on specific content within a person [1].

Key mechanisms to cultivate flexibility are, according to [3], staying present in the moment and being mindful of one's psychological experiences, openness and acceptance toward thoughts and feelings, identifying personal goals and values, acting in accordance with those values, being willing to experience unpleasant feelings while adhering to values, and avoiding chronic fusion—recognizing and rejecting psychological processes that hinder individuals from aligning their actions with their values. Openness and acceptance toward unpleasant experiences, coupled with actions in accordance with values, lead to a rich and meaningful life [1].

As stated before, PF may be especially relevant in challenging and stressful life situations, such as those experienced by higher education students. Entering university presents significant challenges for students. A substantial worry for students in higher education is related to the academic pressure of adapting to this unfamiliar environment and their ability to thrive within it. Indeed, as students move into the higher education phase, it is typical for them to ponder their connections with others, their life path, and their own value [4]. Significant inner conflict may arise from inquiries into one's identity, potentially culminating in a personal crisis [5].

In this context, emotional issues can appear as overall psychological discomfort, physical symptoms of distress, nervousness, diminished self-worth, or feelings of sadness. Specifically, the psychiatric condition that is most commonly observed among university students is depression [6,7]. Anxiety is a significant concern as well, and it has been consistently observed that anxiety can increase the likelihood of students withdrawing from their studies [8,9]. It is important to note that students' mental health worsens after entering university, especially in intermediate- and upper-level courses [10]. For example, in a large study conducted in UK, a decline in well-being was observed once students started university, mainly during the first semesters of the academic year, and this pressure did not return to pre-registration levels [11]. In a longitudinal study, also conducted in the UK, an increase in anxiety and depression at clinically significant levels was reported at mid-course for students without previous mental health issues [12].

There is growing concern over the increase of mental health issues in recent years. As evidence of this, counseling services are experiencing a rise in demand for assistance from students. For example, the study by [13], conducted on a large sample of more than 150,000 students, showed an intensification in mental health services use from 2007 to 2017. The study found an increase in both depression and suicidal ideation. According to [14], there are several reasons for this escalation in mental health issues. On one hand, distress in young people has grown in recent years, especially in young women, probably related to a heightened use of social media. On the other hand, as [14] states, as more people enroll in university, the likelihood that individuals with mental health issues will also attend increases, while personalized support becomes less available.

Changes in teaching modalities may also be contributing to this intensification in students' mental health issues. Thus, despite a rise in online course enrollment in recent

years, many students still lack experience with remote learning. According to a recent study, prior to the COVID-19 pandemic, only 35% of college students in the United States had completed one or more online courses [15]. This is troubling because prior experience with online courses is one of the strongest indicators of academic success in this format [16].

The current review

As stated before, PF is especially relevant in challenging and stressful conditions. Considering all the challenges faced by university students, it is reasonable to think that PF plays an important role in students' adaptation and mental health during their university years. PF has been well researched in the previous literature in different environments, including workplaces, in academic settings, and in medical environments. Findings indicate positive impacts of this construct in many aspects of health, including mental health of people of all ages [17,18].

Even though many studies have investigated PF in the academic environment, we found out that not a single systematic review study exists, to the best of the authors' knowledge, that has focused on factors associated with PF among higher education samples. However, it is an important question to consider in sustainability.

Objectives

This study aims to fill the gap of non-existence of systematic review studies covering the previous literature, which investigated factors that are associated with PF in the academic environment, more specifically among university or college samples.

2. Materials and Methods

2.1. Search Strategy

To answer the aforementioned concerns, a systematic review was conducted with the aim of gaining a better understanding of the factors associated with PF levels in higher education students.

The systematic review was based on the PRISMA methodology [19] (see Figure 1). The PRISMA Statement comprises a checklist of 27 items and a flow diagram depicting 4 phases (See Supplementary Materials). The authors examined studies published between January 2010 and November 2023 in two academic databases, namely Web of Science (WoS) and Scopus, which have been proven to be rich with sources in the field of education and psychology.

The search terms used were: "psychological flexibility" AND ("education" OR "college" OR "university" OR "academic" OR "student")

The search terms in the WoS database initially yielded 634 results. In the Scopus database, the same keywords generated 378 results.

During the initial stage of data collection, we identified 1012 articles. The final day of data collection was 12 November 2023.

2.2. Removal of Duplications

In the second stage of the data collection process, duplicate studies were removed. The result indicated 257 duplicate articles published in both WoS and Scopus databases. Following this, the remaining articles were manually screened, and 19 external and 3 internal duplicates (published in the Scopus database twice) were revealed. There were 279 duplicates revealed in total.

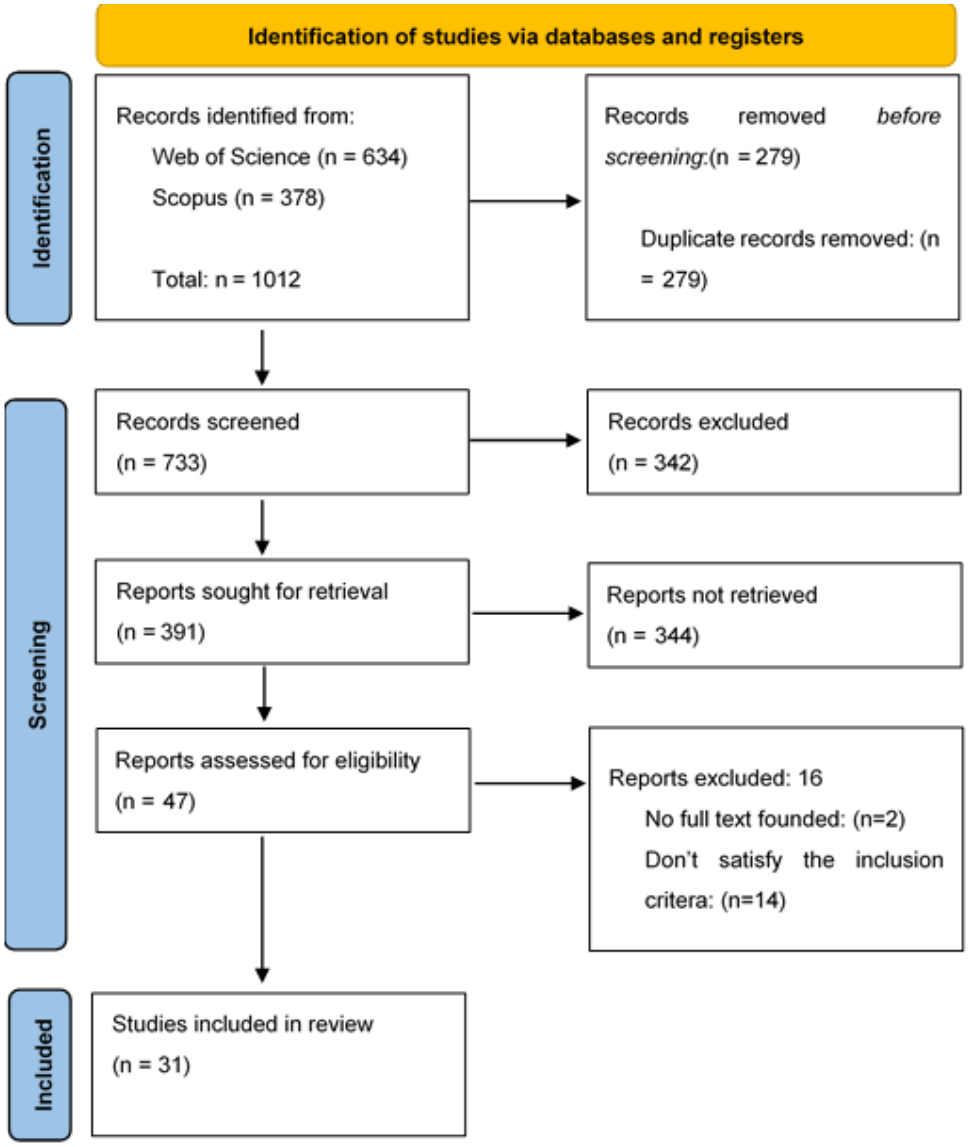

Figure 1. Identification of studies via databases using the PRISMA methodology.

2.3. Inclusion Criteria

After removing duplicates, 733 articles out of 1012 remained. The remaining articles in both databases were filtered based on the inclusion criteria of this study. These criteria are provided below:

- Studies published between 2010 and 2023 were selected in both databases. The choice of this time frame reflects the limited number of studies on PF prior to 2010.
- Only documents labeled as "article" were selected in both databases. Only peer-reviewed articles published in indexed scientific journals were included in this study. Studies in different formats, such as conference proceedings, and grey literature, such as dissertations or preprints, were not included.
- Only those studies falling within the research areas of "psychology" and "education educational research" in the WoS database and "psychology" in the Scopus database were included. The Scopus database did not feature an "education" research area.

At the end of this process, a total of 391 studies (360 articles in the WoS database and 31 articles in the Scopus database) were selected for the screening of titles and abstracts in the following phase.

New inclusion and exclusion criteria were used during the detailed screening process. These include:

Samples: Our inclusion criteria comprised undergraduate and graduate level university and college students as samples. Those studies using primary and secondary school students, teachers, and parents as samples were excluded.

Study design: Only the studies with quantitative research design, in which mostly correlation, regression, and mediation/moderation analyses were employed, were included. Descriptive studies and intervention and experimental studies, including those focusing on ACT therapy interventions were excluded.

Clinical/nonclinical environment: The articles conducted in the non-clinical environments were selected, and those articles conducted in clinical conditions were excluded.

Variable: Studies addressing PF as a whole construct were included. Those studies handling psychological inflexibility were excluded as the previous literature shows that these are separate constructs. In some studies, though the article title mentioned PF, psychological inflexibility as a concept is also used inside the article as a construct, and both are used interchangeably. But the context and relationship of this concept with other variables indicated that (such as a negative relationship with academic success related variables) psychological inflexibility was the focus of the paper. These articles were also excluded from our study. Furthermore, studies considering separate subcomponents of PF, such as experiential avoidance or body image flexibility, were excluded, even though the article title mentioned PF as a construct.

2.4. Data Analysis

Following these screening processes, 47 studies were selected for full text analysis initially. By applying inclusion and exclusion criteria in 2 stages and removing duplicates, we determined that 31 studies would remain for detailed analysis. Sixteen studies were removed: two because the full texts could not be obtained and fourteen because they did not meet the inclusion criteria of this study. This review was not registered in any database and a review protocol was not prepared.

The remaining 31 studies, published between 2010–2023, were included in the final list of articles to be screened thoroughly. They were then organized into a table, presenting key details such as the authors, year of publication, methodology, variables, and results (See Table 1). While preparing the tables, we first analyzed all the studies and extracted their key points. We excluded articles with missing data from the review during the exclusion process to reduce potential risks. No sensitivity analysis was conducted in this study to check the robustness of the results. As a synthesis method, we used the qualitative narrative synthesis method, contrary to the quantitative synthesis method. Regarding the outcomes, during the initial search, instead of focusing on specific factors, we searched for any outcomes related to psychological flexibility (PF). However, later, the outcomes found were grouped into three categories: Maladaptive factors, Psychological well-being, and Academic outcomes. Any outcomes other than these factors were not considered for this study. Both the process of checking if the selected studies met the inclusion criteria and the process of data collection from the selected studies were conducted by one author first, and then the second author independently reviewed both steps. Risk of bias for each reviewed study was measured using the JBI Critical Appraisal Checklist for Analytical Cross Sectional Studies [20]. Following the guidelines, if all checklist criteria were met, a paper was classified as "low risk of bias"; if one or two criteria were not met, the paper was classified as "moderate risk of bias"; and if more than two criteria were not met, it was classified as "high risk of bias". Risk of bias test results are presented in Table 1. Figure 1 presents the process of selection as a flow diagram of the PRISMA methodology.

Table 1. Details of the final 31 articles selected for reporting.

Authors and Year of Publication	Participants	Methodology and Variables	Aim of the Study	Results	Risk of Bias
[21]	117	Methodology: Exploratory factor analysis Variables: student integration PF self-regulation in learning	To investigate the relationship between self-regulated learning, PF, and student integration.	PF is associated with advancing in studies, engaging in self-regulated learning, and integrating into the student community.	Moderate
[22]	296	Methodology: correlation and regression analyses, qualitative inductive content analysis Variables: PF study related burnout experiences of online studying	To examine the relationship between PF and burnout in relation to academic research. Additionally, to explore potential changes in burnout experiences and online learning during the COVID-19 pandemic among students with different levels of PF.	PF demonstrated an inverse correlation with study-related burnout.	Moderate
[23]	274	Methodology: Exploratory factor analysis and correlations Variables: academic emotions PF self-regulation study success	To investigate the associations among self-regulated learning, academic emotions, PF, study success, and study pace in the context of university-level studies.	PF emerged as a crucial mediator in the relationship between academic emotions and study pace.	Moderate
[24]	432	Methodology: structural equation modeling Variables: Mindfulness PF Values	To examine the predictive relationship between mindfulness and PF and, simultaneously, assess whether values act as a mediating factor in this association.	The findings revealed that the connection between mindfulness and PF was entirely mediated by values.	Moderate
[25]	500	Methodology: Multiple-sample latent structural equation modeling Variables: chaotic-enmeshment family functioning anxiety PF self-compassion	To investigate whether PF and self-compassion mediate the relationship between chaotically coupled family functioning and anxiety in a sample of 500 college students.	Elevated levels of chaotically-enmeshed family functioning were significantly linked to reduced levels of PF and self-compassion. Furthermore, the relationship between chaotic-enmeshment and anxiety was mediated by PF and self-compassion.	Moderate

Table 1. *Cont.*

Authors and Year of Publication	Participants	Methodology and Variables	Aim of the Study	Results	Risk of Bias
[18]	644	Methodology: Latent profile analysis, Variables: PF college adjustment subjective well-being	To use latent profile analysis to examine subgroups of PF profiles in college students, focusing on key subcomponents of PF and examining relationships between these subgroups and college adjustment as well as subjective well-being.	Individuals characterized by high PF demonstrated superior adjustment to college life and experienced the highest levels of well-being. Conversely, those with low PF encountered greater challenges in adjusting to college life and reported lower well-being. Additionally, students from rural areas and those with siblings were associated with low PF.	Moderate
[26]	125	Methodology: Moderation analyses Variables: event centrality PF trauma recovery	To examine the effect of changes in PF, which relates to the ability to persist in behavior despite calls to do otherwise, on posttraumatic stress symptoms (PTS) and posttraumatic growth (PTG) as perceived by increasing event centrality	Reduced PF was linked to increased severity of posttraumatic stress symptoms as event centrality heightened. While both event centrality and PF individually predicted perceived posttraumatic growth, no interaction effect was observed.	Moderate
[27]		Methodology: correlation and regression analysis Variables: racial microaggressions obsessive-compulsive symptoms PF	To examine whether occurrence of microaggressions and PF contribute to understanding obsessive-compulsive disorder OCD symptoms in a university-based sample including undergraduate, graduate, and law students, while accounting for depression and anxiety.	There was a correlation observed between obsessive-compulsive disorder (OCD) symptoms, encounters with microaggressions, and PF.	Low
[28]	1239	Methodology: multi year survey study, Variables: Perceived stress Life satisfaction PF	To identify coping strategies for stress and assess the effects of the COVID-19 pandemic on the well-being of both male and female physician assistant (PA) students.	Before the pandemic, male and female students had comparable levels of perceived stress and PF, with females reporting higher life satisfaction. However, after the pandemic, female students exhibited increased perceived stress and decreased PF.	Low

Table 1. *Cont.*

Authors and Year of Publication	Participants	Methodology and Variables	Aim of the Study	Results	Risk of Bias
[29]	659	Methodology: cross-sectional survey, Latent profile analysis (LPA) Variables: Perceived Stress PF Profiles Mental Health	To use a person-centered approach to identify distinct subgroups of university students based on the Individualized Psychological Flexibility Index (PPFI), and simultaneously examining these subgroups' risk factors (perceived stress) and various mental health outcomes, including depression, anxiety, negative affect, and positive affect to examine how it relates to outcomes.	Three profiles of PF were identified, and these profiles were found to be associated with perceived stress and mental health outcomes.	Moderate
[30]	122	Methodology: Survey study, multilevel modeling Variables: Mindfullness Meaning in life PF Daily stress Daily valued action	To examine how daily stress and intrapersonal resources, including mindfulness, meaning, and PF, influence valued functioning in a sample of 122 undergraduates.	Multilevel modeling results indicated notable variability in daily valued action, influenced by daily stress fluctuations and overall stress levels, along with dispositional mindfulness, meaning, and PF.	Moderate
[31]	76	Methodology: A survey as a part of an intervention study. Correlation and regression analyses Variables: social interaction and communication anxiety self-compassion PF	To examine the effects of self-compassion and PF in university students experiencing high levels of social interaction and communication anxiety.	Elevated social interaction and communication anxiety were correlated with reduced levels of self-compassion and PF.	Moderate
[32]	135	Methodology: Correlation and linear regression analyses Variables: time and effort management skills PF self-efficacy procrastination	To integrate diverse perspectives on procrastination by examining the interrelationship of students' time and effort management skills, PF, and academic self-efficacy.	PF plays a significant individual role in elucidating procrastination, along with time and effort management skills. The close relationship between time and effort management and PF suggests that both factors should be considered when seeking to mitigate procrastination.	Moderate

Table 1. *Cont.*

Authors and Year of Publication	Participants	Methodology and Variables	Aim of the Study	Results	Risk of Bias
[33]	247	Methodology: Correlation and SEM (Structural Equation Modeling) analyses Variables: PF study success cognitive attributional strategies academic emotions	To investigate the connections among students' PF, cognitive-attributional strategies, academic emotions, and their impact on study success.	The interrelation among PF, cognitive-attributional strategies, and academic emotions is significant. PF showed positive associations with success expectations and positive emotions, while displaying negative correlations with task avoidance and negative emotions.	Moderate
[34]	348	Methodology: Correlation and hierarchial regression analyses Variables: PF Psychological inflexibility college self-efficacy	To comprehend the influence of PF and inflexibility on self-efficacy and explore the potential moderating effects of both year in college and underrepresented racial minority (URM) status.	Students exhibiting PF reported higher levels of college self-efficacy, while those displaying psychological inflexibility reported lower levels of college self-efficacy.	Low
[35]		Methodology: multiple mediation model, multivariate regression analysis Variables: PF Self-compassion perfectionistic self-presentation Subjective wellbeing.	To examine the relationship between perfectionistic social media self-presentation, self-compassion, PF, and perfectionism as measured by general well-being.	PF did not emerge as a significant mediating factor in the relationship between perfectionistic self-presentation on social media and overall wellbeing.	Low
[36]	190	Methodology: Correlation and multiple regression analyses Variables: perceived academic stress mindfulness related constructs (i.e., mindfulness, self-compassion and PF) Anxiety symptoms depressive symptoms	To examine the relationships between academic stress, mindfulness-related constructs, and symptoms of anxiety and depression.	Higher levels of perceived academic stress were significantly associated with anxiety and depressive symptoms, while also correlating with lower levels of acting with mindfulness, reduced self-compassion, and diminished PF. However, none of the mindfulness-related constructs were identified as moderators in the relationship between perceived academic stress and anxiety or depressive symptoms.	Low

Table 1. *Cont.*

Authors and Year of Publication	Participants	Methodology and Variables	Aim of the Study	Results	Risk of Bias
[37]		Methodology: Correlation analysis Variables: Adaptive potential Hardiness PF	To examine the relationships between PF and various expressions of coping mechanisms that serve as predictors of adjustment.	The composition of adaptive potential consists of elevated levels of hardiness and manifestations of psychological (cognitive and behavioral) flexibility.	Moderate
[17]	144	Methodology: correlation and multiple regression analyses Variables: PF Self-Compassion Emotional Well-Being	To explore the relationship between PF, self-compassion, and emotional well-being.	Self-compassion showed significant correlations with PF processes, such as mindful acceptance, defusion, and emotional well-being. Moreover, self-compassion was found to predict unique variance in emotional well-being beyond that explained by PF across various indices.	Moderate
[38]	833	Methodology: cross sectional study, correlation and hierarchical multiple regression analyses Variables: PF Self-concealment Disordered eating	To examine differential associations of self-concealment and PF with various aspects of disordered eating (DE), including dieting, bulimia/binge eating, and oral control, as well as potential gender differences in these associations.	After adjusting for age, ethnicity, and BMI, dieting was found to have unique associations with both self-concealment and PF. When considering these demographic variables, PF, but not self-concealment, demonstrated a unique association with bulimia/food preoccupation. Additionally, neither self-concealment nor PF exhibited a unique association with oral control.	Low
[39]		Methodology: Correlation and hierarchical regression analyses Variables: Disordered eating-related cognition PF General psychological health Personal distress	To the cross-sectional study examine the relationship between eating-related cognition, PF, and adverse psychological outcomes within a nonclinical college sample.	The study found that disordered eating-related cognition exhibited a negative association with PF, and this, in turn, was linked to lower levels of psychological well-being and increased emotional distress in interpersonal situations.	Moderate

Table 1. *Cont.*

Authors and Year of Publication	Participants	Methodology and Variables	Aim of the Study	Results	Risk of Bias
[40]	209	Methodology: cross-sectional study, correlation, regression, and mediation analyses Variables: PF self-concealment disordered eating symptoms	To examine whether PF mediates the relationship between self-concealment and disordered eating (DE) symptoms in nonclinical college students.	Self-concealment showed a positive association with disordered eating (DE) symptoms, encompassing general eating disorder symptoms and related cognitions, while also exhibiting a negative correlation with PF. The study revealed an inverse relationship between PF and DE symptoms. Moreover, PF was identified as a mediator in the connection between self-concealment and DE symptoms, even after adjusting for gender, ethnicity, and body mass index (BMI).	Low
[41]	278	Methodology: cross sectional study, hierarchical multiple regressions Variables: PF Mindfulness Disordered eating Cognitions Disordered Eating Behaviors Psychological distress	To examine whether PF and mindfulness each independently influence the relationship between disordered eating cognitions and psychological distress, as well as the relationship between disordered eating cognitions and disordered eating behaviors.	Disordered eating cognitions, mindfulness, and PF demonstrated associations with psychological distress, even when accounting for factors such as gender, ethnicity, and body mass index.	Low
[42]	87 + 231	Methodology: survey study, correlation and multiple regression analyses Variables: PF Disordered-Eating Cognitions Psychological distress	To examine potential associations between eating disorder-related cognitive and PF among Asian-American and European-American female college students in the United States.	In both cohorts, there were positive associations between all categories of disordered-eating cognitions and psychological distress, and these were inversely linked to PF. Within the Asian American group, PF demonstrated a unique connection to psychological distress, even when considering other disordered-eating cognitions, age, and Body Mass Index (BMI). Meanwhile, in the European American group, PF maintained a unique association with psychological distress after accounting for other study variables.	Low

Table 1. *Cont.*

Authors and Year of Publication	Participants	Methodology and Variables	Aim of the Study	Results	Risk of Bias
[43]		Methodology: structural equation modeling Variables: PF Self compassion Depression Anxiety Traumatic memories of shame	To further explore the mediating role of PF and self-compassion in the relationship between traumatic shame memories and depression and anxiety-related symptom severity.	The findings indicated that recollections of shame-inducing traumas had a notably positive effect on anxiety and depression, while having a notably negative impact on self-compassion and PF. Moreover, PF was observed to significantly reduce feelings of sadness and anxiety.	
[44]	677	Methodology: Latent profile analysis, linear regression analysis Variables: PF self-compassion perfectionism wellbeing	To examine whether psychological skills such as PF and self-compassion play a moderating role in the relationship between perfectionism and general well-being.	PF and/or self-compassion buffered the negative effects of average and high perfectionism on quality of life and symptom impairment.	Moderate
[45]	393 + 447	Methodology: network analysis, cross-lagged longitudinal analysis Variables: Meaning in life PF Psychological inflexibility	To analyze the internal structure of the components within Meaning in Life (MIL) and examine their relationships with both PF and psychological inflexibility (PI). At the same time, it is known that both PF and Psychological inflexibility independently affect well-being.	PF (PF) exhibited a positive association with all Meaning in Life (MIL) components, while psychological inflexibility (PI) showed a negative association with them. Specifically, the MIL component of purpose significantly predicted both PF and PI in reverse. The relationship between PF/PI and purpose was found to be reciprocal.	Moderate
[46]	3950	Methodology: correlation and logistic regression analyses Variables: binge drinking psychological distress PF self-reported Days Out of Role (DOR)	To examine the relationship between demographic factors, binge drinking, psychological distress, PF, and self-reported Days of Role (DOR) among college university students, and further, to examine whether PF plays a moderating role in the relationship between psychological distress and DOR.	Experiencing more Days Out of Role (DOR) was linked to heightened psychological distress and decreased PF. Furthermore, the study identified that PF played a moderating role in the relationship between psychological distress and DOR.	Low

Table 1. *Cont.*

Authors and Year of Publication	Participants	Methodology and Variables	Aim of the Study	Results	Risk of Bias
[47]		Methodology: Correlation and multiple regression analyses Variables: statistics-related PF statistics anxiety statistics performance	To examine the relationship between statistics anxiety, PF, and performance in statistics.	This research provides initial support for the idea that PF related to statistics (i.e., the willingness to engage with statistics materials and the perceived importance of statistics engagement) moderates the association between statistics anxiety and performance in statistics.	Moderate
[48]	1769	Methodology: Latent profile analysis Variables: PF depression anxiety stress	To explore the potential classification of PF (PF) in Chinese college students, assess the existence of group variations in PF, and examine differences in latent PF profiles related to negative emotions such as depression, anxiety, and stress.	The levels of depression, anxiety, and stress exhibit significant variations across the three PF groups.	Low
[49]	2377	Methodology:Correlation and mediation analyses Variables: PF Perceived COVID-19 stress Perceived COVID-19 burnout Social support	To examine a moderated mediation model considering perceived COVID-19 stress and social support as mediators.	After accounting for gender, age, family location, and year of study, there was a significant association between PF and COVID-19 burnout, and this relationship was mediated by perceived COVID-19 stress. Additionally, social support mitigated the negative impact of perceived COVID-19 stress on PF and moderated the association between perceived COVID-19 stress and burnout.	Low

3. Results

Table 1 summarizes the results of the 31 studies selected for the review. Our summary categorizes these factors into several central themes, illuminating the connections between PF and various constructs. For greater coherence, we will divide these studies into those concerning psychological maladjustment, those concerning psychological well-being, and those related to academic outcomes. It is important to note that various types of relationships of PF have been identified in the previous literature, including correlational, causal, and mediation/moderation relationships.

3.1. Psychological Maladjustment

Different studies have found a relationship between PF and various indicators of psychological maladjustment, such as anxiety, depression, stress, burnout, eating disorders, etc., in university students. Depending on the study, this relationship may be direct, or PF may serve as a mediator or moderator between two other variables, as discussed below.

3.1.1. Anxiety Disorders and Depression

As mentioned earlier, both depression and anxiety are highly prevalent among university students. Several studies have examined the relationship between these two constructs and PF in different contexts (academic, familiar. . .) and in relation to other variables. In the first study, ref. [47] disclosed that PF related to statistics, acts as a moderator in the association between statistics anxiety and performance in statistics. Specifically, they found that when PF was high (measured as willingness to engage with materials), statistics anxiety was related to better performance on statistics tests, while if PF was low, statistic anxiety, on the contrary, was related to lower performance. Ref. [25] investigated the association between chaotically-enmeshed family functioning and anxiety in a wide sample of college students and discovered that this relationship was mediated by PF. That is, chaotically-enmeshed family functioning negatively impacts PF, which in turn negatively impacts anxiety. Ref. [36] examined the relationships between academic stress, mindfulness-related constructs, and symptoms of anxiety and depression, and determined that anxiety and depressive symptoms were associated with reduced levels of PF. Ref. [31] found a connection between increased self-reported anxiety during social interactions and diminished levels of both self-compassion and PF. Ref. [29], employing a latent profile analysis, identified three profiles of PF (active strategy, inconsistent strategy, and passive strategy). They found that the passive strategy profile (characterized by a combination of high avoidance, low acceptance, and harnessing) was associated with low mental health outcomes (anxiety, depression, and negative affect). Ref. [43] identify PF as a crucial mediator in the relationship between the severity of depression and anxiety symptoms and traumatic experiences of shame. Specifically, they found that traumatic memories related to shame had a significantly positive relationship with anxiety and depression, as well as a significantly negative impact on PF, and, in turn, that hindered PF was associated with increased sadness and anxiety. Ref. [48] investigated the potential categorization of PF in Chinese college students and observed that, when compared to college students in the high PF group, those in the low PF group exhibited more pronounced symptoms of depression, anxiety, and stress. Lastly, ref. [27] revealed a negative correlation between symptoms of specific anxiety disorder—obsessive-compulsive disorder (OCD)–encounters with microaggressions, and PF. As can be seen, all these studies point to a direct relationship between anxiety and/or depression and a lowered PF or either PF has an important role as mediator or moderator between anxiety or depression and other variables.

3.1.2. Stress, Distress, and Burnout

Some other studies have focused on other indicators of psychological maladjustment, such as stress, distress, and burnout. Since all of them are conceptually close to each other, they are grouped together in this section. In this line, ref. [26] identified that heightened post-traumatic stress (PTS) severity was linked with low PF as the importance of the event increased. Ref. [49] discovered the mediation role of perceived COVID-19 stress, and a moderating role of social support, in the relationship between PF and COVID-19 burnout within a sample of Chinese college students, after accounting for gender, age, family location, and year of study. According to the authors, these results suggest that, specially in students with high social support, psychological flexibility may mitigate the irrational appraisal of students' stressors related to the COVID-19 pandemic, which in turn would reduce the perceived stress related to this situation. Also related to the impact of COVID-19, ref. [28] tried to assess the effects of the pandemic on the well-being of both male and female physician assistant students. Their research showed that the rise in perceived stress among female students could have strained their ability for PF, resulting in lower life satisfaction compared to their male counterparts. The aforementioned study by [29] also uncovered a negative association between PF and perceived stress, especially in the passive strategy group. Lastly, ref. [22] found that higher levels of PF were linked to lower levels of study-related burnout and all its components. In conclusion, all of these studies demonstrate a relationship between stress-related constructs and PF, both in the context of academic stressors and non-academic ones, such as COVID-19 or PTS.

3.1.3. Disordered Eating

In a series of studies, Masuda et al. went a step further in investigating the relationship between PF and stress, adding disordered eating as a variable of interest, in college students. In an initial study, ref. [39] conducted a cross-sectional study, exploring the relationship between disordered eating-related cognition, PF, general psychological health, and personal distress in a non-clinical college sample. They reported a negative association between PF and emotional distress in interpersonal contexts. They also found that PF was inversely related to a strong belief in disordered eating-related cognitions. In [40], Masuda et al. uncovered a negative correlation between PF and symptoms of disordered eating, also in a college student sample. Additionally, this study showed that PF was a partial mediator in the connections between self-concealment and symptoms of disordered eating (as general eating disorder pathology and eating disorder-related cognitions). That is, self-concealment was negatively associated with psychological flexibility, which, in turn, was inversely related to disordered eating symptoms. In subsequent studies, ref. [38] revealed that PF exhibited a unique negative association with bulimia/food preoccupation and [41] found that increased PF is linked to reduced psychological distress and disordered eating behaviors. Lastly, ref. [42] investigated the role of disordered-eating cognitions and PF on distress in Asian American and European American college females in the United States. The study revealed that, regardless of students' backgrounds, all types of disordered eating thoughts were positively linked to psychological distress, thereby showing a negative relationship with psychological flexibility. In parallel to Masuda's et al. studies, ref. [46] found that the relationship between psychological distress and disordered eating behaviors was moderated by PF. According to their results, students with high distress were less inclined to report increased disordered eating behaviors if they exhibited higher levels of PF. Taken together, these studies show a close relationship between PF and various disordered eating symptoms.

3.1.4. Conclusions: PF and Psychological Maladjustment

In conclusion, the diverse body of research reviewed here consistently demonstrates that PF plays a pivotal role in influencing various indicators of psychological maladjustment among university students. Studies have shown that higher levels of PF are associated with lower levels of anxiety, depression, stress, burnout, and disordered eating behaviors. Furthermore, PF acts as a mediator or moderator in the complex relationships between these maladaptive factors and other variables such as academic stress, social support, and traumatic experiences like COVID-19. These findings show the importance of developing PF as a protective factor to enhance resilience and mitigate the negative impacts of psychological processes in university settings.

3.2. Psychological Well-Being

Compared to studies linking PF with psychological maladjustment, there are fewer studies that connect PF to indicators of well-being. However, promising results have been observed regarding values, mindfulness, meaning in life, well-being, self-compassion, and adaptative potential.

3.2.1. Values, Mindfulness and Meaning in Life

Values are a central construct in ACT and are closely related to PF, as being psychologically flexible involves acting in alignment with one's values, as previously stated. Not surprisingly, some studies have found a strong relationship between values and related constructs, such as meaning in life, and PF. Thus, ref. [30] found that mindfulness, meaning in life, and PF were all positively linked to increased average daily valued action. Ref. [24] explored the relationship between mindfulness, values, and PF, finding that values served as a complete mediator in the association between mindfulness and PF. In other words, their study highlighted the function of mindfulness, rather than its form, to understand its relationship with PF. Thus, being mindful without clear values may lead to low PF because mindfulness, in this case, may serve as experiential avoidance. On the contrary, as stated by the authors, "If the function of a mindful act is being done in the service of chosen values, the very mindful acts can be considered as the predictors of psychological flexibility" [24]. Lastly, ref. [45] found that PF was a robust predictor for meaning in life.

In summary, while there are still few studies, the existing research suggests that individuals with higher levels of PF engaged in more actions that align with their values, even when considering time and daily stressors.

3.2.2. Well-Being, Self Compassion and Adaptive Potential

In a groundbreaking study, ref. [17] discovered a positive connection between PF, self-compassion, and emotional well-being. Since then, some studies have examined this relationship. Ref. [18], using a latent profile analysis, identified three subgroups of PF profiles among college students (with high, moderate, and low PF). They discovered that the three profiles exhibited distinct levels of subjective well-being, with high PF participants demonstrating the highest well-being and low PF participants the lowest one. Ref. [44] investigated whether PF and self-compassion played a moderating role in the connection between perfectionism and well-being, including factors like quality of life, symptom impairment, and psychological distress. They found that, in general, PF and/or self-compassion served as protective factors, buffering the impact of average and high perfectionism on both quality of life and symptom impairment. However, ref. [35] determined that PF did not emerge as a significant mediator in the relationship between perfectionism and well-being although a sequential effect was observed where perfectionism influenced self-compassion, which in turn affected PF, ultimately leading to subjective well-being. Therefore, more studies

should be carried out to clarify the relationship between perfectionism, self-compassion, PF, and well-being.

Lastly, regarding adaptative potential, ref. [37] discovered that the structure of adaptive potential in pandemic conditions was shaped by elevated levels of hardiness and expressions of psychological (cognitive and behavioral) flexibility.

In summary, these findings underscore the multifaceted role of PF in well-being, suggesting that while it generally acts as a protective factor, further research is needed to fully understand its interaction with perfectionism and adaptive potential in different contexts.

3.2.3. Conclusions: PF and Psychological Well-Being

In conclusion, although studies examining the relationship between PF and psychological maladjustment are more prevalent, the reviewed studies underscores the significant role of PF in promoting well-being. PF appears to be closely linked to mindfulness, self-compassion, and emotional well-being, serving as a protective factor against psychological distress and perfectionism in some cases. Additionally, evidence suggests that PF contributes to adaptive potential, particularly in challenging conditions such as the COVID-19 pandemic.

3.3. Academic Outcomes

A variety of academic outcomes have been studied in relation to PF, including college adjustment, procrastination, study performance and success, academic emotions, perfectionism, self-efficacy, and self-regulation.

As mentioned before, ref. [47] provided initial evidence of the importance of PF in academic contexts, in this case in a specific subject (statistics). Consequently, their results indicate that PF related to statistics moderates the connection between statistics anxiety and performance. In a subsequent study, ref. [23] investigated the relationship among self-regulated learning, academic emotions, PF, academic achievement, and study pace throughout university-level education. The authors found that correlation between PF and academic success appeared to be relatively weak. However, they also found that PF was associated with engaging in self-regulated learning, and that PF acted as a crucial mediator in the relationship between academic emotions and study pace. In essence, students who are able to study despite potential negative thoughts and emotions tend to make better academic progress.

Regarding expectations and self-efficacy, ref. [34] showed that students who reported higher levels of PF with their stigmatizing thoughts felt more confident in their ability to accomplish college-related tasks, while students who reported a tendency to avoid or withdraw from situations in response to negative thoughts reported lower levels of self-efficacy. Ref. [33] discovered a positive correlation between PF and expectations of success. They also found a close relationship between PF and academic emotions.

Another important variable, college adjustment, was examined by [18]. They found significant differences in subjective well-being of the three PF profiles described in their study, as previously mentioned, as well as in college adjustment. Students with high PF exhibited higher levels of adjustment, while those with low PF showed poorer adjustment.

Lastly, regarding procrastination, ref. [32] unveiled that PF plays a significant role in elucidating procrastination, along with time and effort management skills.

Overall, these findings suggest that PF plays a meaningful role in various academic outcomes, influencing self-regulated learning, emotional management, self-efficacy, college adjustment, and procrastination. Although its direct impact on academic success may be limited, PF appears to support key psychological and behavioral factors that contribute to students' overall academic experience.

4. Discussion

The main objective of this systematic review was to analyze the factors associated with PF in the academic environment, specifically among university or college samples. Following the PRISMA methodology, 31 articles examining PF in higher education students were identified. The synthesis of these studies highlighted several key factors associated with PF, including anxiety, depression, disordered eating, self-compassion, stress, distress, burnout, mindfulness, and overall well-being, among others.

Concretely, these findings identified strong relationships between PF and mental health related factors. Anxiety and depressive symptoms were linked to lower PF [31,36,43,48]. In addition, several studies reported a negative connection between PF and stress [26,28,29,49]. Furthermore, an inverse relationship was found between early traumatic events, such as experiences of shame, and PF [43]. Similar associations have been found between PF and self-concealment, as well as disordered eating symptoms [39,40]. Consistent with this, the association between PF and positive mental health outcomes, such as reduced symptoms of anxiety and depression [36,47], underscores the critical role of this construct in promoting emotional well-being among university and college students. Taken together, these findings show how flexibility is an important factor in coping with the challenges of the academic environment in students and its positive effects on mental health.

In addition to their associations with psychological adjustment, several studies have reported connections between PF and factors related to academic success. The findings indicated a negative relationship between PF and test anxiety [47], as well as a positive relationship between PF and academic success. Furthermore, PF is negatively associated with academic burnout [22] and academic procrastination [32], among other factors.

Some studies showed that PF is a mediator in the relationship between various factors, such as between academic emotions and study pace [23], between self-concealment and disordered eating symptoms [40], and between chaotic-enmeshment and anxiety [25]. This suggests that PF has significant potential in intervention strategies aimed at enhancing students' psychological well-being.

These results align with the predictions of Hayes' model [1–3]. According to this model, a student with high psychological flexibility would tend to align their actions with their core values and goals rather than being swayed by momentary emotional fluctuations and intrusive thoughts. Nevertheless, further research is needed to elucidate the specific mechanisms through which PF exerts its beneficial effects. For instance, a potential explanation lies in the possibility that students with high PF may possess a greater ability to remain present, without becoming entangled in cognitive fusion or resorting to experiential avoidance. This capacity can lead to enhanced psychological well-being and reduced psychological maladjustment, which may contribute to better academic outcomes, both directly and indirectly—for example, by decreasing the likelihood of procrastination.

The findings of this review underscore the role of PF not only as a key component of student well-being and academic success, but also as a factor with implications for broader goals of social and economic sustainability. As shown, high PF is consistently associated with better emotional adjustment, reduced psychological distress, and improved academic outcomes. These individual-level benefits can scale up to institutional and societal levels: students who demonstrate greater psychological flexibility are more likely to persist in their studies, which can help reduce dropout rates—a major concern for higher education systems worldwide due to its financial and social costs.

From an economic sustainability perspective, enhancing PF among students can help alleviate the burden on healthcare systems by preventing or mitigating mental health issues, such as anxiety, depression, and stress-related conditions. In turn, this can reduce the need for long-term medical and psychological interventions, leading to a more efficient allocation

of public and institutional resources. Socially, promoting PF helps foster a more resilient and adaptable student population, which is crucial for preparing graduates who can thrive in uncertain and rapidly changing professional environments.

Furthermore, PF is aligned with the aims of the United Nations' Sustainable Development Goals (SDGs), particularly Goal 3 (Good Health and Well-being) and Goal 4 (Quality Education), by supporting mental health and inclusive, equitable education. By integrating PF-based approaches in university settings—whether through curricular innovations, digital interventions, or institutional support services—higher education institutions can play a strategic role in advancing sustainable development in both local and global contexts.

In summary, this systematic review contributes to the ongoing discussion of PF in academic contexts by providing a comprehensive overview that synthesizes existing knowledge and points to opportunities for future research. By incorporating the insights and recommendations outlined, institutions can work towards creating an environment that fosters both academic success and the mental health and well-being of their diverse student populations.

Limitations

As this was the first systematic review examining the factors associated with PF in higher education settings, it had several limitations. First, this study had a very narrow inclusion criteria that left out many studies (such as those focusing on ACT interventions) for the sake of simplicity. In addition, we only used studies from two databases: Web of Science and Scopus. Expanding the number of databases could allow for more comprehensive coverage of studies. For example, since databases such as PubMed were not employed, it is possible that relevant studies from the clinical or medical domains may have been missed, which should be considered when interpreting our findings. Second, while a risk of bias analysis was conducted for each study (see Table 1), additional quality assessments would have strengthened the rigor of our study, making our conclusions more robust. Third, we observed that many studies did not clearly distinguish between PF and inflexibility. In some instances, these terms are used interchangeably, while in many cases, they are treated as separate constructs. To prevent any confusion, we decided to exclude studies that focus on psychological inflexibility. Fourth, we primarily focused on university and college students during sample selection. However, we noticed that many relevant articles concerning primary and high school students, as well as teachers and parents, were not included in this review. Finally, we used a manual screening process to eliminate duplicates and to select the studies for our final review.

In addition to the limitations of our own study, we would also like to discuss the general limitations of the studies we reviewed.

First, it is important to note that there are still very few studies exploring the relationships involving psychological flexibility in educational settings and among educational samples.

Second, a major limitation is that most of the quantitative research articles follow a cross-sectional design, making it difficult to find longitudinal studies.

Third, the results included in this review are primarily based on self-report measures such as questionnaires, which have various limitations that were not addressed in the present systematic review. Addressing these limitations would have gone beyond the scope of this review. Incorporating studies that use different types of measures (e.g., daily diary studies) would have improved the results and conclusions presented in this review.

Third, many of the reviewed studies rely on the same research methods, primarily correlation and multiple regression analyses. Mediation analysis has been used to a lesser extent, while other more diverse analytical approaches have not been widely applied.

Fourth, there may be a risk of publication bias, as most included studies reported positive findings. The absence of studies with divergent or null results may limit the comprehensiveness of the synthesis.

Lastly, most of the reviewed studies examine psychological flexibility in face-to-face learning environments. However, its relationship with other factors in online and hybrid learning models has been significantly underexplored.

Recommendations

Despite the necessity of continued investigation, this review yields preliminary practical insights. Interventions targeting PF and inclusive mental health support may collectively contribute to a more holistic and proactive approach to student well-being in higher education and, in addition, to economic and social sustainability. Thus, higher levels of PF can reduce the prevalence of mental health issues, thereby decreasing university dropout rates and the costs associated with psychological and medical care. Additionally, by enhancing academic performance, educational resources are utilized more efficiently, and graduation rates increase, contributing to better job placement and economic stability for graduates. From a social perspective, fostering PF in students strengthens human capital and promotes a more resilient and productive society, reducing the economic burden on healthcare and social welfare systems.

From a research perspective, our study highlights the need for further longitudinal studies that examine over time the interplay between PF and the emotional adjustment and maladjustment variables reviewed herein, as well as its impact on academic performance. Furthermore, research that clarifies the influence of the academic discipline or various sociocultural factors, such as the ethnic or cultural background of the sample, are necessary to draw more robust conclusions. A better understanding of these interrelations will help to develop more tailored and effective interventions in the academic context. In addition, as mentioned earlier, the reviewed studies primarily rely on self-report measures. Therefore, expanding the assessment methods would be beneficial to better capture the dynamic nature of PF.

Lasty, in the modern era of digitization, digital tools and applications can also be applied in real life to strengthen students' PF. Future studies should aim to develop and validate applications that offer various exercises to enhance psychological flexibility in students, such as virtual reality therapy applications.

5. Conclusions

In conclusion, this systematic review reveals an inverse association between PF and psychological maladjustment (i.e., anxiety, depression, stress, etc.). Furthermore, it highlights a positive relationship between PF and well-being and academic performance in higher education students. The associations between PF and various psychological and academic constructs highlight PF's relevance in promoting mental health, general well-being, and academic success among students. By fostering PF, institutions can contribute to reducing student dropout, alleviating mental health burdens, and preparing more adaptable, resilient graduates, thereby supporting both economic and social dimensions of sustainability. Future research and interventions aimed at enhancing PF may thus serve as strategic levers for sustainable development in educational contexts.

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