

Perceived Self-Efficacy as a Moderator of the Relationship between Life Skills and Mental Health in Pakistani Adolescents with Non-Communicable Diseases (NCDs): A Cross-Sectional Study

Misbah Ashfaq & Umm-e-Siddiqa

Abstract

Background: Adolescents diagnosed with NCDs face a dual burden of chronic physical pathology and heightened risks for emotional and behavioral problems (EBPs). According to Social Cognitive Theory, psychosocial competencies like life skills and perceived self-efficacy (PSE) are critical determinants of adaptive coping and emotional regulation in this population. This study examined the predictive utility of life skills and PSE on EBPs and evaluated the moderating influence of PSE on the relationship between life skills and psychological outcomes. Moreover, this study evaluated the construct validity of the Urdu version of the Life Skills Scale Short (LSS-S) within a clinical population of Pakistani adolescents.

Method: A purposive sampling technique was used based on a cross-sectional research design. Two hundred adolescents (n=111 female, 55.5%; n=89 male, 44.5%) aged 15–19 with diagnosed NCDs were recruited from the departments of Fauji Foundation Hospital, Rawalpindi, Pakistan. Psychometric assessments included the Life Skills Scale Short (LSS-S), the Strengths and Difficulties Questionnaire (SDQ) Youth Self-Report, and the General Self-Efficacy Scale.

Results: This study analysis indicated that higher levels of life skills were significantly associated with increased PSE and a reduction in EBPs ($p < .01$). Regression analysis confirmed that life skills significantly predicted fewer emotional and behavioral difficulties, explaining 40% of the variance ($R^2 = .40, p < .001$). Moderation analysis revealed a significant interaction effect ($\beta = .004, p < .03$), indicating that PSE serves as a critical buffer. Specifically, higher PSE strengthens the protective effect of life skills, leading to a more pronounced decrease in EBPs compared to those with lower self-efficacy.

Conclusions: These findings underscore the synergistic role of life skills and self-efficacy in promoting psychological resilience among adolescents with chronic illnesses. The results advocate for the integration of self-efficacy-based life skills interventions into standard clinical care to mitigate psychological distress and enhance long-term health outcomes in pediatric NCD management.

Keywords: Life skills, emotional and behavioral problems, perceived self-efficacy, non-communicable diseases.

1. MS scholar, Department of Psychology, Foundation University Islamabad, Pakistan.
2. Lecturer, Department of Psychology, Foundation University Islamabad, Pakistan.

Correspondence concerning this article should be addressed to Misbah Ashfaq, Department of Psychology, Foundation University Islamabad, Pakistan. Email: misbaah.ashfaq@gmail.com. This scholarly work, made accessible through an Open Access framework, operates under the auspices of a Creative Commons Attribution 4.0 International License. This license facilitates broad utilization, provided that due credit is accorded to the original authors and the source is duly acknowledged. Moreover, adherence to the guidelines set forth by the Committee on Publication Ethics (COPE) ensures the integrity of the publication process. For further details regarding the licensing terms, please refer to the following link: <http://creativecommons.org/licenses/by/4.0/>.

Background

The global burden of NCDs is shifting toward younger populations, particularly in the Eastern Mediterranean Region, where a 17% increase in NCD fatalities is projected over the next decade (Akkawi et al., 2020). Beyond physical pathology, adolescents with NCDs face profound psychological vulnerabilities, often manifesting as complex emotional and behavioral problems (EBPs) (Ramesh & Kosalram, 2023). While traditional clinical approaches focus on symptom management, there is an urgent need to shift toward "psychosocial competence" frameworks that equip adolescents with the cognitive tools necessary to mitigate the psychological fallout of chronic illness.

Life skills defined by the World Health Organization as adaptive interpersonal and intrapersonal abilities serve as a primary defense against the stressors inherent in long-term illness (WHO, 2014). These skills facilitate emotional regulation and proactive problem-solving, thereby reducing the risk of anxiety, depression, and maladaptive behaviors (Mangrulkar et al., 2001). However, the efficacy of life skills in reducing EBPs is not uniform; it is likely contingent upon an individual's internal belief system.

Central to this cognitive architecture is perceived self-efficacy (PSE). Grounded in Social Cognitive Theory (SCT), PSE represents an individual's conviction in their capacity to execute actions required to manage prospective situations (Bandura, 1997). While life skills provide the *tools* for adaptation, PSE provides the *agency* to use them. Current literature suggests that PSE functions as a cognitive buffer; adolescents with high self-efficacy interpret failure as a surmountable challenge rather than a terminal deficit, which reinforces persistence and emotional stability (Cattelino et al., 2021; Tak et al., 2017). Conversely, deficient life skills coupled with low PSE may exacerbate

vulnerability to EBPs during the identity-forming years of adolescence (Aqeel et al., 2024; Bibi & Aqeel, 2025; Noor & Aqeel, 2025).

Despite the established importance of these constructs, a significant research gap exists in non-Western, collectivist contexts. Most NCD-related mental health research remains concentrated in high-income countries, leaving a scarcity of data on Pakistani adolescents who navigate unique socio-cultural and systemic healthcare challenges (Akseer et al., 2020). Furthermore, the specific mechanism through which PSE moderates the protective effect of life skills on EBPs remains under-explored in pediatric NCD management.

The present study was aligned with the mandates of the United Nations Sustainable Development Goal 3 (SDG 3) with the urgent need for pediatric psychological resilience, this study interrogates the complex interplay between life skills, perceived self-efficacy (PSE), and emotional and behavioral problems (EBPs) within a clinical cohort of Pakistani adolescents navigating non-communicable diseases (NCDs). We posit a moderation framework grounded in Social Cognitive Theory, hypothesizing that while life skills serve as a primary negative predictor of EBPs (H2) and a robust correlate of PSE (H1), the ultimate efficacy of these psychosocial competencies is conditioned by the individual's level of self-efficacy. Specifically, this investigation aims to quantify the predictive utility of these constructs and determine if PSE functions as a critical catalytic buffer (H3), whereby the protective influence of life skills against psychological maladjustment is significantly augmented in adolescents possessing higher self-beliefs. By addressing these objectives, the study seeks to bridge the empirical gap in non-Western clinical settings and provide a theoretically grounded basis for integrated, self-efficacy enhanced life skills interventions.

Method

Research Design

A clinical, cross-sectional research design was utilized to examine the predictive and moderating mechanisms of psychosocial competencies in adolescents with chronic illnesses. The secondary objective of this analysis was to evaluate the construct validity and structural integrity of the Urdu version of the Life Skills Scale Short (LSS-S) within a clinical population of Pakistani adolescents.

Participants

A purposive sampling technique was used based on a cross-sectional research design. Two hundred adolescents ($n=111$ female, 55.5%; $n=89$ male, 44.5%) aged 15–19 with diagnosed NCDs were recruited from the departments of Fauji Foundation Hospital, Rawalpindi, Pakistan. The age range was restricted to late adolescence (15–19 years; $M=17.2$, $SD=1.4$) to ensure developmental homogeneity. Participants were selected based on a confirmed clinical diagnosis of an NCD including Type 1 diabetes, pediatric oncology, chronic respiratory conditions, or cardiovascular disorders with a minimum illness duration of one year. To ensure data integrity and minimize confounding variables, the study excluded individuals with comorbid neurodevelopmental or psychiatric disorders (e.g., ASD, intellectual disability, or psychosis) and those experiencing acute medical crises during the assessment period. Literacy in Urdu was required for all participants to ensure the valid completion of the self-report psychometric battery.

Translation and Cross-Cultural Adaptation

The Life Skills Scale-Short (LSS-S) was subjected to a rigorous cross-cultural adaptation process following the gold-standard forward-back translation protocol (Brislin, 1970) to ensure linguistic and conceptual equivalence in Urdu.

Phase I: Forward Translation: Two bilingual subject matter experts (MS Clinical Psychology) and two linguists (MPhil English Linguistics) independently translated the scale from English to Urdu, prioritizing semantic equivalence over literal translation.

Phase II: Synthesis (Committee Approach): An expert committee, comprising a PhD senior psychologist and two MPhil researchers, reconciled the forward translations to resolve linguistic discrepancies and ensure conceptual clarity.

Phase III: Back Translation: Four independent bilingual scholars, blinded to the original English version, back-translated the Urdu draft into English to identify any potential shifts in meaning.

Phase IV: Finalization: The expert committee compared the back-translated versions with the original English instrument. Minor adjustments were made to ensure the Urdu items maintained the theoretical essence of the construct.

Phase V: Pilot Testing: A feasibility trial was conducted with 10 adolescents to evaluate the clarity, readability, and cultural relevance of the items. Participants

reported no ambiguity, confirming the instrument's face validity.

Instruments

A researcher-developed demographic survey was administered in Urdu to capture essential participant characteristics. Variables included age, biological sex, birth order, sibling count, family structure (nuclear vs. extended), and clinical history (duration of disease and treatment).

Life Skills Scale-Short (LSS-S; Ozer & Bertelsen, 2020): This 20-item instrument assesses generic life skills on a 7-point Likert scale. High scores represent superior psychosocial competence. In the current study, the Urdu version demonstrated excellent internal consistency ($\alpha = .94$).

Strengths and Difficulties Questionnaire (SDQ; Goodman et al., 1997): Emotional and behavioral problems (EBPs) were assessed using the 25-item Youth Self-Report version. Items are scored on a 3-point Likert scale across five sub-domains. The scale yielded a reliable Cronbach's alpha of .73.

General Self-Efficacy Scale (GSE; Schwarzer, 1995): A 10-item measure of optimistic self-beliefs regarding stress management, utilizing a 4-point Likert scale. Scores range from 10 to 40, with higher values indicating robust self-efficacy. The scale demonstrated strong internal consistency ($\alpha = .86$).

Procedure

The study protocol was approved by the Institutional Review Board (IRB) of Foundation University Islamabad and formal permission was secured from the medical superintendents of the Oncology, Pulmonology, Cardiovascular, and Pediatric departments at Fauji Foundation Hospital, Rawalpindi. Data collection adhered strictly to the American Psychological Association (APA) ethical guidelines and the Declaration of Helsinki. Two hundred adolescents with diagnosed NCDs were recruited from the departments of Fauji Foundation Hospital, Rawalpindi, Pakistan. Informed consent was obtained from all participants, with additional parental consent secured for minors (under 18 years). Participants were briefed on the voluntary nature of the study, their right to withdraw without clinical prejudice, and the strict confidentiality of their data. The instruments were administered in a quiet environment in the presence of the researcher to provide clarification where necessary.

Statistical Analysis Plan

Statistical analyses were performed using IBM SPSS (v.26) and AMOS (v.24). Construct validity was established via Confirmatory Factor Analysis (CFA), while Pearson correlations and multiple regression analyses were utilized to evaluate initial associations and the hypothesized moderation effects, respectively. Predictive utility and the hypothesized buffering mechanism were evaluated through multiple regression and Hayes' PROCESS Macro (Model 1), employing 5,000 bootstrap resamples to validate the significant moderating role of perceived self-efficacy.

Results

The demographic and clinical characteristics of the study cohort (N=200) are summarized in Table 1. The demographic and clinical characteristics of the study cohort (N=200) are summarized in Table 1. The sample was relatively balanced regarding gender, with a slight majority of female participants (n=111, 55.5). The mean age of the participants was 17.1 years (SD=1.38), representing a late adolescent developmental stage. Clinically, the participants had been managing non-communicable diseases for an average of 8.5 years (SD=6.69), indicating significant chronic exposure to illness during their formative years. The diagnostic distribution was led by respiratory diseases (38.5%) and diabetes (36.0%), followed by pediatric oncology (17.5%) and cardiovascular disorders (8.0%). Regarding family structure, the majority of the sample resided in nuclear family systems (55.0%), with a significant portion belonging to households with 3–5 siblings (65.0%).

The Pearson correlation analysis (Table 2) revealed robust and statistically significant associations between all primary constructs in the hypothesized directions. Life skills (LS) demonstrated a strong negative correlation with emotional and behavioral problems (EBP) ($r = -.63^{**}$, $p < .01$), indicating that higher psychosocial competence is associated with a marked reduction in psychological maladjustment. Conversely, LS exhibited a potent positive association with perceived self-efficacy (PSE) ($r = .77^{**}$, $p < .01$), suggesting that the acquisition of life skills is intrinsically linked to an adolescent's sense of mastery and agency. Consistent with Social Cognitive Theory, PSE was significantly and negatively associated with ($r = -.56^{**}$, $p < .01$). This reinforces the premise that self-beliefs serve as a critical protective factor against emotional distress in the context of chronic illness. The high correlation between LS and PSE ($r = .77$) provides empirical justification for the subsequent moderation analysis, evaluating whether PSE conditionalizes the impact of life skills on behavioral outcomes.

A linear regression analysis was conducted with life skills as the independent variable and emotional and behavioral problems (EBP) as the outcome to evaluate the predictive utility of psychosocial competencies. The results, summarized in Table 3, indicate that the model accounted for a substantial 40% of the total variance in EBP ($R^2 = .40$, $F(1,198) = 135.6$, $p < .001$). The analysis revealed that life skills are a robust negative predictor of EBP ($\beta = -.63$, $t = -11.6$, $p < .001$). Specifically, for every unit increase in life skills, there is a corresponding decrease in the severity of emotional and behavioral difficulties ($\beta = -.12$, $SE = .011$). These findings suggest that the acquisition of life skills provides a critical protective framework, significantly reducing psychological maladjustment in adolescents managing NCDs.

Moderation Analysis

To test the hypothesis that perceived self-efficacy (PSE) conditionalizes the impact of life skills (LS) on emotional and behavioral problems (EBP), a moderation analysis was conducted using Hayes' PROCESS Macro (Model 1). The overall model was statistically significant, accounting for 43% of the variance in EBP ($R^2 = .43$, $F = 49.77$, $p < .001$).

As shown in Table 4, the interaction term (LS * PSE) was statistically significant ($B = .004$, $SE = .002$, $t = 2.15$, $p = .032$), with a 95% confidence. The inclusion of the interaction term yielded a significant increase in explained variance ($R^2 = .01$, $p < .05$). These findings confirm that PSE functions as a significant moderator between psychosocial competencies and psychological outcomes. Specifically, the positive sign of the interaction coefficient suggests a "buffering" or "interference" effect, where the protective influence of life skills on reducing EBPs is significantly altered at varying levels of perceived self-efficacy. This indicates that while life skills are a primary predictor of mental health, their effectiveness is optimized or constrained by the adolescent's subjective belief in their own coping capabilities.

The simple slopes plot (Figure 1) elucidates the nature of the interaction between life skills and perceived self-efficacy. While life skills serve as a robust predictor of psychological health accounting for 40% of the variance in emotional and behavioral outcomes this relationship is significantly moderated by the adolescent's level of self-efficacy.

Specifically, the negative association between life skills and emotional problems is most pronounced (indicated by a steeper slope) among adolescents with low perceived self-efficacy. This suggests that for individuals with lower internal confidence, the acquisition of life skills serves as a critical compensatory mechanism. Conversely, for those with high self-efficacy, the slope is less steep, indicating that while life skills remain beneficial, their incremental impact is attenuated as high self-beliefs already provide a baseline of psychological resilience.

In Table 5, the construct validity of the LSS-S was evaluated using CFA to ensure its structural integrity within the specific context of Pakistani adolescents with NCDs. The objective was to confirm that the observed data adequately fit the hypothesized latent factor structure. The goodness-of-fit indices for the measurement models are presented in Table 5. The initial testing of the theoretical model (Model 1) yielded a poor fit, characterized by a significant Chi-square and indices well below acceptable thresholds ($CFI = .52$, $RMSEA = .19$). To address these discrepancies, modification indices were consulted, leading to the development of Model 2. This refined model accounted for localized areas of strain (e.g., error covariances between semantically similar items), resulting in a psychometrically robust fit. Model 2 demonstrated excellent alignment with the data, yielding a Comparative Fit Index (CFI) of .97 and a Root Mean Square Error of Approximation (RMSEA) of .05. These values meet the stringent criteria suggested by Hu and Bentler (1999), confirming that the LSS-S possesses strong construct validity and is a reliable instrument for this clinical population.

Figure 2 presents the standardized path coefficients for the refined measurement model (Model 2) of the Life Skills Scale-Short. All observed variables (items) demonstrated statistically significant factor loadings on their respective latent construct ($p < .001$). The standardized loadings ranged from .58 to .89, surpassing the recommended threshold of .40 for clinical instruments. These robust coefficients indicate that each item contributes significantly to the measurement of life skills, providing further evidence for the structural integrity and internal consistency of the scale within the target population.

Table 1
Demographic Characteristics of the sample (N=200)

Variables	Categories	<i>f</i> (%)
Age	M = 17.1 , SD = 1.38	
Duration of Disease	M = 8.5, SD = 6.69	
Gender		
Girl		111 (55.5%)
Boy		89 (44.5%)
Birth Order		
First Born		52 (26.0%)
Middle Born		83 (41.5%)
Last Born		65 (32.5%)
Number of Siblings		
1-2		30 (15.0%)
3-5		130 (65.0%)
6 and more		40 (20.0%)
Family System		
Joint		90 (45.0%)
Nuclear		110 (55.0%)
Diseases		
Cancer		35 (17.5%)
Diabetes		72 (36.0%)
Respiratory Diseases		77 (38.5%)
Cardiovascular Diseases		16 (8.0%)

Note. M = Mean, SD = Standard Deviation, f = Frequency, % = Percentage.

Table 2

Descriptive statistics and Pearson correlation coefficients among life skills, emotional and behavioral problems, and perceived self-efficacy in adolescents with NCDs (N= 200).

Variables	M	SD	1	2	3
1. LS	70.8	24.52	-	-.63**	.77**
2. EBP	15.68	4.89		-	-.56**
3. PSE	30.01	6.96			-

Note. LS = Life Skills; EBP = Emotional and Behavioral Problems; PSE = Perceived Self Efficacy. ** $p < .01$

Table 3

Regression Coefficients of life skills on emotional and behavioral problems in adolescents with NCDs (N= 200).

Predictor	B	SE B	B	t	p
Constant	24.68	.818	-	30.1	.001
Life Skills	-.12	.011	-.638	-11.6	.001

Note. B = Unstandardized Coefficient; β = Standardize coefficient; SE = Standard Error

Table 4

Moderating role of perceived self-efficacy between life skills and emotional and behavioral problems among adolescents with non-communicable diseases (N = 200).

Predictor	B	SE	T	p	LLCI	ULCI
Constant	27.88	5.02	5.54	<.0000	17.97	37.79
Life Skills	-.208	.053	-3.90	<.0001	-.313	-.103
Perceived Self-Efficacy	-.202	.163	-1.23	.2167	-.525	.119
Life Skills \times Self-Efficacy	.0043	.002	2.15	.0327	.0004	.0083

Note. $R^2 = .43$, $\Delta R^2 = .01$, $F = 49.77$, $p < 0.05$; CI = Confidence Interval; LL = Lower Limit; UL = Upper Limit

Figure 1. Moderating role of perceived self-efficacy in the relationship between life skills and emotional and behavioral problems in adolescents with NCDs (N=200).

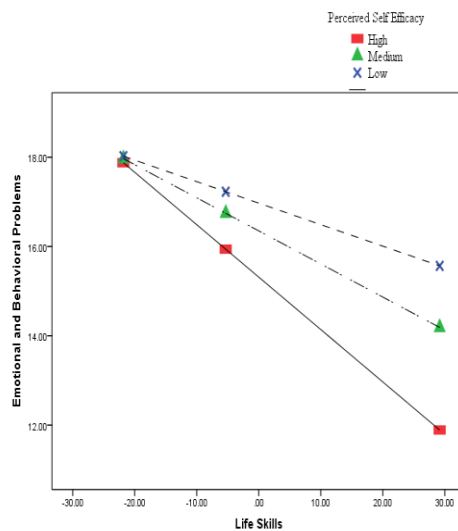


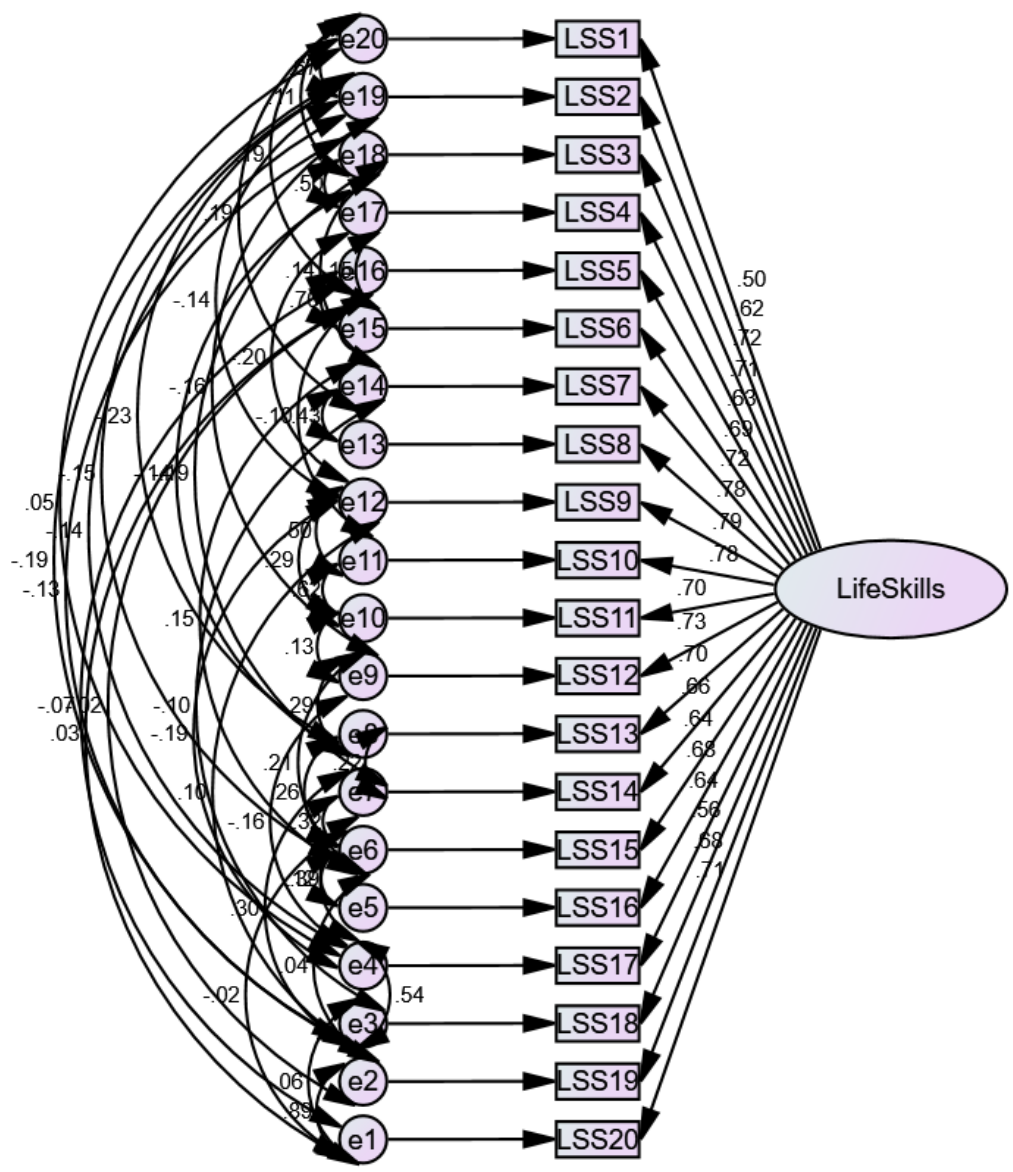
Table 5

Fit indices of Confirmatory Factor Analysis for Life Skills Scale Short in Pakistani Adolescents with NCDs (N = 200).

Model	χ^2	df	NFI	CFI	RMSEA
Model 1	1518.78	171	.49	.52	.19
Model 2	205.363	122	.95	.97	.05

Note. χ^2 = Chi-square; df = Degrees of Freedom; NFI= normed fit index; CFI= Comparative Fit Index; RMSEA=Root Mean Square Error of Approximation

Figure 2. Unidimensional Confirmatory Factor Analysis (CFA) Model for the Life Skills Scale (N = 200)



The error terms and covariances depicted in the model represent the adjustments made to achieve optimal parsimony and goodness-of-fit.

Discussion

The present study elucidated the complex interplay between psychosocial competencies and psychological maladjustment in a clinical cohort of Pakistani adolescents managing non-communicable diseases (NCDs). By examining the relationship between life skills, perceived self-efficacy (PSE), and emotional and behavioral problems (EBPs), this research provides a theoretically grounded understanding of resilience in the context of chronic illness.

The results confirmed a robust positive correlation between life skills and PSE ($r = .77, p < .01$), supporting the hypothesis that psychosocial competencies are foundational to a sense of agency. This aligns with Bandura's Social Cognitive Theory, suggesting that as adolescents master core life skills such as problem-solving and stress management they develop the subjective conviction necessary to navigate the complexities of long-term medical treatment. In clinical settings, these skills facilitate a shift from passive patient roles to proactive health management (Mutiso et al., 2017).

In line with our second objective, linear regression identified life skills as a significant negative predictor of EBPs ($B = -.63, p < .001$), accounting for 40% of the total variance. These findings resonate with contemporary systematic reviews indicating that life skills interventions significantly mitigate internalizing and externalizing symptoms (Sherif et al., 2023). For adolescents in hospital settings, these skills function as a cognitive shield, preventing the transition from medical stress to clinically significant psychological distress.

A pivotal finding was the significant moderating role of PSE in the relationship between life skills and EBPs. The interaction effect ($p < .05$) suggests that the protective influence of life skills is conditional upon an adolescent's self-belief. Specifically, the negative association between life skills and EBPs was most pronounced among adolescents with lower self-efficacy, where skills functioned as a compensatory resource. Conversely, for those with higher PSE, a "baseline resilience" effect was observed. This suggests that while life skills are essential, their effectiveness in reducing behavioral problems is optimized when coupled with high self-efficacy.

A vital objective was the formal translation and validation of the Life Skills Scale-Short (LSS-S) into Urdu. The CFA results provided robust evidence for its structural integrity ($CFI = .97, RMSEA = .05$), following the gold-standard five-stage forward-back translation protocol (Brislin, 1970). This successful validation provides regional researchers with a culturally resonant and psychometrically sound tool, filling a significant gap in the local psychometric literature.

Novel Contribution

This study provides a rare empirical examination of the psychosocial landscape of Pakistani adolescents, a population significantly underrepresented in global pediatric psychology. It is among the first in the region to move beyond basic prevalence rates by identifying the specific moderating mechanism of perceived self-efficacy in the

relationship between life skills and psychological maladjustment within a clinical NCD cohort. By validating a culturally adapted Urdu version of the Life Skills Scale-Short, this research offers a psychometrically sound tool for local practitioners. Ultimately, the findings bridge the gap between clinical practice and policy by aligning psychological resilience with Sustainable Development Goal 3 (SDG 3), providing actionable evidence for integrating mental health resources into Pakistan's universal health coverage framework.

Limitations and Recommendations for Future Research

Despite its significant contributions, several methodological constraints warrant consideration. First, the cross-sectional design precludes definitive causal inferences regarding the directionality of the observed relationships; while theory suggests life skills foster resilience, longitudinal or experimental designs are required to establish temporal precedence. Second, the study utilized a purposive sample ($N = 200$) from a specific clinical setting, which may limit the generalizability of the findings. Future research should employ multi-center, stratified sampling across diverse geographical and socioeconomic regions of Pakistan.

Furthermore, the reliance on self-report measures introduces potential social desirability and common-method biases. Subsequent studies should incorporate multi-informant assessments (e.g., involving clinicians or caregivers) and objective behavioral markers to enhance diagnostic depth. Finally, while the Life Skills Scale-Short underwent rigorous translation, subtle cultural nuances in linguistic interpretation may still exist. Future investigations should evaluate the efficacy of targeted life-skills interventions specifically tailored for adolescents managing the unique stressors of chronic non-communicable diseases.

Study Implications

The current study can serve as a basis upon which awareness programs integrating mental health resources can be developed to educate young people regarding illness management and adolescent development. This study also contributes towards psychoeducation in helping parents to understand how EBPs can impact the mental health of their children, which can help to undo the effect of disease from worsening. The current study will also help mental health professionals to obtain factual knowledge about the prevalence of EBPs in adolescents with non-communicable diseases in Pakistan, through which they can identify the seriousness of its effects and develop programs that could help young people to improve their perceived self-efficacy which will help to improve their coping ability. According to the findings, enhancing life skills interventions especially those that focus on self-efficacy can significantly enhance coping, treatment compliance, and general quality of life for young individuals with non-communicable diseases. Interventions may lessen psychological distress while simultaneously promoting resilience and proactive health behaviors by increasing their self-assurance in handling health-related difficulties. This emphasizes how crucial it is to incorporate self-efficacy-based life skills programs into clinical treatment plans, community health initiatives, and school curricula in order to promote the long-term wellbeing of young people dealing with the burden of chronic illness.

Conclusion

This study provides robust empirical evidence that life skills and perceived self-efficacy (PSE) are critical determinants of psychological well-being in adolescents managing non-communicable diseases (NCDs). The results indicate that while higher levels of psychosocial competence are intrinsically associated with a significant reduction in emotional and behavioral maladjustment, this relationship is not uniform. A central contribution of this research is the identification of the significant moderating role of perceived self-efficacy. As a vital psychological buffer, PSE conditionalizes the protective utility of life skills: while life skills are universally beneficial, their impact in mitigating emotional and behavioral symptoms is most pronounced in the context of varying levels of self-belief. These findings underscore the necessity of moving beyond traditional biomedical models toward an integrated biopsychosocial approach. To improve the long-term mental health outcomes of youth facing the burden of chronic illness, clinical interventions must be designed to simultaneously enhance tangible life skills and foster the subjective conviction of personal agency. Future longitudinal research is warranted to further validate these pathways across broader clinical cohorts in Pakistan.

**Received: 14 January, 2026: Accepted: April 13, 2026:
Published online: April 20, 2026**

Ethical Consideration

The study was approved by Department of Psychology, Foundation University Islamabad (FUI). Consent Form was taken before taking data and participants were asked to take voluntary participation.

Acknowledgement

The author thanks to Department of Psychology, Foundation University Islamabad (FUI).

Availability of data and materials

The data sets used and analyzed during the current study are available from the corresponding author on reasonable request.

Authors' contributions/Author details

M. Ashfaq and U. Siddiq were responsible for the study's conceptualization, methodology, and coordination. They managed the implementation of the protocol and data collection for all participants. The final manuscript has been reviewed and approved by all authors.

Corresponding author

Correspondence to Ashfaq, M.
misbaah.ashfaq@gmail.com

References

- Aboobaker, S., Jangam, K. V., Sagar, K. J. V., Amaresha, A. C., & Jose, A. (2019). Predictors of emotional and behavioral problems among Indian adolescents: A clinic-based study. *Asian Journal of Psychiatry*, *39*, 104–109. <https://doi.org/10.1016/j.ajp.2018.12.002>
- Akkawi, A., Khabsa, J., Noubani, A., Jamali, S., Sibai, A. M., & Lotfi, T. (2020). Non-communicable diseases research output in the Eastern Mediterranean region: An overview of systematic reviews. *BMC Medical Research Methodology*, *20*(1), Article 94. <https://doi.org/10.1186/s12874-020-00924-0>
- Akseer, N., Mehta, S., Wigle, J., Chera, R., Brickman, Z. J., Al-Gashm, S., Sorichetti, B., Vandermorris, A., Hipgrave, D. B., Schwalbe, N., & Bhutta, Z. A. (2020). Non-communicable diseases among adolescents: Current status, determinants, interventions and policies. *BMC Public Health*, *20*(1), Article 1908. <https://doi.org/10.1186/s12889-020-09988-5>
- Aqeel, M., Rehna, T., Akhtar, R., & Abbas, J. (2024). Evaluating the psychometric properties of the Multidimensional Externalising Behaviour Disorders Inventory in Pakistani truant students. *Nature-Nurture Journal of Psychology*, *4*(2), 9–21. <https://doi.org/10.58585/nnjp.v4i2.09>
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. W. H. Freeman. ISBN: 978-0716728504
- Bibi, N., & Aqeel, M. (2025). Effects of experimentally induced visual and auditory hallucinations on cognitive and emotional functioning in schizophrenia patients and healthy individuals: The modulatory role of placebo intervention. *Nature-Nurture Journal of Psychology*, *5*(2), 41–58. <https://doi.org/10.53107/nnjp.v5i2.104>
- Brislin, R. W. (1970). Back-translation for cross-cultural research. *Journal of Cross-Cultural Psychology*, *1*(3), 185–216. <https://doi.org/10.1177/135910457000100301>
- Caraway, K., Tucker, C. M., Reinke, W. M., & Hall, C. (2003). Self-efficacy, goal orientation, and fear of failure as predictors of school engagement in high school students. *Psychology in the Schools*, *40*(4), 417–427. <https://doi.org/10.1002/pits.10092>
- Cattellino, E., Testa, S., Calandri, E., Fedi, A., Gattino, S., Graziano, F., Rollero, C., & Begotti, T. (2021). Self-efficacy, subjective well-being and positive coping in adolescents with regard to Covid-19 lockdown. *Current Psychology*, *42*(22), 18362–18374. <https://doi.org/10.1007/s12144-021-01965-4>
- Compas, B. E., Howell, D. C., Phares, V., Williams, R. A., & Giunta, C. T. (1989). Risk factors for emotional/behavioral problems in young adolescents: A prospective analysis of adolescent and parental stress and symptoms. *Journal of Consulting and Clinical Psychology*, *57*(6), 732–740. <https://doi.org/10.1037/0022-006x.57.6.732>
- Goodman, R. (1997). The Strengths and Difficulties Questionnaire: A research note. *Journal of Child Psychology and Psychiatry*, *38*(5), 581–586. <https://doi.org/10.1111/j.1469-7610.1997.tb01545.x>
- Hafeez, A., Dangel, W. J., Ostroff, S. M., Kiani, A. G., Glenn, S. D., Abbas, J., Afzal, M. S., Afzal, S., Ahmad, S., Ahmed, A., Ahmed, H., Ali, L., Ali, M., Ali, Z., Arshad, M., Ashraf, T., Bhutta, Z. A., Bibi, S., Butt, Z. A., & Das, J. K. (2023). The state of health in Pakistan and its provinces and territories, 1990–2019: A systematic analysis for the Global Burden of Disease Study 2019. *The Lancet Global Health*, *11*(2), e229–e243. [https://doi.org/10.1016/S2214-109X\(22\)00497-1](https://doi.org/10.1016/S2214-109X(22)00497-1)
- Hoskins, B., & Liu, L. (2019). *Measuring life skills in the context of life skills and citizenship education in the Middle East and North Africa*. UNICEF. https://www.unicef.org/mena/media/7011/file/Measuring%20life%20skills_web.pdf.pdf
- Icenogle, G., Steinberg, L., Duell, N., Chein, J., Chang, L., Chaudhary, N., Di Giunta, L., Dodge, K. A., Fanti, K. A., Lansford, J. E., Oburu, P., Pastorelli, C., Skinner, A. T., Sorbring, E., Tapanya, S., Uribe Tirado, L. M., Alampay, L. P., Al-Hassan, S. M., Takash, H. M. S., & Bacchini, D. (2019). Adolescents’ cognitive capacity reaches adult levels prior to their psychosocial maturity: Evidence for a “maturity gap” in a multinational, cross-sectional sample. *Law and Human Behavior*, *43*(1), 69–85. <https://doi.org/10.1037/lhb0000315>
- Kortesoja, L., Vainikainen, M. P., Hotulainen, R., Rimpelä, A., Dobewall, H., Lindfors, P., Karvonen, S., & Merikanto, I. (2020). Bidirectional relationship of sleep with emotional and behavioral difficulties: A five-year follow-up of Finnish adolescents. *Journal of Youth and Adolescence*, *49*(6), 1277–1291. <https://doi.org/10.1007/s10964-020-01203-3>
- Labrague, L. J. (2021). Psychological resilience, coping behaviours, and social support among healthcare workers during the COVID-19 pandemic: A systematic review of quantitative studies. *Journal of Nursing Management*, *29*(7), 1893–1905. <https://doi.org/10.1111/jonm.13336>
- Liu, Y. C., & Hung, Y. Y. (2016). Self-efficacy as the moderator: Exploring driving factors of perceived social support for mainland Chinese students in Taiwan. *Computers in Human Behavior*, *64*, 455–462. <https://doi.org/10.1016/j.chb.2016.07.018>
- MacLean, A., Hunt, K., & Sweeting, H. (2012). Symptoms of mental health problems: Children’s and adolescents’ understandings and implications for gender differences in help seeking. *Children & Society*, *27*(3), 161–173. <https://doi.org/10.1111/j.1099-0860.2011.00406.x>
- Mangrulkar, L., Whitman, C. V., & Posner, M. (2001). *Life skills approach to child and adolescent healthy human development*. Pan American Health Organization. <http://elcolegiodehidalgo.edu.mx/descargas/sensibilizacion/Life%20Skills%20Approach.pdf>
- Minas, H., Tsutsumi, A., Izutsu, T., Goetzke, K., & Thornicroft, G. (2015). Comprehensive SDG goal and targets for non-communicable diseases and mental health. *International Journal of Mental Health Systems*, *9*(1), Article 12. <https://doi.org/10.1186/s13033-015-0003-0>
- Mutiso, V., Tele, A., Musyimi, C., Gitonga, I., Musau, A., & Ndetei, D. (2017). Effectiveness of life skills education and psychoeducation on emotional and behavioral problems among adolescents in institutional care in Kenya: A longitudinal study. *Child and Adolescent Mental Health*, *23*(4), 351–358. <https://doi.org/10.1111/camh.12232>
- Noor, J., & Aqeel, M. (2025). Neural correlates of placebo analgesia and emotion regulation: A coordinate-based neuroimaging meta-analysis. *Nature-Nurture Journal of Psychology*, *5*(2), 17–40. <https://doi.org/10.53107/nnjp.v5i2.124>
- Ozer, S., & Bertelsen, P. (2020). Developing and validating a short scale assessing generic life skills. *Psychological Studies*, *65*(3), 327–335. <https://doi.org/10.1007/s12646-020-00560-0>

- Ramesh, S., Kosalram, K., & Srinivas, V. (2023). Non-communicable diseases and their impact on depression, anxiety, and stress among the geriatric population residing in old age homes in Chennai, Tamil Nadu. *Journal of Family Medicine and Primary Care*, *12*(9), 1931–1936. https://doi.org/10.4103/jfmpc.jfmpc_801_23
- Schwarzer, R. (2014). *Self-efficacy: Thought control of action*. Taylor & Francis.
- Schwarzer, R., & Renner, B. (2000). Social-cognitive predictors of health behavior: Action self-efficacy and coping self-efficacy. *Health Psychology*, *19*(5), 487–495. <https://doi.org/10.1037/0278-6133.19.5.487>
- Schwarzer, R., Jerusalem, M., Weinman, J., & Johnston, M. (1995). *Generalized Self-Efficacy Scale*. https://www.researchgate.net/publication/304930542_Generalized_Self-Efficacy_Scale
- Sherif, Y., Zaid, A., Awang, H., Mokhtar, S. A., Mohammadzadeh, M., & Alimuddin, A. S. (2023). Effectiveness of life skills intervention on depression, anxiety and stress among children and adolescents: A systematic review. *The Malaysian Journal of Medical Sciences*, *30*(3), 42–59. <https://doi.org/10.21315/mjms2023.30.3.4>
- Sherif, Y., Zaid, A., Said, S. M., Alimuddin, A. S., Awang, H., & Mohammadzadeh, M. (2024). Effect of online intervention based on life skills for mental health, self-efficacy and coping skills among Arab adolescents in the Klang Valley, Malaysia: A cluster randomised controlled trial protocol. *PLOS ONE*, *19*(2), e0298627. <https://doi.org/10.1371/journal.pone.0298627>
- Singla, D. R., Waqas, A., Hamdani, S. U., Suleman, N., Zafar, S. W., Zill-e-Huma, Saeed, K., Servili, C., & Rahman, A. (2020). Implementation and effectiveness of adolescent life skills programs in low- and middle-income countries: A critical review and meta-analysis. *Behaviour Research and Therapy*, *130*, Article 103402. <https://doi.org/10.1016/j.brat.2019.04.010>
- Suppiej, A., Longo, I., & Pettoello-Mantovani, M. (2025). The pivotal role of mental health in child and adolescent development. *Global Pediatrics*, *13*, Article 100277. <https://doi.org/10.1016/j.gped.2025.100277>
- Tak, Y. R., Brunwasser, S. M., Lichtwarck-Aschoff, A., & Engels, R. C. M. E. (2017). The prospective associations between self-efficacy and depressive symptoms from early to middle adolescence: A cross-lagged model. *Journal of Youth and Adolescence*, *46*(4), 744–756. <https://doi.org/10.1007/s10964-016-0614-z>
- Thornton, C. P., Li, M., Yeh, C. H., & Ruble, K. (2021). Self-efficacy in symptom management for adolescents and young adults with cancer: A systematic review. *Supportive Care in Cancer*, *29*(6), 2903–2917. <https://doi.org/10.1007/s00520-020-05960-6>
- Torres, D. G., Romero, A. M. O., & Fuentes-Ramírez, A. (2025). Life skills that promote school health in adolescents: A concept analysis. *BMC Public Health*, *25*(1), Article 23. <https://doi.org/10.1186/s12889-025-24532-z>

Publisher's Note

The Nature-Nurture publishing group remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.