

The Future-Positive Core Beliefs Scale (FPBS): Construction, Validation, and Initial Psychometric Properties

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Abstract: This study introduces the Future-Positive Core Beliefs Scale (FPBS), a psychometric instrument developed to assess optimistic beliefs about the future. Future-positive core beliefs shape individuals' perceptions of potential outcomes, contributing to their well-being and personal growth. The aim of study was to develop, validate, and refine the FPBS for psychological assessment and research use. The research involved four stages: (1) item development, which included item generation, content validation, and piloting; (2) Exploratory factor analysis (EFA), conducted with a sample of 861 bilingual participants aged 18–45, which revealed a three-factor model explaining 55.26% of the variance, with factor loadings ranging from .42 to .80; (3) Confirmatory factor analysis (CFA) on a separate sample data of 600 participants, demonstrated strong construct validity (CFI = .95, GFI = .94, RMSEA = .06) with excellent reliability estimates (Cronbach's alpha = .91) and item response theory analysis confirmed scale items higher discrimination values; and (4) analysis of the third sample comprising 270 participants, further confirmed FPBS's robust convergent and discriminant validity. Limitations include sample homogeneity and the potential for self-report bias. Further research should evaluate the scale's applicability across diverse populations. Overall, the FPBS provides a reliable and valid tool for measuring future-oriented positive core beliefs.

Keywords: Positive Core Beliefs, Future Orientation, Scale Development, Construct Validity, Reliability

Introduction

Cognitive behavioral therapy (CBT), developed by Aaron T. Beck in the 1960s, is a widely recognized therapeutic approach that is effective in helping individuals manage emotional and behavioral issues by modifying negative thought patterns. Beck's theory posits that distorted thoughts, often stemming from core beliefs, contribute to the development and persistence of psychological difficulties. The core beliefs are emotional and behavioral reactions that depend on deep-rooted beliefs that people hold about themselves, the people they interact with and the world that surrounds them (Beck, 2021). Adaptive core beliefs that emphasize self-worth and overall well-being are classified as positive beliefs. According to Beck (2021), well-adjusted individuals have positive core beliefs that help them to cope effectively with adverse circumstances. On the other hand, negative core beliefs produce distressing effects through specific beliefs such as "I am unlovable," or "The world is unsafe" (Beck, 2011). Mental health outcomes depend on these beliefs because they direct an individual toward appropriate coping styles and adaptation mechanisms while negative core beliefs make people more prone to developing depressive symptoms (Seligman & Csikszentmihalyi, 2000).

The formation of beliefs about future events directly influences motivation, goal setting, and resilience. Optimistic beliefs about one's abilities, relationships, and potential shape how individuals approach challenges, make decisions, and cope with adversity. Past experiences shape these beliefs, and individuals can also cultivate them through deliberate cognitive and behavioral strategies. Research suggests that individuals with a strong sense of future optimism tend to exhibit greater psychological well-being, persistence in goal achievement, and adaptive coping mechanisms (Bryant & Cvengros, 2004; Husman & Shell, 2008).

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Future-oriented research often prioritizes external opportunities and proactive behaviors, overlooking internal factors like competence perception, self-worth, and relational expectations (Hoyle & Sherrill, 2006). Many studies assume individuals already believe in their abilities, neglecting those struggling with self-doubt or learned helplessness (Bandura, 1997). Despite self-worth's role in goal setting, its impact on future expectations is rarely examined (Markus & Nurius, 1986). Likewise, expectations regarding social support are often ignored, though social connections are vital for motivation and resilience as social connections provide foundation for future self-concept and goal directed behavior (Ryan & Deci, 2000). These dimensions should be integrated into future research that addresses both external opportunities and internal self-perceptions (Markus & Nurius, 1986). In collectivist cultures, optimism is shaped by independent factors such as family expectations, community values, and social norms, particularly those related to self-worth and future outlook (Schwartz, 1994; Triandis et al., 1990). It is essential not only to recognize these cultural influences but also thoroughly understand and integrate them in the development of psychological assessment and intervention that are comprehensive and sensitive to varied needs.

Therefore, we plan to develop The Future Positive Core Beliefs Scale (FPBS) to address existing knowledge gaps. Items used in the FPBS measure aspects of future-oriented optimism which represent personal competence, self-worth, and relational potential and include culturally relevant elements that make it applicable to individuals of diverse populations.

So, Recognizing and fostering future-oriented optimism has important implications for both research and clinical practice (Hoyle & Sherrill, 2006). For researchers to understand the influence of future mentality on mental health and personal development, the FPBS is a valuable tool. The scale may aid in the detection of people who would profit from interventions for future optimism improvement for example cognitive restructuring and goal-setting strategies. By creating an opportunity to break limiting beliefs that affect mental health, goal-directed behavior, and long-term resilience, the FPBS can be utilized for both personal and clinical applications.

Overall, the FPBS serves as an important contribution to research on the role of future beliefs in mental health by providing a multi-dimensional and culturally sound assessment of future-oriented optimism. Targeted interventions informed by this knowledge may enhance future optimism and promote psychological well-being and resilience.

Cognitive structures that are core, highly held, and cause individuals to perceive themselves, others, and the world in certain ways are known as core beliefs (Beck, 1967). Unlike broader schemas, core beliefs are specific and enduring, influencing emotional responses and behaviors across contexts (Beck, 2011). Positive core beliefs, particularly those related to the future, foster hope, resilience, and adaptive functioning, enhancing overall well-being (Seligman, 2011). Future-oriented positive beliefs are cognitive schemas that reflect optimistic expectations about achieving future goals, overcoming challenges, and maintaining meaningful relationships (Snyder, 2002; Beck, 2011; Seligman, 2011; Fredrickson, 2001). These beliefs are distinct from general optimism and hope: while optimism (as measured by the LOT-R) reflects a generalized expectation of positive outcomes, and hope (per Snyder's theory) involves agency and pathways thinking (Snyder, 2002), future-oriented positive beliefs specifically focus on actionable pathways and the anticipation of meaningful, goal-directed outcomes. This distinction underscores the need for a specialized scale to capture these nuanced dimensions, as existing tools fail to do so.

While Beck's Cognitive Behavioral Therapy (CBT) focuses on modifying negative core beliefs (Beck, 1967), there is a lack of tools to assess positive future-oriented beliefs. This gap hinders research and clinical practice, as the absence of a reliable measure limits the exploration of these beliefs' role in resilience and well-being. Addressing this gap is crucial, as positive beliefs buffer distress and promote post-traumatic growth, prosocial behavior, and productivity (Fredrickson, 2001).

This has led to cognitive behavioral frameworks such as Beck's (1967) cognitive therapy that emphasizes the relation between one's belief about the self, the world, and the future to mental health. Positive schemas will counteract negative thought patterns such as Beck's cognitive triad and promote resilience and well-being (Beck, 2011). Seligman PERMA model emphasizes that positive emotions and future-orientated beliefs are part of flourishing (Seligman, 2011) while Snyder's Hope Theory is the one

that suggests hope involves not only a belief in the achievement of goals (agent) but also in the ways to do it (Snyder, [2002](#)). These theories reinforce that there is a need for tools to measure positive core beliefs as much as they tackle negative cognitive patterns and generalize psychological health.

Recent studies point out that future-oriented positive beliefs are beneficial for mental health. Fredrickson et al. ([2003](#)) noted that people with positive future beliefs are more resilient after trauma, and Luthans et al. ([2006](#)) show that people with positive future optimism are more satisfied with their jobs and more in tune with the morale of the team. According to Fredrickson ([2001](#)), optimism helps people cope adaptively in the face of adversity. However, more recent research by Carver et al. ([2019](#)) states that future-oriented beliefs are important for goal-directed behavior and emotional regulation, especially when stress is high. However, there is no standardized scale for assessing future-oriented positive beliefs, which constitutes a gap in this field.

However, existing tools, for example, Connor Davidson Resilience Scale (CD-RISC), use general tests of resilience, which are insufficient in specificity in testing future-mindedness (Windle et al., [2011](#); Khoshouei, [2009](#)). The dispositional optimism of the Life Orientation Test-Revised (LOT-R) is treated but fails to account for future expectations indispensable for adaptive coping (Glaesmer et al., [2012](#); Creed et al., [2002](#)). The Values in Action Inventory of Strengths (VIA-IS) measures traits such as hope and gratitude but not future-oriented core beliefs (van Eeden et al., [2008](#)). Such tools are inadequate in capturing the cognitive and emotional aspects of future-oriented, positive beliefs, like those of Snyder's Hope Theory ([2002](#)) with pathways and agency. This emphasizes the need for a specialized scale to assess these constructs.

Many psychological tools are developed in Western, individualistic contexts, which may not reflect collectivist values (Triandis, [1995](#)). In collectivist cultures, future-oriented beliefs may emphasize communal goals and family well-being, whereas individualistic cultures prioritize personal achievement. A culturally sensitive scale measuring future-oriented positive beliefs would address these gaps and inform interventions enhancing long-term psychological well-being (Fredrickson, [2001](#)). To ensure the cross-cultural relevance and broader applicability of Beck's theoretical model, we have decided to develop and validate the FPBS in English. It will allow researchers to test its applicability across diverse cultural contexts, specifically in Western, English-speaking populations.

Moreover, the scale has important potential for clinical and organizational settings. It could be used by clinicians to distinguish clients with strong future-oriented positive core beliefs who would benefit from having these strengthened and with resilience increased through interventions. For example, therapists could develop CBT exercises for clients to build their belief that they will reach future goals. Moreover, the scale could be used for assessing employees' future-oriented optimism in organizations which could inform some leadership training programs that are designed to inspire resilience and productivity (Luthans et al. [2006](#)). This could also be explored across diverse populations concerning mental health. Additionally, the scale could longitudinally predict mental health outcomes, providing insight into how these beliefs evolve and their long-term effects on well-being.

Beck's cognitive model should be expanded in the future to include positive beliefs about competence, lovability, and self-worth. The proposed scale will assess future-oriented positive core beliefs of perceived abilities, relationship values, self-esteem, and goal-orientation optimism. Cross cultural applicability will be improved by considering cultural influences especially from the collectivist societies (Triandis, [1995](#)).

Although past tools have progressed greatly, they do not have the degree of specificity needed to assess future-oriented positive core beliefs accurately. This gap can only be addressed by developing a specially designed scale, based on solid theoretical frameworks and principles of psychometrics. This scale offers a promising basis for future-oriented positive core beliefs as a reliable and valid measure to improve both research and clinical practice of mental health outcomes, for a diverse population.

Methods

This research includes three studies to develop and validate a scale intended to measure future-oriented positive core beliefs. Item generation and exploratory factor analysis (EFA) were conducted in study one.

Study two consists of confirmatory factor analysis (CFA) and item response theory (IRT) assessments. Additional validation of the scale in Study Three involves assessments of convergent and discriminant validity.

Study 1

Phase 1: Item Generation

A phase of item development for the Future-Positive Core Beliefs Scale (FPBS) was conducted to generate items measuring positive future core beliefs, following the guidelines explained by Boateng et al. (2018). A deductive approach was employed, involving an extensive theoretical review of positive core beliefs and existing scales. This was followed by the development of a semi-structured interview schedule based on Beck's theoretical model. Five bilingual experts with backgrounds in CBT and ten bilingual participants were included for initial interviews. Qualitative data from the Semi-structured interviews on future positive core beliefs were analyzed using thematic and content analysis. Consequently, a preliminary pool of 50 items was generated.

The initial items were reviewed by expert psychologists about relevance, clarity, and alignment with the construct. Some of the irrelevant or unclear items were removed and some were refined. Furthermore, initial items underwent a second round of expert reviews, in which they were rated on a four-point relevance scale (1 = not relevant; 4 = highly relevant). By using the formula below, the Content Validity Ratio (CVR) was calculated.

$$CVR = \frac{ne - \frac{N}{2}}{\frac{N}{2}}$$

Items with a CVR > 0.99 (unanimous agreement), remaining in terms of number, where *ne* is the number of experts rating an item as 3 or 4 and *N* is the total number of experts are retained, providing outstanding content validity (Kyriazos & Stalikas, 2018). To reach unanimity among the experts (Lawshe, 1975), a CVR threshold of 0.90 was used (Wynd et al., 2003), resulting in a preliminary set of 31 items for the initial scale, which was subsequently used in pilot testing.

Phase 2

EFA

The suitability of the data for exploratory factor analysis (EFA) was judged based on recommendations by Tabachnick and Fidell (2013) and Costello and Osborne (2019). With 861 participants responding to 31 items, the sample-to-item ratio (27.8:1) was greater than the threshold recommended by 5:1 to 10:1 by an order of magnitude. There was adequate homogeneity without excessive redundancy, as inter-item correlations ranged from .13 to .67 (Costello & Osborne, 2019).

Sampling: The sample for Study 1 consisted of 861 bilingual participants (who understood English well), aged 18 to 45 years (*M* = 21.79, *SD* = 4.70), with 28.9% male and 71.1% female. Educationally, 8.7% had completed intermediate education, 85.5% held a bachelor's degree, 5.1% with master's or MPhil, and 0.7% with doctoral degree. In terms of profession, 90.5% were students, 8.6% were employed, and 0.9% were unemployed. Data were collected from universities in Gujranwala and Lahore, Pakistan.

Procedure: This study followed institutional ethical review committee approval, ensuring adherence to the APA's ethical guidelines. Data were collected from 861 participants using informed consent, the 31-item Future Positive Core Beliefs Scale (FPBS) and a demographic questionnaire. Responses were recorded on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). A convenience sampling technique was used to recruit participants from universities in Gujranwala, Faisalabad and Lahore, Pakistan. Once data collection was completed, it was screened for missing values and outliers. Then, exploratory factor analysis (EFA) was conducted in IBM SPSS Statistics (Version 27) to examine the factor structure and refine the FPBS item set.

Results: An EFA was conducted to examine the factor structure of the FPBS. Preliminary tests confirmed data suitability, with a KMO measure of .95 (excellent sampling adequacy; Kaiser, 1974) and a significant

Bartlett's Test of Sphericity ($\chi^2 = 9120.310$, Df = 253, $p < .001$), indicating appropriate item correlations for factor analysis (Bartlett, 1954).

Principal Component Analysis (PCA) with varimax rotation was performed to maximize variance across items (Tabachnick et al., 2013; Hair et al., 2023). Factors with eigenvalues greater than 1 were retained (Kaiser, 1974). The initial PCA identified three factors, explaining 40.67%, 9.75%, and 4.84% of variance, respectively, with a total variance of 55.26%. Various factor solutions (two, three, and four factors) were explored, and items with factor loadings $> .35$ were retained, as this threshold is commonly used in social science research to ensure meaningful factor contributions (Field, 2013). Items with low or cross-loadings were excluded for clarity (Field, 2013; Kline, 2014).

A three-factor solution was the best fit, with 22 retained items and factor loadings ranging from .42 to .80, supporting construct validity (Tabachnick et al., 2013). Communalities above .35 indicate that each item explains a significant portion of the variance in its respective factor, supporting the robustness of the factor structure (Field, 2013), with values ranging from 0.42 to 0.71 (Tabachnick & Fidell, 2013). Communalities above 0.3–0.4 are considered significant, explaining over 30–40% of item variance (Field, 2013; Hair et al., 2023). Given that the cumulative variance explained exceeded 50%, the factor structure was deemed satisfactory (Field, 2013; Tabachnick & Fidell, 2013; Hair et al., 2023). The rotated component matrix (Table 1) presents the final factor loadings and communalities, further validating the identified three-factor model.

Table 1

EFA Provide Three Factor Structure of FPBS (N = 861)

Sr. No.	Items	Component			Communalities	r^{it}
		1	2	3		
1	FPBS1	.68			.51	.61**
2	FPBS2	.69			.50	.56**
3	FPBS3	.64			.52	.66**
4	FPBS4	.55			.47	.65**
5	FPBS6	.71			.58	.65**
6	FPBS8	.69			.54	.60**
7	FPBS9	.71			.59	.67**
8	FPBS11	.57			.45	.62**
9	FPBS12	.73			.59	.63**
10	FPBS13		.73		.62	.64**
11	FPBS14		.80		.71	.66**
12	FPBS15		.76		.61	.59**
13	FPBS16		.68		.57	.65**
14	FPBS17		.64		.57	.63**
15	FPBS22		.65		.54	.55**
16	FPBS23			.70	.65	.71**
17	FPBS24			.42	.42	.64**
18	FPBS25			.59	.50	.60**
19	FPBS26			.70	.60	.66**
20	FPBS27			.68	.63	.71**
21	FPBS28			.54	.49	.65**
22	FPBS31			.60	.51	.65**
Eigen Value		8.95	2.14	1.07		
% Of Variance		40.67	9.75	4.84		
Cumulative %		40.67	50.42	55.26		

Note. Factor Loadings $> .45$, r^{it} = Item total correlation $> .30$

Table 1 presents the factor loadings and communalities for each item, with items grouped under the three factors: Effective, Lovable, and Worthy. Factor loadings greater than 0.35 were retained for their strong

representation of the respective factors. The item-total correlations (r^{it}) ranged from .55 to .71, all well above the commonly accepted threshold of .30 for acceptable item discrimination (Holmbeck & Devine, 2009). This confirms that scale items contribute meaningfully to the overall reliability of the FPBS scale.

Effective

This factor reflects confidence, goal achievement, and resilience. Key items include "I will do my best for a better future" (FPBS 12, .73) and "I will be successful in the future" (FPBS 9, .71), along with "I will reach my goals" (FPBS 6, .71) and "My skills will be polished with experience" (FPBS2, .69). The lowest-loading item, "I will effectively overcome my hardships" (FPS4, .55), still contributes meaningfully. The factor emphasizes success, self-improvement, and perseverance.

Lovable

This factor captures feelings of being loved, forming strong relationships, and self-worth. The highest-loading item is "I will get enough attention in my life" (FPBS 14, .80), followed by "My relationships will be my strength" (FPBS 15, .76) and "I will be more attractive" (FPBS 16, .68). The lowest-loading item, "I will find unconditional love" (FPBS 22, .65), still aligns well. The factor highlights the importance of love, attention, and meaningful connections.

Worthy

This factor emphasizes self-worth and admiration. Key items include "I will be a source of admiration for others" (FPBS 26, .70) and "I will be worthy" (FPBS 23, .70), "I will be a valuable person" (FPBS 27, .68) and "I will be worthy of acceptance" (FPBS 31, .60). The weakest item, "My life's purpose will motivate me" (FPBS 24, .42), may need refinement. The factor underscores purpose, admiration, and personal value.

Overall, the factors exhibit strong coherence. The Effective factor has slightly higher average loadings. Lower-loading items like FPBS 24 (.42) may require revision to enhance construct validity. These findings help refine the measurement tool for assessing effectiveness, lovability, and worthiness domains of future positive core beliefs.

Study 2

Phase 1: CFA

A second round of data collection was conducted using the refined items. The main objective of Study 2 was to establish the psychometric properties of the Future-Positive Core Beliefs Scale (FPBS). The study involved two analytical phases: confirmatory factor analysis (CFA) and item response theory (IRT) modeling. CFA was utilized to assess the structural validity of the scale, while IRT was employed to evaluate the discrimination and threshold parameters of each item.

Sample

The sample for Study 2 consisted of 600 bilingual participants with a mean age of 21.2 years ($SD = 2.24$). The gender distribution was balanced, with 50% male and 50% female participants. Educationally, 75.2% held a bachelor's degree, 17.0% had completed intermediate education, 5.7% had an MS/MPhil, and 2.2% had a Ph.D. The majority were students (84.8%), while 14.0% were employed, and 1.2% were unemployed.

Results

The initial model fit (Model 1) indicated that the Default model had a chi-square value (CMIN) of 785.799 with 206 degrees of freedom (DF) and a p-value of .000, suggesting a substantial deviation from an ideal model fit. The CMIN/DF ratio of 3.815 was acceptable. However, the Goodness of Fit Index (GFI) of .88 was just missing the recommended threshold ($<.90$). Similarly, the Normed Fit Index (NFI) (.876) did not meet the suggested threshold and the Relative Fit Index (RFI) (.86) and the Tucker-Lewis Index (TLI) further highlight poor model fit. However, the Comparative Fit Index (CFI) (.90) and the Root Mean Square Error of Approximation (RMSEA) (.069) remained within the acceptable threshold (see Table 2).

Although model 1 provides decent fit indices, it lacked some parameter values such as GFI, NFI, RFI, and TLI that rectify the need for using modification indices or exclusion of some items. After expert review,

we decided to exclude four items from “effective”, two items from “lovable”, and three items from “worthy” domains. Consequently, extracted significant model 2 as shown in Table 2.

Table 2

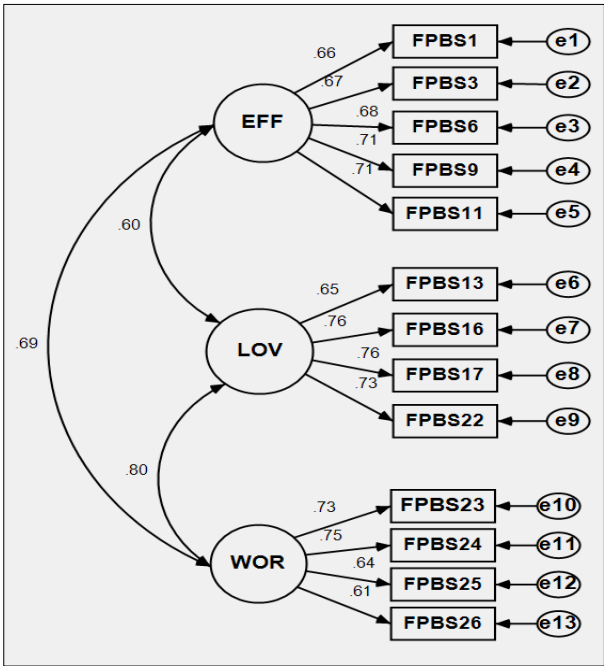
CFA Initial Model Fit Indices (Model 1) of FPBS Required Multiple Items Omission to Achieve Significant Model Fit (Model 2)

	χ^2	Df	P	RMSEA	GFI	NFI	RFI	TLI	CFI
Model 1	785.799	206	.000	.069	.88	.87	.86	.89	.90
Model 2	218.31	62	.00	.061	.95	.93	.91	.93	.95

Model 2 yielded an augmented value of chi-square (CMIN) of 218.31, (DF) 62, and a significant p-value of .00. The CMIN/DF ratio improved to 3.52, reflecting a better fit. GFI was .95, NFI was .93, RFI was .91, TLI was .93 and CFI was .95, collectively supported the adequacy of the model. In lines with these improvements, RMSEA was .06, with a confidence interval of .06 to .07, further confirmed the model improvement. This indicated a significant improvement in model fit indices after the exclusion of items. As shown in Figure 1, CFA results confirm the three-factor structure of FPBS, with significant factor loadings and strong model fit indices, providing a solid foundation for further analysis.

Figure 1

CFA Path Diagram for Final Version of FPBS (N=600)



Note. EFF= Effective Core Beliefs, Lov = Lovable Core Beliefs, WOR= Worthy Core Beliefs

Table 3

FPBS Final Extracted Items with Loading in CFA (N= 600)

Sr. no	Item. no	Items	Factor loading
Factor 1(Effective)			
1.	1	I will succeed with my abilities.	.66
2.	3	I am confident about my better future.	.67
3.	6	I will reach my goals.	.68
4.	9	I will be successful in the future.	.71
5.	11	I will be competent.	.71
Factor 2(Lovable)			
6.	13	I will get lots of love in my life.	.65
7.	16	I will be more attractive.	.76

8.	17	I will be a special person.	.76
9.	22	I will find unconditional love.	.73
Factor 3(Worthy)			
10.	23	I will be worthy.	.73
11.	24	My life’s purpose will motivate me.	.75
12.	25	I will keep helping others.	.64
13.	26	I will be a source of admiration for others.	.61

Note. Item loading >.60

Table 3 presents the final items of the Future Positive Core Beliefs Scale (FPBS), extracted through Confirmatory Factor Analysis (CFA) on a sample of 600 participants. The analysis validated a three-factor structure: Effective, Lovable, and Worthy, highlighting their relationships with respective items and factor loadings. All items showed acceptable to strong loadings (.61 to .76), confirming the reliability and validity of the scale. This structure effectively represents distinct domains of positive core beliefs about the future.

Factor 1: Effective

The first factor, “Effective”, includes five items (1, 3, 6, 9, and 11) reflecting beliefs about one's competence, abilities, and potential for future success. Key items include 'I will succeed with my abilities' (Item 1, .66) and 'I will be successful in the future' (Item 9, .71). This factor captures self-efficacy and confidence in achieving goals.

Factor 2: Lovable

The second factor, "Lovable," consists of four items (Items 13, 16, 17, and 22) representing beliefs about receiving love, affection, and acceptance in the future. Factor loadings range from .65 (Item 13: "I will get lots of love in my life") to .76 (Items 16 and 17: "I will be more attractive," and "I will be a special person"). This factor highlights expectations of forming meaningful and loving relationships.

Factor 3: Worthy

The third factor, "Worthy," includes four items (Items 23, 24, 25, and 26) related to personal value, purpose, and contributing to others. Factor loadings ranged from .61 (Item 26: "I will be a source of admiration for others") to .75 (Item 24: "My life’s purpose will motivate me"). This factor reflects beliefs about self-worth, purpose, and the motivation to make a positive impact.

Overall, the CFA results confirm the three-factor structure of the FPBS, with each factor representing distinct yet interconnected dimensions of positive core beliefs about the future. The high factor loadings across all items indicate strong reliability and validity, demonstrating that the scale effectively captures core beliefs about effectiveness, lovable, and worthiness in shaping one's future outlook.

Phase 2 IRT

In Phase 2, an Item Response Theory (IRT) analysis using the graded response model examined the item parameters of the FPBS. As shown in Table 4, Discrimination parameters between 1.34 and 2.01 denote that all items effectively differentiate between individuals with varying levels of positive future core beliefs, with higher values indicating greater sensitivity, indicating that all items effectively differentiated respondents at varying levels of positive future beliefs. Higher discrimination values suggest that the items are sensitive in distinguishing individuals with different levels of this latent trait. The threshold estimates followed an expected ordinal pattern, meaning that as respondents' core beliefs about the future became more positive, they were more likely to select higher response categories on the five-point Likert scale. The relatively small standard errors for parameter estimates demonstrate a high degree of precision in measurement, further enhancing confidence in the validity of the item parameters, which were derived from a 600-participant calibration sample. The IRT results confirm the one-dimensionality of the scale, indicating that a single underlying factor: positive future core beliefs, adequately represents the data. This finding aligns with the assumptions of the graded response model, allowing for the derivation of precise ability scores for future respondents and ensuring that the FPBS accurately measures positive future core beliefs across its full range.

Table 4
IRT Item Discrimination and Threshold Estimates for FPBS Items(N=600)

Item	Discrimination (SE)	Threshold 1 (SE)	Threshold 2 (SE)	Threshold 3 (SE)	Threshold 4 (SE)
FPBS 1	1.43 (0.13)	-3.35 (0.30)	-3.08 (0.26)	-1.66 (0.14)	0.28 (0.08)
FPBS 3	1.46 (0.13)	-3.27 (0.29)	-2.70 (0.22)	-1.42 (0.12)	0.46 (0.08)
FPBS 6	1.34 (0.12)	-3.78 (0.37)	-3.29 (0.30)	-1.84 (0.16)	0.28 (0.08)
FPBS 9	1.49 (0.14)	-3.62 (0.34)	-3.17 (0.28)	-1.90 (0.16)	0.07 (0.08)
FPBS 11	1.56 (0.13)	-3.73 (0.35)	-2.75 (0.22)	-1.46 (0.12)	0.50 (0.08)
FPBS 13	1.66 (0.13)	-2.68 (0.21)	-1.89 (0.14)	-0.78 (0.08)	0.69 (0.08)
FPBS 16	2.01 (0.16)	-2.73 (0.21)	-2.06 (0.14)	-0.77 (0.08)	0.67 (0.08)
FPBS 17	1.82 (0.14)	-2.72 (0.20)	-1.93 (0.14)	-0.62 (0.08)	0.62 (0.08)
FPBS 22	1.83 (0.14)	-2.52 (0.18)	-1.72 (0.12)	-0.48 (0.07)	0.63 (0.08)
FPBS 23	2.11 (0.17)	-2.86 (0.22)	-2.14 (0.14)	-1.07 (0.09)	0.52 (0.07)
FPBS 24	1.86 (0.15)	-3.34 (0.28)	-2.56 (0.19)	-1.14 (0.10)	0.57 (0.08)
FPBS 25	1.43 (0.14)	-3.89 (0.40)	-3.27 (0.31)	-2.11 (0.18)	0.02 (0.08)
FPBS 26	1.52 (0.13)	-4.21 (0.48)	-3.13 (0.28)	-1.34 (0.12)	0.57 (0.08)

Psychometric Properties

As shown in Table 5, comparisons between Study 1 (N=861) and Study 2 (N=600) indicate that the overall FPBS, as well as each of its scales, maintained strong reliability despite the item reduction in Study 2, supporting the factor structure identified in CFA while improving efficiency.

Table 5
Comparison of Cronbach's Alpha Level of Study 1 (N=861) and Study 2 (N=600)

After EFA (N=861)						After CFA (N=600)		
Scale	k	α	M	SD	K	α	M	SD
FPBS	23	.93	92.35	12.86	13	.90	53.3	7.47
EFF	10	.88	37.72	5.39	5	.81	21.1	3.12
LOV	6	.86	22.41	4.64	4	.81	15.5	3.26
WOR	7	.86	32	4.91	4	.78	16.7	2.50

Note. k=number of items, M=Mean, SD=Standard deviation, α = Cronbach's alpha level

Table 5 compares Cronbach's alpha levels, mean scores (M), and standard deviations (SD) for the Future Positive Core Beliefs Scale (FPBS) and its subscales (EFF, LOV, WOR) across Study 1 (N=861) and Study 2 (N=600). After EFA, FPBS showed high reliability (α = .93, 23 items), which remained strong after CFA (α =.90, 13 items). Subscales also maintained good reliability (EFF: α = .88 to .81; LOV: α = .86 to .81; WOR: α =.86 to .78) despite item reductions. The results confirm robust internal consistency and support the scale's factor structure even after concise 13 items FPBS.

Study 3

The 13-item Future Positive Core Beliefs Scale (FPBS) was validated by comparing it with the Negative Core Beliefs Inventory (NCBI), the Depression Anxiety Stress Scales-21 (DASS-21), and the Subjective Happiness Scale (SHS) (Beck et al., 1990; Lovibond & Lovibond, 1995; Lyubomirsky & Lepper, 1999). The NCBI measures negative core beliefs, DASS-21 assesses emotional distress, and SHS evaluates overall happiness. These comparisons aimed to test the FPBS's validity in measuring positive core beliefs about the future. The correlations between these scales helped confirm the FPBS's effectiveness in capturing future optimism.

Sample

The demographic data for Study 3, which included 270 bilingual participants, showed a mean age of 20.3 years ($SD = 2.02$). The majority were female (78.9%), single (97.8%), and students (97.0%). Most participants had completed a bachelor's degree (82.2%) and lived in urban areas (53.3%) within nuclear families (72.2%).

Instruments

SHS

The 4-item Subjective Happiness Scale (Lyubomirsky & Lepper, 1999) rates overall happiness on a 7-point Likert scale from 1 (unhappy) to 7 (happy). Lyubomirsky and Lepper (1999) reported well to excellent internal consistency, with alpha coefficients ranging from 0.79 to 0.94.

DASS 21

The 21-item Depression Anxiety Stress Scales 21 (DASS 21; Lovibond & Lovibond, 1995) is a well-established self-report measure assessing symptoms of depression, anxiety, and stress. It contains 3 subscales of 7 items each rated on a 4-point severity/frequency scale. Initial validation by Lovibond and Lovibond (1995) found excellent internal consistency, with coefficient alphas ranging from 0.81 to 0.91.

NCBI

The 32-item Negative core beliefs inventory (NCBI; Osmo et al., 2018) measures negative core beliefs about self and others based on Beck's cognitive model. It has already been translated and validated into Urdu (Mujitaba & Ahmad, 2024), minimizing its chances of cultural bias. It consists of a 21-item self-scale and an 11-item other-scale, using a 4-point Likert response format. The reported reliability is above 0.84.

Procedure

A sample of 270 bilingual individuals participated in the study. Participants completed the FPBS along with the NCBI, DASS-21, and SHS. The same inclusion and exclusion criteria as in previous studies (Studies 1 and 2) were applied to ensure appropriate sampling characteristics. Demographic information was also collected. This sample size allowed for a psychometric evaluation of the FPBS and an examination of convergent and discriminant validity through relationships with related and unrelated constructs.

Results

As shown in Table 6, most correlations between the measured constructs were statistically significant ($p < .001$), aligning with theoretical assumed associations.

Convergent Validity

Convergent validity was assessed through correlations between theoretically related constructs of subjective happiness. The FPBS strongly correlated with its subcomponents: Effectiveness ($r = .86$, $p < .001$), Lovability ($r = .85$, $p < .001$), and Worthiness ($r = .88$, $p < .001$), reinforcing its link to adaptive self-perceptions. The Subjective Happiness Scale (SHS) showed a moderate positive correlation with FPBS ($r = .38$, $p < .001$) and was also correlated with its subcomponents: Effectiveness ($r = .30$, $p < .001$), Lovability ($r = .35$, $p < .001$), and Worthiness ($r = .33$, $p < .001$). These results suggest that individuals reporting greater subjective happiness tend to hold more positive future-oriented core beliefs.

Discriminant Validity

Discriminant validity was assessed by analyzing inter-correlations among FPBS, SHS, the Negative Core Beliefs Inventory (NCBI), and the Depression Anxiety Stress Scale (DASS). The SHS showed negative correlations with Depression ($r = -.17$, $p < .001$), Anxiety ($r = -.13$, $p < .05$), and Stress ($r = -.14$, $p < .05$), reinforcing its role in psychological well-being.

FPBS exhibited negative correlations with Depression ($r = -.35$, $p < .001$), Anxiety ($r = -.29$, $p < .001$), Stress ($r = -.30$, $p < .001$), and Negative Core Beliefs ($r = -.37$, $p < .001$), suggesting that individuals with stronger future positive core beliefs tend to experience lower levels of psychological distress and maladaptive thinking.

The DASS subscales were highly interrelated, with Depression strongly correlating with Anxiety ($r=.93$, $p < .001$), Depression with Stress ($r = .93$, $p < .001$), and Anxiety with Stress ($r = .92$, $p < .001$), reflecting their strong association in capturing different but related aspects of emotional distress.

Additionally, the NCBI exhibited strong negative correlations with FPBS, particularly for NCBI-Self ($r=-.37$, $p < .001$) and NCBI-Other ($r = -.28$, $p < .001$), indicating that maladaptive core beliefs are inversely linked to positive future core beliefs. These findings support FPBS's construct validity, highlighting its link to adaptive self-perceptions and its negative association with emotional distress (depression, anxiety and stress) and negative core beliefs.

Table 6
Correlation Matrix Displaying Positive Correlation Between FPBS and SHS and Negative Correlation with DASS and NCBI (N=270)

	1	2	3	4	5	6	7	8	9	10	11	12
FPBS	1	.86**	.85**	.88**	.38**	-.35**	-.37**	-.29**	-.30**	-.37**	-.37**	-.28**
Eff.		1	.56**	.65**	.30**	-.37**	-.38**	-.33**	-.33**	-.36**	-.38**	-.26**
Lov.			1	.64**	.35**	-.21**	-.22**	-.19**	-.17**	-.28**	-.25**	-.26**
Wor.				1	.33**	-.31**	-.37**	-.24**	-.27**	-.31**	-.34**	-.20**
SHS					1	-.17**	-.21**	-.13*	-.14*	-.20**	-.18**	-.19**
DASS						1	.93**	.92**	.93**	.65**	.68**	.47**
DEP							1	.76**	.79**	.62**	.65**	.43**
ANX								1	.79**	.57**	.60**	.41**
STR									1	.62**	.63**	.46**
NCBI										1	.95**	.86**
Self											1	.66**
Other												1

Note: FPBS = Future Positive Belief Scale, Eff. = Effectiveness, Lov. = Lovability, Wor. = Worthiness, SHS = Subjective Happiness Scale, DASS = Depression Anxiety Stress Scale, DEP = Depression, ANX = Anxiety, STR = Stress, NCBI = Negative Core Beliefs Inventory, NCBI-Self = Negative Core Beliefs (Self), NCBI-Other = Negative Core Beliefs (Others), *** $p < .001$

Discussion

The current study aimed to develop and validate the Future-Positive Core Beliefs Scale (FPBS), a psychometrically robust tool for measuring future-oriented positive beliefs across multiple domains. These results are consistent with the existing literature regarding the core of cognitive schemas in determining psychosocial well-being and psychological resilience (Beck et al. 1985, Seligman & Csikszentmihalyi 2000). The FPBS had a multidimensional structure, with 3 main factors: Effective, lovable, and worthy as central to future-oriented positive core beliefs. These factors are consistent with established constructs in psychological literature important for self-belief and adjustment (Bandura, 1977) and are consistent with previous research showing that self-views supportive of positive affect and social adjustment are promoted through reinforcing (Myers, 2000; Crocker & Park, 2004).

Exploratory Factor Analysis (EFA) revealed a three-factor structure accounting for 54.02% of the total variance. This variance is quite moderate and, considering the well-established thresholds for social science research remains acceptable since a variance below 50% is considered acceptable. This is due to the homogeneity of the sample according to Field (2018). The scale's structure was further validated by Confirmatory Factor Analysis (CFA), as all the items loaded acceptably on their respective factors. Finally, the fit indices of the model (CFI = .93, TLI = .92, RMSEA = .07) indicate an acceptable fit of the model, similar to that of other psychometric tools (Hu and Bentler, 1999; Mulaik et al., 1989). The FPBS was also

highly internally consistent (Cronbach's alpha = .90 for the overall scale) and provided essential evidence of reliability as a measure of future-oriented positive core beliefs. Moreover, FPBS demonstrated strong convergent and discriminant validity, exhibiting a positive correlation with subjective happiness and a negative correlation with depression anxiety, stress and negative core beliefs.

FPBS mainly measures future core beliefs related to self, covering the following key domains compelling, lovable, and worthy, perfectly aligning with Beck's theoretical explanation (Beck, 2021) and previous understanding (Osimo et al., 2018). It also reflects a broader understanding of future-oriented positive beliefs compared to previously developed scales e.g., future time perspective scale (FTPS; Pyszczynski et al., 1999). Notably, the FBPS demonstrates excellent internal consistency, distinguishing it from the FTPS, which falls within an acceptable range of Cronbach's alpha. Thus, the FPBS can be considered a psychometrically sound scale that corresponds to a moderate to excellent range of Cronbach alpha level.

FBPS was developed and validated on bilingual participants who could understand English well, making it a more accessible English-speaking population as yet limited reliable and valid scales available on future-oriented positive core beliefs, which are precisely aligned with Beck's theoretical explanation. In addition, the development and validation of the FPBS in the English language help to evaluate the implication of the Beck theoretical concept in the Pakistani cultural context. This is supported by excellent psychometric properties of scale, as we have found meaningful results with the framework of classical test theory (Crocker & Algina, 1986) such as EFA and CFA results. Furthermore, Item response theory also reinforced the evaluation of FPBS on Pakistani normative samples. More importantly, FPBS internal consistency remains consistent across various data, even reducing in almost fifty percent of items.

In addition, convergent and discriminant validity have theoretical relevance for instance multiple authors (Beck, 2021) have agreed that individuals with positive core beliefs in the present are more likely to develop positive future-oriented core beliefs. Although our study did not establish a direct relationship between them. However, the strong negative correlation between FPBS and negative core beliefs and depression, anxiety and stress, validates Beck's theoretical model, and existing literature (Beck 1979; Seligman and Csikszentmihalyi 2000), which suggests a negative association between positive and negative core beliefs. In contrast, it is well documented that people with positive core beliefs are likely optimistic about their future and have positive core beliefs about the future.

Nevertheless, the FPBS is considered a novel tool for research and clinical application. It can be used in clinical settings to identify people with future-oriented positive core beliefs and therefore tailor interventions to improve resilience and well-being. The scale can also be used in nonclinical settings to inform organizational trained programs to promote optimism and productivity (Luthans et al., 2006).

Despite the sound mythological approach adapted for FPBS development, we acknowledge a few limitations of our study. Firstly, we could only approach some education institutes for sample selection, yet its external validity might be questionable unless tested on diverse samples. Secondly, only inclusion of participants with English proficiency, may not reflect the true cultural representation of future oriented positive core beliefs. Therefore, we recommend that FPBS should be tested on different populations and its translation in indigenous language will improve its external validity.

Conclusion

Overall, the development and validation of the FPBS—through the application of the classic test theory, item response theory, and assessment of convergent and discriminant validity—address a critical gap in the assessment of future-oriented positive beliefs by offering a comprehensive and culture-sensitive instrument. The findings of this study provide a solid platform for the application of the FPBS in various research and practical contexts, including clinical assessments, organizational training, and resilience-building activities. Furthermore, future validation of FPBS in varying samples and cultures can reveal its cross-cultural applicability, maximizing the usefulness of FPBS in psychological research and practice.

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APPENDIX

Future-Positive Core Belief Scale (FPBS)

This scale determines the positive core belief about the future. Try to read each statement carefully and select the option which best represents how much you agree with it. For each of the statements, write your response based on the given response options:

- 1 = Strongly Disagree
- 2 = Disagree
- 3 = Neutral
- 4 = Agree
- 5= Strongly Agree

Table 1

Sr.no	Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	I will succeed with my abilities.	1	2	3	4	5
2	I am confident about my better future.	1	2	3	4	5
3	I will reach my goals.	1	2	3	4	5
4	I will be successful in the future.	1	2	3	4	5
5	I will be competent.	1	2	3	4	5
6	I will get lots of love in my life.	1	2	3	4	5
7	I will be more attractive.	1	2	3	4	5
8	I will be a special person.	1	2	3	4	5
9	I will find unconditional love.	1	2	3	4	5
10	I will be worthy.	1	2	3	4	5
11	My life’s purpose will motivate me.	1	2	3	4	5
12	I will keep helping others.	1	2	3	4	5
13	I will be a source of admiration for others.	1	2	3	4	5

Domains: The Future-Positive Core Beliefs Scale (FPBS) consists of three key domains: Effective (Eff.), Lovable (Lov.), and Worthy (Wor.) core beliefs.

- 1. **Effective (Items 1–5):** Demonstrates confidence in abilities, goal achievement, and resilience.
- 2. **Lovable (Items 6–9):** Captures expectations of love, strong relationships, and self-worth in social contexts.
- 3. **Worthy (Items 10–13):** Assesses self-worth, purpose, and the motivation to be valued and admired.

Scoring: As the higher score indicates a strong presence of positive core beliefs, therefore, the score should be added to determine the level of positive core beliefs.

Table 01

Cut off Scores and Levels of Future Positive Core Belief Scale (FPBS)

		Raw Scores			
Percentile	Level	FPBS	Effective	Lovable	Worthy
<25	Developing Positive Beliefs	<48	<19	<13	<15
50	Stable Positive Beliefs	53	22	16	17
75	Strengthening Positive Beliefs	60	24	18	19
>75	Strong Positive Beliefs	>60	>24	>18	>19