RESEARCH PAPER

A Multidimensional Study of Optimism and Pessimism: Scale Development and Structural Evidence

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ABSTRACT
This study creates and validates a multidimensional measure of optimism and pessimism among university students based on established work such as the Life Orientation Test-Revised (LOT-R) by Michael F. Scheier and Charles S. Carver, while broadening the construct to include distinct facets of maladaptive pessimism, defensive pessimism, realistic optimism, and unrealistic optimism. The objective is to develop a legitimate and trustworthy Optimism-Pessimism Scale and investigate the structural connections between these dimensions. A convenience sample of 530 university students from a variety of academic, socioeconomic, and geographic backgrounds, ages 19 to 25, is used in a quantitative study design. A self-created Likert scale questionnaire is used to gather data, and it is distributed in educational environments. IBM SPSS-AMOS is used for structural equation modelling, while SPSS is used for factor loadings, reliability testing, and descriptive statistics. Factor analysis results supported the multidimensional conceptualization of dispositional viewpoint by confirming a distinct four-factor structure. Strong internal consistency shows through reliability analysis in every dimension. Pessimistic attitudes, especially maladaptive and defensive pessimism, have a detrimental impact on realistic optimism, according to structural modelling, suggesting that pessimism might impede the formation of balanced optimistic expectations. The results demonstrate the intricate relationship between students' optimistic and pessimistic dispositions and validate the scale as a psychometrically sound tool. By providing a sophisticated framework for comprehending how many types of optimism and pessimism coexist and interact, the research advances psychological measurement and has implications for student well-being treatments, counselling, and evaluation..

Keywords: Optimism, Pessimism, Maladaptive Pessimism, Defensive Pessimism, Realistic Optimism, Unrealistic Optimism
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INTRODUCTION

Pessimists and optimists have different perspectives on the world. In contrast to optimists, who look forward to the future with confidence and often anticipate positive outcomes, pessimists are filled with uncertainty and typically anticipate negative outcomes. Numerous aspects of life, including life happiness, health, work status, and self-esteem, are positively correlated with dispositional optimism (Nießen et al., 2022).

Generally speaking, optimism in the study literature refers to having broadly favourable views for the future. Hope, self-efficacy, agency (i.e., one's subjective feeling of control), and pleasure are all associated with optimism, which has both cognitive and emotional components. Through increased resilience, social support, coping mechanisms, self-rated health, subjective well-being, adherence to healthy behaviours, and confidence, optimism is linked to better mental and physical health (Millstein et al., 2019). All health outcomes, including mortality and cardiovascular disease, seem to be protected by optimism. Measuring optimism as a state would enable researchers to better evaluate the impacts of optimism treatments and its correlations with changeable health outcomes, given optimism's influence on health and its propensity to change over time. The creation of a state optimism metric is presented here.

The attitude or mentality of anticipating especially favourable, desirable, optimistic, and pleasant results from occurrences is known as optimism. A glass filled halfway with water is a typical metaphor for optimism and pessimism. An optimist is said to perceive the glass as half full, while a pessimist sees it as half empty. Optimism and

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idealism, especially false or stupid optimism, are sometimes used interchangeably in everyday English. The word comes from optimal, which means "best" in Latin. In the conventional definition of the term, optimism is anticipating the best possible result from any given circumstance. In psychology, this is often known as dispositional optimism (Wikipedia, 2021). It expresses the conviction that things will turn out well in the future. It cultivates resilience in the face of stress. Models of explanatory style and dispositional models are examples of theories of optimism. Both of these theoretical approaches have led to the development of methods for measuring optimism, such as the Attributional Style Questionnaire, which measures optimism in terms of explanatory style, and several versions of the Life Orientation Test, which measures optimism according to the original dispositional definition.

The term "optimism," as it is commonly understood, encompasses two closely related ideas: the first is the propensity to hope, and the second more broadly refers to the propensity to think that we live in "the best of all possible worlds," as the German philosopher Gottfried Wilhelm Leibniz put it in his well-known theodicy, which Voltaire mocked in Candide. The effectiveness of optimism as a psychological phenomenon has been the subject of a substantial amount of research over the past few years, which has led to several theoretical formulations of the same concept, which are understood as "disposition," "attributional style," "cognitive bias," or "shared illusion (Conversano et al., 2010)."

Pessimism is a state of mind when one expects an unfavourable result from a certain circumstance. Pessimists often concentrate on life's shortcomings. An optimist is said to perceive the glass as half full, whereas a pessimist is said to see it as half empty, or in extreme situations, totally empty (Wikipedia, 2023). This question is often used to test for pessimism. All major fields of thought have been impacted by the pessimistic attitude throughout history. The Latin word pessimism, which means "the worst," is where the word pessimism originates. Jesuit critics of Voltaire's 1759 work Candide, or optimism, were the first to use it. Leibniz's theory, which held that this was the "best (optimum) of all possible worlds," was being parodied by Voltaire. The Jesuits of the Revue de Trévoux accused Voltaire of pessimism in their assaults.

Optimism and pessimism, or anticipating a good or bad future, are two different ways of thinking that are best understood as a continuum with varying degrees of optimism and pessimism rather than strictly and dichotomously (Hecht & Hecht, 2013). A person may feel optimistic about one part of life (such as anticipating the success of their marriage or relationship) yet gloomy about other areas (such as anticipating financial troubles in the future). As the timeframe develops, people may potentially change where they stand on the optimismpessimism spectrum. Everybody has "rainier" days when they view the world through grey and gloomy glasses, and "sunnier" days when they wear rosy and brilliant spectacles.

People who use a pessimistic explanation style "expect the disadvantageous outcome when facing events of unknown emotional impact." People always look for explanations for life's happenings. A negative bias occurs when someone has a gloomy outlook on the world. Positive occurrences are often seen as external, particular, and unstable by pessimistic people, whereas bad events are frequently interpreted as internal, universal, and steady. Figure 1 below shows these correlations.

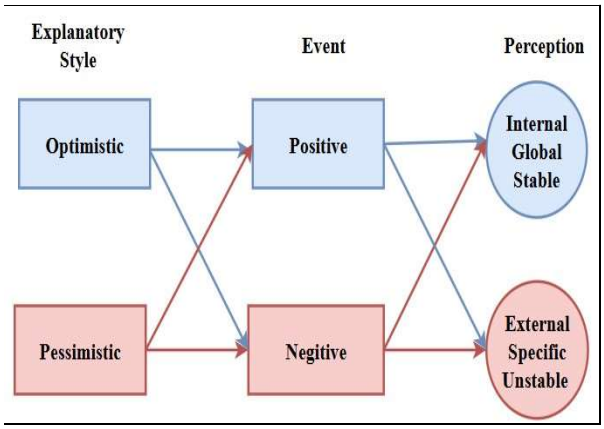

Figure 1 Relationship between explanatory style, event, and perception

Numerous facets of life are impacted by explanatory style (Heather S. Lonczak, 2021). When faced with pressures, for instance, a person with a negative bias is less likely to feel resilient since they will feel powerless. Self-esteem suffers when bad occurrences are seen as the result of stable, internal factors. On the other hand, a positive outlook is linked to a decrease in physical symptoms and sadness. Crucially, however, it's not always easy to link pessimism to unfavourable results since it's conceivable to feel both optimistic and pessimistic at the same time. Furthermore, under some circumstances, defensive pessimism can be advantageous.

Defensive pessimism is a cognitive technique in which a person sets low expectations for their performance, regardless of previous success. Defensive pessimism is a tactic used by people to be ready for performances or situations that cause anxiety. Then, defensive pessimists consider certain unfavourable incidents and failures that could negatively impact their pursuit of their objectives. Defensive pessimists might take steps to prevent or prepare for potential bad consequences by imagining them. By using this tactic, defensive pessimists may effectively manage worry that might otherwise impair their work (Wikipedia, 2009). Public speaking is an excellent illustration of the process involved in defensive pessimism, which is used in many different contexts. By seeing potential challenges like forgetting the speech, becoming thirsty, or discolouring their clothes before to the event, defensive pessimists might reduce their fear of public speaking. Defensive pessimists may adequately prepare for the difficulties that lie ahead since they have considered these issues. For example, the speaker may carry a bleach

pen to erase shirt stains, make note cards with hints regarding the speech, and set a cup of water on the platform to quench thirst. These preventative measures encourage better performance while lowering anxiety.

LITERATURE REVIEW

This paper (Siewert et al., 2025) highlighted the ecological implications of these concepts, proposing their application in behavioural ecology. Originating from human psychology, the concepts of "optimism" and "pessimism" have been applied to animal welfare science to assess emotional states in non-human animals. It discussed how "optimism" and "pessimism" reflect animal personalities and their role in individual environmental adaptation. The authors suggested that variations in these traits may significantly influence adaptation to environmental heterogeneity, with "optimists" potentially being less behaviourally flexible than "pessimists", affecting their response to environmental change.

(Indu Pv et al., 2025) focused on the psychometric evaluation of rating scales, specifically criterion and construct validity, and factor analysis. Criterion validity assessed a new scale against a "gold standard" (concurrent or predictive), using Pearson's correlation for continuous variables. Construct validity verifies alignment with theoretical concepts via convergent and divergent validity. Factor analysis examined linear relationships between variables and factors, serving as a method for evaluating construct validity, and included discussions on exploratory and confirmatory methods.

(Alavi et al., 2024) discussed factor analysis techniques for construct validity, emphasizing their importance in psychological testing, including assessments of aptitude, achievement, and interests. It highlighted the need for reliable measurements in nursing and health sciences and provides suggestions for reporting evidence from exploratory and confirmatory factor analyses. The author notes that while these analyses are critical for supporting construct validity, researchers should also incorporate additional sources of evidence. Validity was portrayed as an ongoing process that continually validates the underlying theories for constructs.

Maladaptive Pessimism (MP): Maladaptive pessimism is an undesirable, excessive kind of pessimistic thinking that impedes rather than improves a person's life. It is sometimes associated with or mistaken with [maladaptive perfectionism] or a general gloomy perspective. While maladaptive pessimism is harmful and leads to a person being trapped in dread, inactivity, and negative self-talk, defensive pessimism may be a strategic technique used by anxious people to control nerves and prepare for unpleasant outcomes to boost performance.

Defensive Pessimism (DP): Defensive pessimism (DP) is a cognitive technique used by anxious persons to mitigate anxiety and improve performance by establishing low expectations and mentally preparing for adverse outcomes. Defensive pessimists (DPs) are driven to exert more effort and engage in thorough planning by predicting probable hazards to avoid failure.

Defensive pessimism is a cognitive technique in which a person sets low expectations for their performance, regardless of previous success. Defensive pessimism is a tactic used by people to be ready for performances or situations that cause anxiety. Then, defensive pessimists consider certain unfavourable incidents and failures that could negatively impact their pursuit of their objectives (Wikipedia, 2009). Defensive pessimists might take steps to prevent or prepare for potential bad consequences by imagining them. By using this tactic, defensive pessimists may effectively manage worry that might otherwise impair their work.

Realistic Optimism (RO): A strategy that is more effective is one that is realistically optimistic. Additionally, realistic optimists accurately appraise reality and project likely outcomes. However, they are not plagued by loss-aversion and risk-aversion since they do not assign the unfavourable consequences significant weight. They anticipate challenges, but they also anticipate coming up with solutions (Loper, 2023). They also persevere when things are difficult. They get their hands dirty and begin looking for answers. Above all, realistic optimists have faith in their ability to improve. They are aware that hardship makes you stronger. They envision what may be possible and put out great effort to bring it to pass, enabling them to realise their amazing human potential.

Unrealistic Optimism (UO): Unrealistic optimism refers to the inclination of individuals to see themselves as less susceptible to adverse circumstances and more likely to encounter favourable situations compared to others (Anneli Jefferson a, Lisa Bortolotti, 2017).

Hypothesis Development

H1: Maladaptive pessimism is negatively associated with realistic optimism.

(Hirschmiller et al., 2025) analysed 689 melanoma survivors, exploring how these dispositions affect depressive and anxiety symptoms through specific coping strategies. Optimism and pessimism significantly influence mental health, especially in stressful situations like cancer survival. Findings revealed that optimism was directly associated with lower levels of depression and anxiety, with coping strategies like denial/self-blame mediating these effects. The model explained 60.8% of the impact of pessimism on depression and 79.55% on anxiety, with variations noted by gender more pronounced mediation effects in men. The study highlighted the need for gender-sensitive psychosocial care, advocating for targeted interventions focusing on maladaptive strategies in men and optimism in women.

(Ada Maksim, et al., 2024) assessed whether UO persists during the second (Study 1) and third waves (Study 2) of COVID-19 in Poland, focusing on perceptions of infection chances, severe disease outcomes, and adverse vaccine reactions. Research during the pandemic indicated a vulnerability to unrealistic optimism (UO), which the Weinstein model suggests may decline over time. Findings reveal that UO regarding infection likely persists. However, for severe disease and vaccine reactions, UO was absent, especially among individuals who know someone who died

from COVID-19. These results related to self-esteem protection and psychological threat reduction mechanisms.
(Orhan et al., 2024) explored the impact of psychological traits Optimism, Pessimism, and Mindfulness on athletes' performance and well-being, involving 236 athletes. Results showed no gender differences in psychological traits, although males had greater Refocusing abilities. Variables like sport type, education level, and age did not significantly influence these traits. A positive correlation between Optimism and Mindfulness was identified, while Pessimism had negative effects. The findings emphasized the need for psychological interventions to promote Optimism and Mindfulness, and reduce Pessimism, enhancing athletes' resilience and performance.
(Chipperfield et al., 2019) The degree to which expectations about one's health in later life match with actual decreasing health determines whether they are maladaptive or adaptive. Longitudinal research conducted over 18 years including 132 older Canadians (ages 72-98) discerned pessimistic (anticipating health deterioration) and optimistic (anticipating health enhancement) expectations predicated on beginning health condition and hospital admissions (HAs). The research indicated that genuine pessimism was associated with a reduction in depressed symptoms and a decreased mortality risk, but false optimism resulted in a 313% increased risk of death. The findings underscored the significance of pragmatic health expectations for elderly individuals and provide essential insights for healthcare professionals in their interactions with patients.
(Heather Craig BPsySc (Hons), et al., 2021) demonstrated that optimism and pessimism must be regarded as separate categories, each exerting unique influences on health behaviours and outcomes. A systematic analysis investigating their correlation with all-cause mortality included 25 research including 217,256 individuals. Research indicated that optimism was associated with a reduced mortality risk (pooled RR = 0.85), while high levels of pessimism are coupled with an increased mortality risk. The study recommended distinct assessments of optimism and pessimism and urges further investigation into psychological therapies aimed at enhancing optimism and diminishing pessimism to alleviate mortality risk.
(Dursun, 2021) explored the rise in interest regarding Subjective Well-Being (SWB), which encompasses life satisfaction, mental health, and happiness. Researchers are investigating the links between SWB and various psychological, social, and cultural factors, particularly optimism and hope. While related, optimism a belief in positive future outcomes and hope a cognitive-motivational construct involving goal-oriented thinking are distinct concepts. The study reviewed definitions of SWB, optimism, and hope, highlighting recent research on their interrelationships.
H2: Defensive pessimism is negatively associated with realistic optimism
(Karademir & Çolakoğlu, 2025) investigated how dysfunctional attitudes mediate the relationship between defensive pessimism and procrastination among 313 university students. Using structural equation modelling, the results revealed that while defensive pessimism positively predicts dysfunctional attitudes, these attitudes negatively predict general procrastination. The direct effect of defensive pessimism on procrastination was not significant, but the indirect effect through dysfunctional attitudes was significant, supporting a full mediation model. The findings indicated that defensive pessimism was linked to increased dysfunctional attitudes, which relate to reduced procrastination. Validity and reliability of the measurement tools were confirmed.
(Ekezie & Hong, 2023) investigated the influence of defensive pessimism (DP) on supply chain operations, a previously underexplored area. It examined how task complexity, perceptions of control, and employee situatedness predict DP, and analyses the relationship between DP and supply chain performance using Monte Carlo simulation and structural equation modelling with survey data. Findings indicated that task complexity and an external locus of control increase defensively pessimistic attitudes, which adversely affect supply chain performance. By addressing these factors, organizations could improve supply chain performance through better management of task complexity, control perceptions, and job autonomy.
(Gordeeva et al., 2020) examined self-determination theory in relation to dispositional optimism and two types of specific optimism constructive and defensive during the COVID19 pandemic. Dispositional optimism is linked to well-being and adaptive coping, while unrealistic optimism has mixed outcomes. A correlational study involving 1,403 Russian young adults assessed adherence to stay-at-home orders and its predictors, revealing that constructive optimism and dispositional optimism fostered autonomous motivation and adherence, whereas defensive optimism hindered it. Gender differences in adherence were noted, with a mediating effect of the optimism types. The findings underscore the significance of optimism in health-related behaviours and motivation, contributing to self-determination theory.
(Fernández-abascal et al., 2018) investigated the link between dispositional optimism and both physical and mental health, as well as health behaviours, addressing a gap in research on defensive pessimism. It utilized the LOT-R to identify three participant groups: dispositionalrealistic pessimism, defensive pessimism, and dispositional-realistic optimism. Findings revealed that dispositional optimism significantly predicts both mental and physical health outcomes, with a stronger correlation to mental health. Dispositional-realistic optimists score highest on health-related assessments and engage in healthier behaviours. Additionally, defensive pessimism and dispositional-realistic optimism show protective effects in substance risk-taking. Overall, dispositional-realistic optimists tend to be older and enjoy superior health status and quality of life across various domains.
(Shimizu et al., 2017) evaluated three cognitive strategies: defensive pessimism (DP), strategic optimism (SO), and realistic/regular pessimism (RP). A total of 59 participants (23 DPs, 22 SOs, and 14 RPs) engaged in conversations

with a confederate after either anticipating a negative event (experimental condition) or waiting for a few minutes (control condition). The study assessed perceived interpersonal friction and confederates' ratings of participants' behaviour. Findings revealed that DPs who focused on negative outcomes performed better in interactions compared to control DPs, while negatively-focused RPs experienced greater interpersonal friction than DPs, despite no significant differences in confederates' evaluations. This indicates that cognitive strategies impact interactions differently.

According to (Adams, 2023) research, offshore oil workers in the UK North Sea use cognitive methods to manage dangers. The research finds a common usage of defensive pessimism (DP) via ethnographic interviews with 35 drilling crew members. Employees told stories of mental models of the worst-case situations, especially when it came to the dangers of offshore and helicopter trips. These tactics helped to improve planning and readiness for workplace risks. The results highlight the significance of DP-like thinking in high-risk situations and provide directions for further investigation into coping mechanisms in comparable circumstances.

RESEARCH GAP

Despite a wealth of research on optimism and pessimism in health, performance, ecology, and behavioural contexts, most of the studies that are currently available focus on these dispositions either as isolated strategies or as general bipolar traits without combining their various functional forms into a single validated framework. A comprehensive scale that simultaneously distinguishes maladaptive pessimism, defensive pessimism, realistic optimism, and unrealistic optimism within a single structural model is lacking, despite prior work emphasising psychometric validity, defensive pessimism as a coping strategy, and the dangers of unrealistic optimism. Furthermore, rather than developing measurement that reflects the complex interactions across these dimensions in young adult populations, a large portion of the research concentrates on applied outcomes (e.g., health, sports, risk behaviour, adaptability). Additionally, there is no empirical data on how various types of pessimism could directly impede realistic optimism, especially in student settings where dispositional perspective affects motivation, coping, and overall wellbeing. Furthermore, optimism and pessimism are often treated as distinct or unidimensional notions in earlier studies, ignoring their multidimensionality and possible structural interrelationships. In order to give a more accurate psychological evaluation framework, there is a significant gap in the development and validation of a multidimensional optimism–pessimism scale and in the empirical modelling of the structural relationships among its many components.

METHODOLOGY

Research design

The research design employed a quantitative analysis, using statistical and empirical analysis to examine the A Multidimensional Study of Optimism and Pessimism: Scale Development and Structural Evidence. A structured approach was used to systematically collect and analyse data from a representative sample of 530 respondents to ensure statistical reliability and validity. Data collection was conducted using a standardized questionnaire that includes Likertscale questions to assess respondents Maladaptive Pessimism (MP), Defensive Pessimism (DP), Realistic Optimism (RO) and Unrealistic Optimism (UO). The research used SPSS (Statistical Package for the Social Sciences) for data analysis, utilizing factor loadings, reliability analysis, and descriptive statistics to evaluate the dataset. IBM SPSS-AMOS (Analysis of Moment Structures) was employed for structural equation modelling (SEM) to analyse the interrelationships among the principal variables and to evaluate the provided hypotheses.

Objectives of the Study

Objective-1: Conducting factor analysis for the purpose of establishing construct validity of the test.

Ojective-2: Conduct Cronbach's alpha to check internal consistency reliability

Hypotheses of the Study

H1: Maladaptive pessimism is negatively associated with realistic optimism.

H2: Defensive pessimism is negatively associated with realistic optimism

Sample Selection

The research used a non-probability convenience sampling strategy with a focus on college students. There were 530 participants in all, most of whom were between the ages of 19 and 21 and mostly represented late teens and young adults. The sample, which was mostly made up of undergraduate students (87.55%) from a variety of academic fields, including the humanities and social sciences, computational and applied sciences, medical and allied health, law, engineering, and others, was predominately female (60%). The majority of participants were from middle-class and upper-class socioeconomic origins and hailed from a variety of cultural backgrounds, including urban, rural, semi-urban, and tribal. This variety maintained a focus on the student body appropriate for evaluating dispositional outlook constructs like optimism and pessimism while guaranteeing representation across academic streams, geographic locations, and socioeconomic levels.

DATA COLLECTION

The study's main source of data was a self-administered, self-developed Optimism–Pessimism Scale that was given to 530 students in higher education. The scale used a structured questionnaire in academic settings to collect responses on four dimensions: Maladaptive Pessimism, Defensive Pessimism, Realistic Optimism, and Unrealistic Optimism. These firsthand answers served as the foundation for structural modelling, factor analysis, and reliability testing. Additionally, established theories and previous measures of dispositional outlook such as the Life Orientation Test-Revised (LOT-R) as well as published psychological literature on optimism, pessimism,

explanatory style, and scale validation techniques were used to inform item construction, dimensional structuring, and validation procedures during the instrument development and conceptual framing stages.

MEASURES

Data has been gathered with the help of a structured questionnaire. Questionnaire has been prepared using 5 Likert-scale (Strongly disagree to Strongly agree) where respondents will be asked to share their opinions regarding various research questions under study. Questionnaire has a set of both open ended and closed ended questions. Questions have been carefully crafted so as to gather meaningful information with respect to identified research variables. There are five categories of respondents in the survey and a separate questionnaire has been designed for each category of respondents. The bellow mention table show variables and no. items considered for the study.

Constructs	**No. of items**
Maladaptive Pessimism (MP)	5
Defensive Pessimism (DP)	5
Realistic Optimism (RO)	6
Unrealistic Optimism (UO)	6

RESULTS

The Results section provides statistical evidence for the creation and validation of the multidimensional optimism-pessimism scale. The study starts with the demographic profile of the 530 student respondents to contextualise the sample, followed by studies that demonstrate concept validity using Exploratory Factor Analysis. The results validate four unique dimensions Maladaptive Pessimism, Defensive Pessimism, Realistic Optimism, and Unrealistic Optimism demonstrating robust factor loadings and significant variation accounted for. Subsequent evaluations of convergent validity and internal consistency indicate that the scale is both dependable and psychometrically robust. Ultimately, Structural Equation Modelling confirms the postulated negative correlation between dimensions of pessimism and realistic optimism, exhibiting superior model fit indices and offering robust structural support for the suggested theoretical framework

.

Table: Demographic Profile

Variable	**Category**	**Frequency (n)**	**Percentage (%)**
Age	18 years	40	7.55
	19 years	171	32.26
	20 years	158	29.81
	21 years	101	19.06
	22 years	33	6.23
	23 years	18	3.4
	24 years	7	1.32
	25 years	2	0.38
	Total	530	100
Gender	Female	318	60
	Male	211	39.81
	Other	1	0.19
	Total	530	100
Education	Under Graduate	464	87.55

	Post Graduate	55	10.38
	Diploma	11	2.08
	Total	530	100
Department	Humanities & Social Sciences	183	34.53
	Computational & Applied Sciences	161	30.38
	Medical & Allied Health	88	16.6
	Law	57	10.75
	Engineering	32	6.04
	Multimedia and Film Studies	7	1.32
	Biotechnology	1	0.19
	Total	530	100
Cultural Background	Urban	236	44.53
	Rural	175	33.02
	Semi-Urban	115	21.7
	Tribal	4	0.75
	Total	530	100
Socioeconomic Status	Middle Class	319	60.19
	Upper Middle Class	121	22.83
	Upper Class	47	8.87
	Lower Class	43	8.11
	Total	530	100

A total of 530 participants were involved in the study. For age, the largest number of participants was 19 years old (n = 171, 32.26%), followed by 20 years (n = 158, 29.81%) and 21 years (n = 101, 19.06%). Respondents who were 18 years old, were 7.55% (n = 40) and those 22 years old and older as a whole were a mere 11.33% of the entire sample, this implies that for the most part the research captured the views of late adolescents and young adults in the age range of 19–21. The sample consisted predominantly of females, 318 (60.00%) female respondents were followed by 211 (39.81%) males, and one (0.19%) respondent who identified as Other. Such a distribution indicates that female students were more active participants in the study. Majority of the respondents were undergraduate (n=464, 87.55%) while a small percentage was pursuing post-graduation (n= 55, 10.38%) and diploma (n= 11, 2.08%). This trend seems to be consistent with the largely undergraduate nature of the studied population. As for the department, the seven academic disciplines participated in the survey were included. Humanities and Social Sciences were the most represented disciplines (n = 183, 34.53%), then Computational and Applied Sciences (n = 161, 30.38%), Medical and Allied Health (n = 88, 16.60%), Law (n = 57, 10.75%), and Engineering (n = 32, 6.04%). Humanities and Social Sciences (5) had the lowest representation reflecting the more general disciplinary distribution of the sample. With regard to cultural background, interests differ with the majority of participants originating from urban areas, n=236 (44.53%), then from rural, n=175 (33.02%) and from semi-urban areas, n=115 (21.70%). A very small number of respondents identified a tribal background (n = 4, 0.75%), suggesting this sample encompasses a broad range of geographic and cultural settings with an urban bias. And finally, as regards their socioeconomic status, most respondents were from the Middle Class (n = 319, 60.19%), followed by the Upper Middle Class (n = 121, 22.83%), Upper Class (n = 47, 8.87%), and Lower Class (n = 43, 8.11%). This pattern indicates that the sample under investigation consisted predominantly of students belonging to middle to upper-middle socioeconomic strata, which is fairly representative of students in formal higher education.

Objective-1: Conducting factor analysis for the purpose of establishing construct validity of the test.

Factor Analysis (EFA)

In this study, exploratory factor analysis (EFA), using principal components analysis (PCA) with Varimax rotation, was conducted to test the construct validity of the instrument. The scale was developed to assess four psychological constructs relevant to optimism/pessimism orientations in students: Maladaptive Pessimism (MP), Defensive Pessimism (DP), Realistic Optimism (RO), and Unrealistic Optimism (UO), with each of these factors containing six items. Construct validity is the extent to which a test measures the theoretical construct that it was designed to measure. EFA was conducted to determine whether the items of the instrument would be factorized logically into four factors as theoretical assumption allows, which would support the theoretical concept of the scale

.

Table 1KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		**0.900**
Bartlett's Test of Sphericity	Approx. Chi-Square	5969.573
	df	231
	Sig.	0.000

Before the factor analysis was performed, the appropriateness of the data for factor analysis was evaluated through the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's Test of Sphericity. A KMO value of 0.900 was found, which is well above the cutoff value of 0.60 and within the range of being considered as meritorious, indicating the patterns of correlations within the items were sufficiently compact to conduct factor analysis. Bartlett's Test of Sphericity = 5969.573 with d.f. = 231 (p = 0.000). This result also indicates that the correlation matrix is not an identity matrix, suggesting that there exist adequate number of correlations among items for factor analysis. Overall, these findings indicate that the data were factorable

.

Table 2 Communalities (Factor Loadings)

		Initial	**Extraction**
MP1		1.000	.755
MP2		1.000	.686
MP3		1.000	.699
MP4		1.000	.601
MP5		1.000	.655
DP1		1.000	.534
DP2		1.000	.617
DP3		1.000	.586
DP4		1.000	.607
DP5		1.000	.526
RO1	1.000	.655	
RO2	1.000	.676	
RO3	1.000	.626	
RO4	1.000	.677	
RO5	1.000	.721	
RO6	1.000	.546	
UO1	1.000	.718	
UO2	1.000	.742	
UO3	1.000	.738	
UO4	1.000	.651	

UO5	1.000	.682
UO6	1.000	.537
Extraction Method: Principal Component Analysis.		

The communality values are the variances of the items explained by the factors. As the communalities (the last column of the above table) show, all of the 22 items had extraction communalities between 0.526 (DP5) and 0.755 (MP1), all above the cut-off value of 0.50. This shows that the factors extracted explain a sufficient amount of variance for the individual item, and that no item needs to be removed because of too little variance accounted for in that item. The high (all > 0.5) and consistent magnitude of the communalities for all four factors MP (0.755–0.655), DP (0.534–0.526), RO (0.655–0.546), and UO (0.718–0.537) also confirmed the convergence within each factor based on the items and thus the appropriateness of the items in each factor

.

Table 3 Total Variance Explained

Component	**Initial Eigenvalues**			**Extraction Sums of Squared Loadings**			**Rotation Sums of Squared Loadings**		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.463	29.376	29.376	6.463	29.376	29.376	4.192	19.055	19.055
2	3.393	15.422	44.798	3.393	15.422	44.798	3.77	17.138	36.192
3	2.759	12.539	57.337	2.759	12.539	57.337	3.395	15.434	51.626
4	1.622	7.373	64.71	1.622	7.373	64.71	2.878	13.084	64.71
	Extraction Method: Principal Component Analysis.								

Four factors were identified as these have the eigenvalue more than 1. The first factor accounted for 29.376% of variance, the second factor accounted for 15.422% of variance, the third factor accounted for 12.539% of variance, and the fourth factor accounted for 7.373% of variance. These four factors together account for 64.710% of the total variance

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Table 4 Rotated Component Matrix

	Component				**Factor Loadings**
	1	2	3	4	
MP1		0.817			0.755
MP2		0.782			0.686
MP3		0.776			0.699
MP4		0.708			0.601
MP5		0.746			0.655
DP1			0.672		0.534
DP2			0.719		0.617
DP3			0.71		0.586
DP4			0.726		0.607
DP5			0.655		0.526
RO1	0.733				0.655

RO2	0.78			0.676
RO3	0.66			0.626
RO4	0.721			0.677
RO5	0.765			0.721
RO6	0.627			0.546
UO1	0.726			0.718
UO2	0.753			0.742
UO3	0.745			0.738
UO4	0.688			0.651
UO5	0.71			0.682
UO6	0.712			0.537
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.				
a. Rotation converged in 4 iterations.				

The value of the factor loading is within the range of 0.627 to 0.817, thus confirming that the variables are highly correlated with the corresponding factors. Items related to maladaptive pessimism range from 0.708 to 0.817, while those of defensive pessimism range from 0.655 to 0.726; realistic optimism items range from 0.627 to 0.780, while unrealistic optimism items range from 0.688 to 0.753

Table 5 convergent validity and reliability

Variables	**No of Items**	**AVE**	**CR**
Maladaptive Pessimism (MP)	5	0.6792	0.82837
Defensive Pessimism (DP)	5	0.574	0.77514
Realistic Optimism (RO)	6	0.65017	0.81784
Unrealistic Optimism (UO)	6	0.678	0.83

The values for AVE are 0.6792 for MP, 0.574 for DP, 0.65017 for RO, and 0.678 for UO. As all the values for AVE are greater than 0.50, there is evidence of convergent validity among the constructs. The values for CR are 0.82837 for MP, 0.77514 for DP, 0.81784 for RO, and 0.830 for

Ojective-2: Conduct Cronbach's alpha to check internal consistency reliability

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The second objective was to investigate the internal consistency reliability of the four instrument subscales based on Cronbach alpha coefficient which is the most commonly used reliability estimate in psychological and education research. Internal consistency reliability is the extent to which items of a scale are homogenous in measuring the same underlying construct and Cronbach's α equal to or higher than 0.80 is typically associated with high internal consistency

Table 6 Internal Consistency

Variables	No of Items	Cronbach's Alpha
Maladaptive Pessimism (MP)	5	0.873
Defensive Pessimism (DP)	5	0.812
Realistic Optimism (RO)	6	0.891
Unrealistic Optimism (UO)	6	0.893

The Cronbach's alpha coefficients for MP, DP, RO, and UO are 0.873, 0.812, 0.891, and 0.893, respectively. Because all coefficients are higher than 0.70, the constructs show internal consistency. The most reliable coefficient is Unrealistic Optimism (0.893), followed by Realistic Optimism (0.891), Maladaptive Pessimism (0.873), and Defensive Pessimism (0.812). Hence, the scale is reliable and appropriate for use in SEM modelling.

Hypothesis implementation

H1: Maladaptive pessimism is negatively associated with realistic optimism

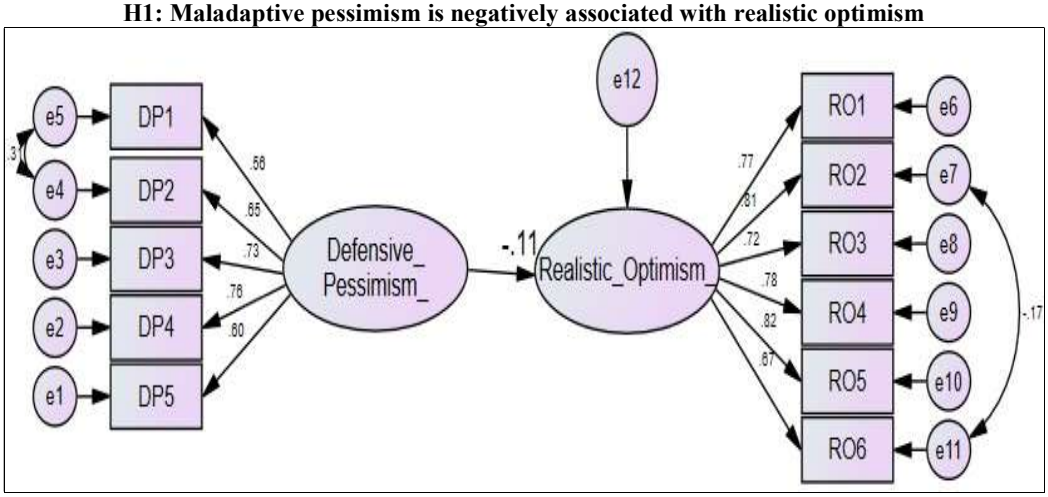

Table 7Regression weights: (group number 1 - default model)

Path			Standard Estimate	S.E.	C.R.	P
Realistic Optimism	<---	Defensive Pessimism	-0.112	0.041	-2.390	0.017 (<0.05)

From the findings, there exists a statistically significant negative correlation between maladaptive pessimism and realistic optimism (β = -0.112, C.R. = -2.390, p = 0.017 < 0.05). The above finding indicates that an increase in the level of maladaptive pessimism leads to a decrease in realistic optimism within the sample population. The effect is relatively small but significant, meaning that the higher one is in maladaptive pessimism, the less likely they are to be realistically optimistic. Therefore, the research hypothesis (H1) is accepted

.

Table 8 Model fit

CMIN	DF	CMIN/DF	GFI	NFI	RFI	IFI	CFI	RMR	RMSEA
66.337	39	1.701	.978	.976	.966	.990	.990	.050	.036

The model fit indices suggest that the suggested model exhibits an exceptional match to the data. The chi-square statistic (CMIN = 66.337, DF = 39) produces a CMIN/DF ratio of 1.701, far below the suggested threshold of 3, indicating an adequate fit. The Goodness-of-Fit Index (GFI = 0.978), Normed Fit Index (NFI = 0.976), Relative Fit Index (RFI = 0.966), Incremental Fit Index (IFI = 0.990), and Comparative Fit Index (CFI = 0.990) exceed the acceptable threshold of 0.90, hence affirming robust model adequacy. Furthermore, the Root Mean Square Residual (RMR = 0.050) and Root Mean Square Error of Approximation (RMSEA = 0.036) fall under the acceptable thresholds (below 0.08 and 0.05, respectively), so reinforcing the strong alignment between the model and the actual data. Collectively, these indicators indicate that the structural model is well-fitting, dependable, and appropriate for further interpretation

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H2: Defensive pessimism is negatively associated with realistic optimism

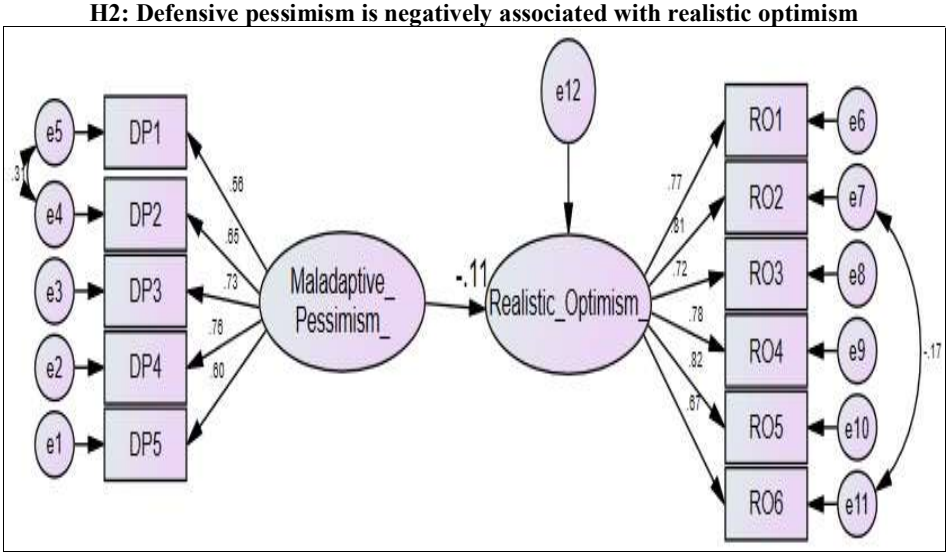

Table 9 Regression weights: (group number 1 - default model)

Path			Standard Estimate	S.E.	C.R.	P
Realistic Optimism	<---	Maladaptive Pessimism	-0.108	0.069	-2.093	0.036 (<0.05)

From the findings, it can be concluded that there is a statistically significant negative influence of pessimism on realistic optimism (β = -0.108, C.R. = -2.093, p = 0.036 < 0.05). It means that an increase in defensive pessimism leads to a decrease in realistic optimism among the participants of the research. A negative standardized coefficient supports the fact that the correlation between the variables under study is inverse, and since the p-value is less than 0.05, the correlation is statistically significant. Consequently, the proposed hypothesis (H2) about the existence of a negative correlation between the two variables has been proven correct

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Table 10 Model fit

CMIN	DF	CMIN/DF	GFI	NFI	RFI	IFI	CFI	RMR	RMSEA
55.231	41	1.34	.982	.978	.970	.994	.994	.023	.026

Based on the model fit indices, the model shows a very good fit to the data. The chi-square index at (CMIN=55.231) and the degree of freedom (DF=41) produces a ratio of 1.34, which is less than the cut-off points of 3, meaning there is a very good fit. All the goodness-of-fit indices, including GFI (.982), NFI (.978), RFI (.970), IFI (.994), and CFI (.994), are above the cut-off point of .90, meaning there is an excellent fit to the model. The residual indexes have very small values as well, since the RMR is 0.023 and RMSEA is 0.026, both of which are smaller than the cut-off points of 0.08.

DISCUSSION

According to the findings, the created optimism-pessimism scale possesses strong psychometric qualities and can be used for further structural analysis. For this research, 530 respondents, mostly aged 19-21 years, predominantly women and university students, were chosen. According to the factor analysis, construct validity was proven due to the high values of KMO, namely 0.900, and the significance of Bartlett's test (χ^2 = 5969.573, df = 231, p = 0.000), suggesting the suitability of the collected data for factor analysis. Communalities of the extracted variables varied from 0.526 to 0.755, meaning that each item was capable of explaining enough variance. Thus, four factors, accounting for 64.710% of variance, were extracted, which confirms the multi-dimensional nature of Maladaptive Pessimism, Defensive Pessimism, Realistic Optimism, and Unrealistic Optimism. The rotated factor loadings ranged from 0.627 to 0.817, indicating acceptable to strong item loading. Convergent validity was also confirmed because AVE values were above 0.50 for all constructs: MP = 0.6792, DP = 0.574, RO = 0.65017, and UO = 0.678. Composite reliability values were also satisfactory, ranging from 0.77514 to 0.830. Internal consistency was strong, with Cronbach's alpha values of 0.873 for MP, 0.812 for DP, 0.891 for RO, and 0.893 for UO. The SEM results further confirmed significant negative relationships with realistic optimism. One path showed β = -0.112, C.R. = -2.390, p = 0.017, while the other showed β = -0.108, C.R. = -2.093, p = 0.036. These results indicate that higher levels of pessimistic orientation are associated with lower realistic optimism. Model fit was also strong, with fit indices such as CMIN/DF = 1.701 and 1.34, CFI = 0.990 and 0.994, and RMSEA = 0.036 and 0.026, confirming that both structural models fit the data well.

CONCLUSION

Conclusively, the present study supports the claim that the constructed optimism-pessimism scale is a reliable and valid measurement tool for psychological dispositions of students. First of all, it should be noted that the factor analysis proves that the items could be correctly divided into four major dimensions, namely maladaptive pessimism, defensive pessimism, realistic optimism, and unrealistic optimism. In turn, it indicates that the investigated concepts should be considered as multi-faceted psychological constructs having a variety of manifestations and behavioural meanings. Secondly, the results regarding the internal consistency prove that all the four identified dimensions possess high reliability because the items measuring them demonstrate considerable inter-correlation which means that they measure a single concept. Thirdly, according to the structural analysis of the data, the orientations of pessimism negatively affect realistic optimism, i.e., students who have stronger predisposition to such a psychological state are unlikely to become capable of creating balanced positive expectations for the future. Thus, it is crucial to understand the investigated psychological construct not only as a negative characteristic but also as an obstacle to optimistic and realist dispositions

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