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The Relationship Between Perceived Stress and Cognitive Flexibility in Adults: The Mediating Role of Life Satisfaction and Cognitive Distortions

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ABSTRACT
This study investigated whether life satisfaction and cognitive distortions mediate the relationship between perceived stress and cognitive flexibility in adults, with particular attention to implications for psychological well-being and clinical practice. This research article reports a quantitative empirical study employing a cross-sectional survey design and regression-based bootstrapped parallel mediation analysis. Using a cross-sectional design, data were collected from 330 adults aged 18 to 63 years recruited from community and healthcare settings. Mediation analyses were performed using regression-based bootstrapping procedures. Perceived stress showed a significant and negative association with cognitive flexibility, representing a medium effect size. Higher levels of perceived stress predicted lower life satisfaction and higher levels of cognitive distortions, both of which were in turn linked to reduced cognitive flexibility. The combined indirect effects accounted for approximately forty percent of the overall association between stress and cognitive flexibility, indicating substantial mediating influence. Specifically, mediation through life satisfaction and cognitive distortions demonstrated meaningful contributions to the model. These findings highlight the importance of addressing subjective well-being and maladaptive cognitive patterns in stress-related interventions. Supporting individuals in enhancing cognitive flexibility may serve as a protective mechanism against the adverse psychological and health consequences of stress, and may also contribute to improved treatment adherence and chronic disease management within clinical contexts. By jointly testing a protective mediator (life satisfaction) and a risk mediator (cognitive distortions) within one model, the study extends prior single-mediator approaches and offers an integrated explanation of the perceived stress–cognitive flexibility relationship.

KEYWORDS
Perceived stress, cognitive flexibility, life satisfaction, cognitive distortions, health psychology

INTRODUCTION

Stress-related processes have been widely examined in relation to both psychological and physical health. Perceived stress is a central factor in understanding these outcomes, particularly regarding emotional and cognitive functioning (McEwen et al., 2015). In this context, perceived stress reflects the degree to which individuals appraise their daily demands as unpredictable, uncontrollable, and overwhelming. Such appraisals are associated with a range of cognitive and affective outcomes and provide a useful framework for understanding stress-related changes in adaptation and well-being. Similarly, a study conducted among employees in the sports industry reported a negative, low-level relationship between perceived stress and job performance, indicating that higher perceived stress was associated with lower functional outcomes (Avunduk, 2021).

Within this framework, cognitive flexibility—a fundamental cognitive adaptation mechanism—is conceptualized as an individual's capacity for mental adaptation in response to environmental demands, serving as a protective factor for mental health and well-being (Lange & Dewitte, 2019). Accordingly, identifying psychological mechanisms that account for this association is important for both theory and intervention. Cognitive distortions, conversely, involve the automatic application of unrealistic, distorted, and dysfunctional thought patterns during event evaluation (Mackintosh et al., 2013; Prochwicz et al., 2020).

This study examines whether life satisfaction and cognitive distortions statistically account for indirect associations between perceived stress and cognitive flexibility within a theory-driven model. The research addresses the impact of perceived stress on cognitive flexibility through a novel model explicating the separate and combined mediating effects of life satisfaction and cognitive distortions.

Although the link between perceived stress and cognitive flexibility has been explored, the roles of mediators such as life satisfaction and cognitive distortions remain underexamined in culturally diverse contexts (Kalia & Knauft, 2020). The current study addresses this limitation by testing an integrated model within a Turkish adult sample.

The study's significance lies in addressing a gap within existing literature: while research has predominantly examined direct relationships between perceived stress and cognitive flexibility, the cognitive and emotional processes mediating this interaction remain understudied. Although some investigations have examined these variables jointly, research comprehensively addressing subjective and mental processes such as life satisfaction and cognitive distortions within unified models remains limited.

This research presents a novel theoretical model for understanding the internal dynamics that shape individuals' cognitive flexibility capacity when confronting stress. The primary contribution of this study lies in integrating a protective mediator (life satisfaction) and a risk mediator (cognitive distortions) within a single parallel mediation framework linking perceived stress to cognitive flexibility. Although each construct has been examined previously, testing their simultaneous indirect effects within the same model provides a more comprehensive

account of how stress relates to flexible thinking and constitutes a meaningful extension of the existing literature. By simultaneously examining mental processes, including life satisfaction and cognitive distortions, and their transformative effects on stress impact, this investigation reveals mediating mechanisms affecting cognitive flexibility in a multidimensional manner. The findings are expected to provide both theoretical contributions and concrete foundations for interventions designed to strengthen individuals' stress-coping capacities.

However, it is also important to acknowledge that the relationship between life satisfaction and cognitive flexibility may not be strictly unidirectional. Evidence indicates that higher cognitive flexibility can enhance life satisfaction by promoting adaptive coping, more effective cognitive reappraisal, and reduced rumination (Genç, 2024). Thus, the reverse causal direction—cognitive flexibility → life satisfaction—also represents a theoretically plausible pathway. This bidirectional possibility should be considered when interpreting the current model.

Nevertheless, the present study is based on a cross-sectional design; therefore, the proposed mediation paths should be interpreted as theory-driven statistical mechanisms rather than evidence of causal ordering. Alternative temporal directions are theoretically plausible, such as cognitive flexibility enhancing life satisfaction or stress-related cognitive rigidity reciprocally reinforcing cognitive distortions. Accordingly, the mediation terminology used in this study reflects indirect statistical associations consistent with the proposed framework, while acknowledging that longitudinal or experimental designs are required to establish causal direction and temporal sequencing among the variables.

Cognitive Flexibility

Cognitive flexibility is commonly defined as the capacity to shift and adapt between different concepts, perspectives, and strategies in response to changing situational demands, and is considered a core component of executive functioning that supports effective problem-solving and decision-making (Hirt et al., 2008; Shields et al., 2016; Yin et al., 2020). Higher cognitive flexibility has been linked to better adaptation under stress, as it enables individuals to restructure their cognitive frameworks, generate alternative solutions, and employ more functional coping strategies (Meymand et al., 2021; Rudnik et al., 2025). In this context, individuals with higher life satisfaction may be more likely to maintain cognitive flexibility by engaging in solution-focused and adaptive behaviors during stressful encounters (Goldfarb et al., 2017; Qehaja & Kida, 2025). This functional aspect of cognitive flexibility also provides an important link between basic cognitive processes and therapeutic change mechanisms.

In CBT and REBT frameworks, cognitive flexibility is viewed as a central mechanism that enables individuals to challenge irrational beliefs, generate alternative interpretations, and adopt more adaptive coping strategies. Thus, cognitive flexibility functions not only as a cognitive skill but also as a core therapeutic process within cognitive-behavioral interventions (Beck, 2011; Ellis & Dryden, 2007).

Perceived Stress

Perceived stress refers to individuals' subjective evaluation of daily life demands and the extent to which these demands exceed their coping resources. Higher perceived stress has been associated with impairments in attention, memory, problem-solving, and flexible thinking, partly through stress-related physiological responses that disrupt cognitive functioning (Feng et al., 2020; Gao et al., 2025; Neymvari et al., 2024; Lin et al., 2022). Such disruptions can make everyday demands feel more difficult to manage, thereby shaping broader evaluations of one's life and thinking patterns. Elevated perceived stress is also linked to lower life satisfaction and more frequent cognitive distortions, which further hinder realistic appraisal of events and may exacerbate rigid, non-adaptive cognitive responses (Goldfarb et al., 2017; Han et al., 2019; Knauft et al., 2021).

Life Satisfaction

Life satisfaction constitutes a subjective well-being indicator reflecting individuals' overall positive life evaluation (Bougherra et al., 2023). Higher life satisfaction correlates with positive outcomes including enhanced physical health, robust social connections, and psychological equilibrium (Asali et al., 2019; Haim-Nachum & Levy-Gigi, 2021). Individual traits and psychological coping mechanisms play a critical role in shaping life satisfaction.

Individuals possessing resilience and effective coping skills typically report elevated life satisfaction levels, as demonstrated in recent empirical studies (Zhu & Deng, 2023). This pattern suggests that adaptive coping resources may strengthen individuals' global evaluations of their lives, particularly under demanding or stressful circumstances. Consequently, interventions designed to enhance life satisfaction can positively impact both mental health and cognitive functioning (Hayatbini et al., 2021; Javed et al., 2023).

Within the perceived stress-cognitive flexibility relationship, life satisfaction functions as a fundamental psychological resource by influencing stress perception and subsequent cognitive flexibility responses (Canale et al., 2019; Deng et al., 2024; Li et al., 2022). Despite life satisfaction's supportive role in stress management, certain mental processes can amplify stress impact and complicate cognitive adaptation, with cognitive distortions representing prominent examples of such processes (Shields et al., 2016; Spencer et al., 2024).

From a Rational-Emotive Behavior Therapy (REBT) perspective, perceived stress represents the activating event (A), while cognitive distortions reflect irrational beliefs (B) that shape emotional and behavioral consequences. Cognitive flexibility corresponds to the disputation and alternative interpretation processes (D–E), through which individuals generate more adaptive beliefs. Therefore, the proposed mediation model—perceived stress → cognitive distortions → cognitive flexibility—is theoretically consistent with REBT's ABC framework and highlights why cognitive distortions are essential for understanding stress-related decreases in cognitive flexibility (Ellis, 1994; Ellis & Dryden, 2007).

In this mapping, life satisfaction can be conceptualized as a protective resource that may buffer the impact of stress appraisals, whereas cognitive distortions represent a risk mechanism

that can intensify rigid interpretations. Cognitive flexibility, in turn, reflects the capacity to dispute maladaptive appraisals and generate alternative, more adaptive interpretations. Therefore, testing life satisfaction and cognitive distortions simultaneously as parallel mediators provides an integrated, REBT-consistent explanation of how perceived stress relates to cognitive flexibility.

Cognitive Distortions

Cognitive distortions, such as overgeneralization, catastrophizing, and dichotomous thinking, impair flexible thinking and intensify stress responses by preventing individuals from forming balanced and realistic appraisals of events (Akman, 2024; Irani et al., 2023; Neymvari et al., 2024). These maladaptive thought patterns have been shown to function as mediators in stress-related psychological dysfunction, shaping how stress is perceived and limiting the cognitive resources available for adaptive coping (Bangasser & Valentino, 2014; Fabio et al., 2020; Rudnik et al., 2025; Shields et al., 2017). This perspective highlights why cognitive distortions are considered central mechanisms through which stress influences cognitive functioning.

Cognitive Flexibility and Perceived Stress Interface

Cognitive flexibility represents individuals' capacity to modify strategies in response to environmental demands and transition between different cognitive frameworks (Shields et al., 2016). Research consistently demonstrates that perceived stress adversely affects this cognitive capacity through neurobiological pathways, including elevated cortisol levels that impede flexible thinking and compromise problem-solving abilities (Feng et al., 2020; Gao et al., 2025). This association carries important implications for psychological adaptability (Shields et al., 2016). Accordingly, understanding this interaction is essential for explaining how stress-related processes may constrain individuals’ adaptive cognitive responses.

Life Satisfaction as a Health-Protective Resource

Life satisfaction functions as both a health outcome and a protective psychological resource within stress-health relationships (Bougherra et al., 2023). Its buffering role helps preserve cognitive flexibility under stress (Goldfarb et al., 2017; Javed et al., 2023). This protective effect enables individuals to maintain cognitive flexibility during stressful health encounters, facilitating adaptive coping strategies and treatment adherence. From this perspective, life satisfaction can be conceptualized as a psychological resource that supports resilience in the face of stress.

Cognitive Distortions as Health Risk Factors

Cognitive distortions represent systematic thinking fallacies that compromise both mental health and physical well-being by intensifying stress responses and limiting adaptive coping (Bardak et al., 2024). These distorted thought patterns compromise individuals' mental flexibility and stress adaptation capacities (Akman, 2024; Bardak et al., 2024). Addressing these distortions through cognitive restructuring techniques enhances both cognitive flexibility and health outcomes. This view underscores the importance of targeting distorted thinking patterns in interventions designed to improve stress-related cognitive functioning.

Theoretical Framework and Research Model

This investigation employs a comprehensive theoretical model examining the potential mediating roles of life satisfaction and cognitive distortions within perceived stress-cognitive flexibility relationships. The model analyzes internal psychological processes that shape individuals' cognitive flexibility capacity in response to stress (Song & Kim, 2025). The model focuses on both protective and risk-related mediating variables affecting the stress–flexibility link.

This model addresses a critical gap in the literature by simultaneously examining protective factors (life satisfaction) and risk factors (cognitive distortions) that influence the stress-cognition relationship in health contexts (Spencer et al., 2024).

The proposed framework operates through three interconnected pathways: (1) direct effects of perceived stress on cognitive flexibility, (2) protective mediation through life satisfaction, and (3) detrimental mediation through cognitive distortions that amplify stress effects (Yıldırım et al., 2024).

Within this framework, perceived stress functions as a primary external factor affecting cognitive adaptability. This influence can generate cognitive dysfunctions that challenge flexible thinking and coherent mental processing (Feng et al., 2020; Gao et al., 2025; Neymvari et al., 2024; Lin et al., 2022).

Life satisfaction serves as an internal protective resource, mitigating these effects. Higher life satisfaction provides protective buffering against stress's negative consequences while supporting flexible, solution-oriented thought pattern development (Javed et al., 2023; Karataş & Tagay, 2017).

Cognitive distortions represent mental processes that disrupt this relationship by limiting flexible thinking capacity. Cognitive distortions, including catastrophizing, personalization, and overgeneralization—frequently observed during stressful events—generate mental rigidity by preventing flexible thinking (Mackintosh et al., 2013; Prochwicz et al., 2020; Shields et al., 2017).

The model explicates stress effects through both direct pathways and mediating mechanisms: protective mediators (life satisfaction) and disruptive mediators (cognitive distortions). This framework provides a multilayered explanation of stress-resilience relationships by addressing both enhancing and compromising mediating pathways (Cheng et al., 2014; Demirezen & Ötken, 2022). The model aims to contribute theoretical knowledge while establishing foundations for practical psychological intervention development.

Importantly, the proposed model integrates both protective and risk-related psychological processes within a single framework. While life satisfaction may preserve cognitive flexibility by supporting adaptive coping and motivational resources, cognitive distortions may restrict flexibility by promoting rigid and threat-focused interpretations. Considering these mechanisms together provides a more comprehensive explanation of how stress influences cognitive functioning and offers clearer implications for intervention design.

Objectives and Rationale. Building on cognitive-behavioral and REBT-informed accounts of stress appraisal, the present study aimed to clarify how perceived stress relates to cognitive flexibility by testing two theoretically distinct pathways within a single parallel mediation model. Specifically, we examined a protective pathway via life satisfaction (a subjective well-being resource) and a risk pathway via cognitive distortions (maladaptive appraisal tendencies). Integrating these mediators in one model addresses a gap in prior work that has typically examined single mediators in isolation and provides a more clinically informative framework for interventions that simultaneously strengthen well-being resources while reducing distorted thinking patterns.

The Effect of Perceived Stress on Cognitive Flexibility

The perceived stress–cognitive flexibility interaction represents a critical research domain. Studies consistently demonstrate that elevated perceived stress is associated with reduced cognitive flexibility, partly due to impairments in working memory, problem-solving, and attentional control (Feng et al., 2020; Neymvari et al., 2024; Shields et al., 2016). Acute and chronic stress can limit individuals' ability to shift perspectives and generate alternative solutions, thereby increasing cognitive rigidity and reducing adaptive coping capacity (Chaby et al., 2019; Durairaja & Fendt, 2020).

Stress response physiological foundations—including elevated cortisol levels—adversely affect cognitive flexibility (Doğan, 2013; Mehr et al., 2023). Interventions targeting effective stress management can mitigate perceived stress's negative effects on cognitive flexibility, enhancing individuals' challenge-coping abilities (Passel et al., 2025).

The Mediating Role of Life Satisfaction

Life satisfaction demonstrates a significant mediating influence within psychological theories, substantially affecting cognitive functions and emotional health (Javed et al., 2023; Shields et al., 2016). Research consistently demonstrates that individuals with higher life satisfaction perform more effectively on flexibility-requiring cognitive tasks and experience reduced negative emotion or stressor impact (Nair et al., 2022; Neymvari et al., 2024).

Individuals with elevated life satisfaction adopt more positive challenge-coping strategies, preventing stress-associated cognitive rigidity. This protective effect indicates that life satisfaction serves as an important buffer, enabling cognitive flexibility maintenance even under intense stress conditions (Genç, 2024; Nair et al., 2022). These findings suggest that increasing life satisfaction can enhance thought and behavior flexibility by supporting adaptive cognitive processes (Javed et al., 2023).

Life satisfaction enhancement interventions significantly contribute to cognitive flexibility development across diverse populations (Chaby et al., 2019; Ram et al., 2022). Given the complex interactions among life satisfaction, perceived stress, and cognitive flexibility, strategies targeting these variables show promise for optimizing mental health outcomes (Fabio et al., 2020; Salahshor & Motevali, 2023).

The Mediating Role of Cognitive Distortions

Cognitive distortions function as crucial mediating variables within perceived stress-cognitive flexibility relationships, often contributing to cognitive rigidity. Individuals experiencing high stress frequently exhibit cognitive distortions including catastrophizing or dichotomous thinking, limiting flexible cognitive strategy development (Akman, 2024; Chaby et al., 2019).

Research demonstrates that individuals affected by these distortions tend to perceive conditions in distorted ways, simultaneously increasing stress perception and weakening cognitive flexibility (Durairaja & Fendt, 2020; Khodarahimi, 2018).

Cognitive restructuring and similar cognitive flexibility enhancement methods can alleviate stress's harmful effects while improving individuals' overall mental health (Akman, 2024; Passel et al., 2025). Further investigation of cognitive distortions as mediating variables will provide valuable insights for identifying effective strategies to enhance cognitive flexibility in stress-experiencing individuals (Raiisi et al., 2022).

The Joint Mediating Roles of Life Satisfaction and Cognitive Distortions

The combined mediating roles of life satisfaction and cognitive distortions enable a comprehensive understanding of perceived stress-cognitive flexibility dynamics. Individuals with higher life satisfaction demonstrate greater resilience to cognitive distortions, thereby reducing the stress-induced cognitive rigidity impact (Campbell et al., 2013; Kaçar Başaran et al., 2022; Ram et al., 2022).

The joint mediation framework demonstrates that cognitive distortions can impede cognitive processes while life satisfaction enhances cognitive flexibility, maintaining emotional well-being (Chaby et al., 2019; Salahshor & Motevali, 2023). Individuals with elevated life satisfaction may exhibit proactive coping strategies involving distorted thought questioning and a flexible problem-solving approach development (Akman, 2024; Ram et al., 2022).

Research examining simultaneous interactions emphasizes the need for comprehensive interventions targeting both life satisfaction and cognitive rigidity (Neymvari et al., 2024; Ram et al., 2022). Interventions enhancing emotional well-being, cognitive restructuring, and life satisfaction facilitate cognitive flexibility development while supporting coping skill development for individuals experiencing perceived stress (Burkolter et al., 2009; Khodarahimi, 2018). Further investigation of these variables' joint mediating roles can enrich psychological interventions and contribute to holistic mental health approaches.

Overall, the findings support a theoretically grounded REBT-consistent model in which perceived stress influences cognitive functioning through both irrational beliefs and subjective well-being. By identifying life satisfaction as a protective factor and cognitive distortions as a risk factor, the study contributes to cognitive-behavioral models of stress and supports the development of REBT- and CBT-based interventions aiming to enhance cognitive flexibility (David et al., 2005; Ellis, 1994).

Research Problem and Hypotheses

Although research examining perceived stress-cognitive flexibility relationships has increased, the potential mediating roles of life satisfaction and cognitive distortions in explaining this

association remain inadequately addressed. This investigation aims to evaluate the separate and combined mediating roles of life satisfaction and cognitive distortions within perceived stress-cognitive flexibility relationships. Given the cross-sectional nature of the data, the hypotheses reflect theoretically specified directional paths rather than definitive causal claims. The findings are expected to contribute to psychoeducational and intervention program development aimed at supporting cognitive flexibility and strengthening stress-coping abilities in adult populations.

The following hypotheses were tested:

H1: Perceived stress will significantly predict cognitive flexibility.

H2: Life satisfaction will mediate the relationship between perceived stress and cognitive flexibility.

H3: Cognitive distortions will mediate the relationship between perceived stress and cognitive flexibility.

H4: Life satisfaction and cognitive distortions will jointly mediate the relationship between perceived stress and cognitive flexibility.

METHOD

Research Design

This manuscript is an empirical research article using a quantitative cross-sectional survey design and regression-based bootstrapped parallel mediation analysis to examine whether life satisfaction and cognitive distortions mediate the association between perceived stress and cognitive flexibility among Turkish adults. This quantitative empirical study employed a cross-sectional, correlational survey design to examine associations among perceived stress, cognitive flexibility, life satisfaction, and cognitive distortions, and to test a parallel multiple mediation model using regression-based bootstrapping. Given the cross-sectional nature of the data, mediation paths were interpreted as theory-driven indirect statistical associations rather than evidence of causal ordering.

Research Group/Participants

Participants were 330 adults aged 18–63 years (M = 29.95, SD = 8.78) recruited via convenience sampling from community and healthcare-related settings in Türkiye. The sample comprised 267 women (80.9%) and 63 men (19.1%). Eligibility criteria were: (a) being 18 years or older, (b) ability to complete an online survey in Turkish, and (c) voluntary consent to participate. Responses were collected anonymously and each participant completed the survey only once.

Data Collection Tools

Data were collected using an online questionnaire package consisting of a demographic form and four standardized self-report measures.

Personal Information Form. A brief researcher-developed form was used to collect demographic information such as age and gender.

Perceived Stress Scale (PSS-10). Perceived stress during the last month was measured using the 10-item Perceived Stress Scale developed by Cohen et al. (1983) and adapted into Turkish by Eskin et al. (2013). The scale consists of two subdimensions and is rated on a 5-point Likert scale. Higher scores indicate greater perceived stress. In the present study, internal consistency was acceptable (α = .82). In the Turkish adaptation study, the original two-factor structure of the scale was supported, providing evidence for structural validity. Cultural validity was ensured through standardized Turkish translation and validation procedures conducted with Turkish samples (Eskin et al., 2013).

Cognitive Flexibility Scale (CFS). Cognitive flexibility was assessed with the 12-item Cognitive Flexibility Scale developed by Martin and Rubin (1995) and adapted into Turkish by Altunkol (2011). Items are rated on a 6-point Likert scale, and some items are reverse-coded. The scale has a unidimensional structure, and higher total scores indicate greater cognitive flexibility. In the present study, internal consistency was α = .81, and prior test–retest reliability was reported as r = .73. The Turkish adaptation study confirmed the single-factor structure of the scale, providing evidence for structural validity. Cultural validity was supported through the Turkish adaptation and psychometric evaluation procedures conducted with Turkish participants (Altunkol, 2011).

Cognitive Distortions Scale (CDS). Cognitive distortions were measured using the scale developed by Lefebvre (1981) and adapted into Turkish by Alçalar and Bahadır (2007). The instrument includes 24 short scenarios designed to assess cognitive distortion tendencies, with total scores ranging from 0 to 96. Higher scores indicate greater cognitive distortion. The scale consists of four subdimensions: catastrophizing, overgeneralization, personalization, and selective abstraction. Reported internal consistency coefficients were α = .86 in non-clinical samples and α = .79 in clinical samples. The Turkish validation study supported the multidimensional structure of the scale, providing evidence for structural validity. Cultural validity was established through Turkish adaptation procedures and validation in Turkish cultural and linguistic contexts (Alçalar & Bahadır, 2007).

Life Satisfaction Scale (LSS). Life satisfaction was measured using the Satisfaction with Life Scale developed by Diener et al. (1985) and adapted into Turkish by Dağlı and Baysal (2016). The scale consists of five items rated on a 5-point Likert scale, and higher scores indicate greater life satisfaction. The scale has a unidimensional structure. In this study, internal consistency was α = .88, and prior test–retest reliability was reported as r = .97. The Turkish adaptation study confirmed the single-factor structure of the scale, providing evidence for structural validity. Cultural validity was supported through standardized Turkish adaptation procedures and validation with Turkish samples (Dağlı & Baysal, 2016).

Procedure and Ethical Considerations

Data were collected remotely via a secure online platform. Participation was voluntary, no incentives were provided, and no time limits were imposed. Before accessing the survey, all participants viewed an information sheet and provided electronic informed consent. The study

was conducted in accordance with ethical standards, and ethical approval was obtained from the relevant institutional ethics committee. Data were collected anonymously and used only for scientific purposes.

Data Analysis Techniques

Analyses were conducted to describe the sample, examine statistical assumptions, and test the hypothesized mediation model. First, descriptive statistics, skewness and kurtosis coefficients, bivariate correlations, and multicollinearity diagnostics (tolerance and VIF) were computed. Univariate normality was evaluated using skewness and kurtosis values. As presented in Table 1, skewness values ranged from −0.38 to 0.99 and kurtosis values ranged from 0.09 to 0.86, indicating acceptable departures from normality for large-sample parametric analyses (Kim et al., 2013). Therefore, the data were considered sufficiently normally distributed for correlational and regression-based analyses. Multicollinearity was assessed using tolerance and variance inflation factor (VIF) values, and all tolerance values were above .70 while VIF values were below 2, indicating no multicollinearity concerns (O'Brien, 2007). Mediation analyses were then performed using a regression-based bootstrapping approach with 5,000 bootstrap resamples to estimate bias-corrected confidence intervals for indirect effects (Hayes, 2018). Life satisfaction and cognitive distortions were entered as parallel mediators between perceived stress (predictor) and cognitive flexibility (outcome). Statistical significance was evaluated at $p < .05$, and indirect effects were considered significant when the bootstrapped confidence interval did not include zero. No covariates were included because the primary aim was to test the core theoretical pathways among the main constructs; this choice is noted as a limitation. We opted for a parsimonious model to focus on the hypothesized REBT-consistent mechanisms among the focal constructs. Given the cross-sectional design and the absence of preregistered covariate selection, we avoided adding controls that could introduce model dependence and reduce interpretability. Nevertheless, we acknowledge that unmeasured factors may partially contribute to the observed associations.

FINDINGS

Table 1 presents descriptive statistics, normality indices, multicollinearity diagnostics, and intercorrelations among the study variables. Skewness values ranged from −0.38 to 0.99 and kurtosis values ranged from 0.09 to 0.86, indicating acceptable distributional properties for parametric analyses. No multicollinearity was observed, as all tolerance values were above .70 and VIF values were below 2. Correlational analyses revealed that cognitive flexibility was positively associated with life satisfaction and negatively associated with perceived stress and cognitive distortions (all $p < .001$).

The proposed mediation model demonstrated excellent fit to the data ($\chi^2 = 1.616$, df = 1, $p = .204$; CFI = .995; TLI = .972; RMSEA = .043; SRMR = .020), indicating that the hypothesized relationships adequately represented the observed data. Mediation analyses using

bootstrapping procedures showed that perceived stress had a significant negative direct effect on cognitive flexibility (B = −0.179, p = .005).

Perceived stress also significantly predicted both mediators: it negatively predicted life satisfaction (B = −0.415, p < .001) and positively predicted cognitive distortions (B = 0.212, p < .001). In turn, life satisfaction positively predicted cognitive flexibility (B = 0.170, p = .011), whereas cognitive distortions negatively predicted cognitive flexibility (B = −0.227, p < .001).

The indirect effect through life satisfaction was significant (B = −0.070, p = .012), as was the indirect effect through cognitive distortions (B = −0.048, p = .011). The total indirect effect was also significant (B = −0.119, p < .001), indicating that the mediators jointly accounted for a substantial portion of the overall association between perceived stress and cognitive flexibility. When compared proportionally, the life satisfaction pathway accounted for approximately 59% of the total indirect effect, whereas the cognitive distortions pathway accounted for approximately 41%, suggesting that life satisfaction played a relatively stronger mediating role in this relationship.

Overall, the total effect of perceived stress on cognitive flexibility was significant and negative (B = −0.298, p < .001). The correlation between perceived stress and cognitive flexibility (r = −.30, p < .001) indicated a medium effect size, suggesting clinically relevant implications for stress-related cognitive interventions.

DISCUSSION AND CONCLUSION

Perceived Stress Effects on Cognitive Flexibility

Consistent with the study hypotheses, perceived stress was negatively associated with cognitive flexibility. This finding aligns with prior research reporting that higher perceived stress is linked to reduced cognitive flexibility (Kalia et al., 2021), supporting the expected directional relationship observed in the present data. Moreover, the medium-sized association observed in the present sample (r = −.30) suggests that perceived stress may have clinically meaningful implications for adaptive cognitive functioning. Similarly, in a study conducted with Turkish university students, executive functions were found to be negatively associated with alcohol use, and this relationship became stronger under high perceived stress and weaker under high perceived social support, highlighting the contextual role of stress in self-regulation processes (Tiring & Yüksel, 2025).

Life Satisfaction Mediation

Substantial empirical evidence supports life satisfaction's mediating role within perceived stress-cognitive flexibility relationships. Padmanabhanunni et al. (2023) demonstrated that elevated life satisfaction associates with reduced anxiety and hopelessness, emphasizing its stress-buffering properties. The current findings (indirect effect: B = -0.070, p = .012) corroborate these results, suggesting that life satisfaction mitigates perceived stress's adverse effects on cognitive flexibility.

Wu et al. (2020) demonstrated life satisfaction's protective function within stress-psychological outcome relationships, indicating that enhanced life satisfaction may counterbalance stress's negative cognitive flexibility effects.

Cognitive Distortion Mediation

Cognitive distortions, characterized as maladaptive thinking patterns, demonstrate significant mediation within perceived stress-cognitive flexibility relationships. In the present model, higher perceived stress was associated with higher cognitive distortions, which in turn predicted lower cognitive flexibility, indicating that distorted appraisals may be one mechanism through which stress constrains adaptive thinking.

Although this model captures key psychological mechanisms, future studies should examine whether mediation effects persist across stress types (e.g., acute vs. chronic) and among individuals with different cognitive styles and resilience levels (Cheng et al., 2014; Kalia & Knauft, 2020). Yıldırım et al. (2024) identified cognitive flexibility as a buffer against stress's negative mental health effects, suggesting that cognitive flexibility enhancement interventions may reduce high-stress-triggered cognitive distortion impacts.

These findings align closely with REBT theory, which proposes that irrational beliefs amplify perceived stress and restrict individuals' capacity for flexible thinking. Catastrophizing, overgeneralization, and personalization—three forms of cognitive distortion measured in the present study—are core irrational beliefs emphasized in REBT. The mediation observed here therefore provides empirical support for REBT's central proposition that irrational beliefs function as critical mechanisms linking stress to reduced psychological functioning (Ellis, 1994; David et al., 2005). Clinically, this pattern supports REBT/CBT-oriented intervention targets that simultaneously reduce cognitive distortions (irrational beliefs) and strengthen cognitive flexibility through disputation, cognitive restructuring, and reappraisal practice.

Total Indirect Effects

Demirezen and Ötken (2022) demonstrated positive associations between cognitive flexibility, psychological well-being, and life satisfaction, suggesting that interventions targeting these mediating variables could enhance cognitive flexibility.

However, research has identified complex variable interactions. Such findings reflect psychological construct relationship complexity, indicating that mediating variable impacts on cognitive flexibility may vary across contexts and individuals.

Health Applications

The findings suggest that clinicians working in primary care or mental health settings should consider routinely assessing patients' perceived stress, life satisfaction, and cognitive distortions using short, validated screening tools. Moreover, brief group-based psychological interventions—such as mindfulness-based programs or cognitive restructuring exercises—may be cost-effective strategies for enhancing cognitive flexibility and promoting overall health and well-being. The demonstrated relationships suggest that effective health behavior change

programs should incorporate multiple psychological targets rather than focusing solely on stress management or cognitive restructuring independently (McEwen et al., 2015).

Screening for perceived stress and cognitive rigidity in clinical settings can support early interventions targeting cognitive flexibility and stress resilience (McEwen et al., 2015). Patients presenting with high perceived stress and low life satisfaction may benefit from psychological interventions prior to or concurrent with medical treatments.

The observed mediation patterns suggest that CBT- and REBT-based techniques may be highly effective for individuals experiencing elevated stress. Interventions such as cognitive restructuring, disputation of irrational beliefs, behavioral experiments, and reappraisal training directly target both cognitive distortions and cognitive flexibility. Incorporating these methods into routine psychological or health-related interventions may strengthen resilience and improve patients' adaptive functioning (Beck, 2011; DiGiuseppe et al., 2014; Ellis & Dryden, 2007).

Cultural Considerations and Limitations

The current findings derive from a Turkish sample, necessitating cultural context consideration. Cross-cultural research demonstrates that psychological processes including stress coping, life satisfaction, and cognitive flexibility vary according to cultural norms, values, and social support systems. While Western societies emphasize individualism, collectivist cultures like Turkey prioritize family and community support, potentially differentiating psychological process functioning (Kruczek et al., 2021; Kryś et al., 2022).

These cultural characteristics may influence how Turkish adults perceive stress, evaluate their life satisfaction, and utilize cognitive resources such as cognitive flexibility. Therefore, the present findings should be interpreted as culturally bound, and future cross-cultural research is needed to determine whether similar mediation patterns appear in individualistic or different collectivist populations.

Recommendations

Based on the present findings, interventions targeting perceived stress should be designed to simultaneously strengthen protective psychological resources and reduce maladaptive cognitive patterns. In practice, this means that stress-focused programs may yield better outcomes when they do not concentrate solely on symptom reduction, but also include components that enhance individuals' overall life satisfaction and promote more adaptive, flexible ways of thinking.

In clinical and counseling settings, brief and feasible screening routines may be implemented to identify individuals at risk for stress-related cognitive rigidity. Short validated measures of perceived stress, life satisfaction, and cognitive distortions can help clinicians quickly map key intervention targets, especially in primary care and community mental health services where time is limited. When elevated stress co-occurs with low life satisfaction and frequent cognitive distortions, clinicians may consider incorporating cognitive restructuring,

disputation of dysfunctional beliefs, and cognitive reappraisal techniques to support improvements in cognitive flexibility.

Preventive and psychoeducational programs may be particularly useful for high-stress groups such as university students and early-career adults. Group-based formats that combine mindfulness-based practices, self-compassion exercises, and positive psychology–oriented activities may help increase life satisfaction while simultaneously reducing the intensity and frequency of cognitive distortions. Such programs can be delivered as short modules within counseling centers or community education initiatives and may contribute to more sustainable coping and adaptive functioning.

At the organizational level, workplaces and educational institutions may benefit from adopting policies and practices that support psychological well-being as a way to indirectly protect cognitive functioning under stress. Creating environments that increase perceived support, autonomy, and meaningful engagement may foster higher life satisfaction, which in turn may buffer the negative impact of stress on flexible thinking. In parallel, staff trainings that include basic cognitive-behavioral skills (e.g., identifying common cognitive distortions and practicing alternative interpretations) may help reduce cognitive rigidity in high-demand contexts.

Finally, future research should prioritize longitudinal and experimental designs to clarify the temporal ordering among perceived stress, life satisfaction, cognitive distortions, and cognitive flexibility. Studies that test intervention-based changes in the proposed mediators would be especially informative for establishing whether improvements in life satisfaction and reductions in cognitive distortions produce downstream gains in cognitive flexibility. Research using more balanced and diverse samples, and including relevant covariates (e.g., age, gender, socioeconomic status, and mental health indicators), would further strengthen the generalizability and interpretability of the findings.

Limitations

While these findings provide valuable insights, several limitations affect generalizability and interpretation. First, the cross-sectional design precludes definitive causal relationship identification among variables. In particular, the directionality between life satisfaction and cognitive flexibility remains theoretically ambiguous, as cognitive flexibility may also influence life satisfaction; the current design cannot resolve this issue. Causal directions within perceived stress, cognitive flexibility, life satisfaction, and cognitive distortion relationships require longitudinal or experimental investigation for clarification. Second, convenience sampling from Turkish adults introduces potential sampling bias, limiting generalizability across diverse socioeconomic, cultural, or demographic groups. Moreover, the overrepresentation of female participants (80.9%) limits the generalizability of the findings, as gender differences may influence perceived stress, coping strategies, and cognitive flexibility. Given documented gender differences in stress appraisal, coping patterns, and executive functioning, the predominance of female participants may have influenced the magnitude of the observed associations and

indirect effects. For example, men and women may differ in typical stressor exposure, emotion regulation strategies, and the propensity to engage in certain cognitive distortions, which could alter the strength of pathways from perceived stress to cognitive flexibility via life satisfaction and distorted thinking. Therefore, the present mediation model should be interpreted cautiously in terms of gender generalizability. Future research should replicate the model in more gender-balanced samples and examine gender as a potential moderator (i.e., multi-group or moderated mediation analyses) to test whether path coefficients differ across men and women. The substantial gender imbalance (predominantly female participants) requires consideration during result interpretation. Future investigations should validate findings using more diverse and representative samples. Third, all measures relied on self-report methodology, introducing potential limitations including social desirability bias, response distortion, and systematic response patterns. Additionally, the absence of control variables may limit the interpretability of the mediation effects, as individual differences could potentially influence the relationships among the constructs. Specifically, the model did not adjust for potentially relevant covariates such as age, gender, socioeconomic indicators, or baseline mental health symptoms. Although omitting covariates supported parsimony and emphasized the core theoretical pathways, residual confounding cannot be ruled out. Future research should replicate the model using preregistered and theory-justified covariate sets, more balanced samples, and preferably longitudinal or experimental designs to strengthen causal inference. Incorporating experimental and behavioral assessments for objective evaluation of psychological constructs such as cognitive flexibility and cognitive biases will enhance future study reliability and validity. Fourth, the model included only perceived stress, cognitive flexibility, life satisfaction, and cognitive distortions, excluding additional variables known to associate with these constructs (social support, psychological resilience, emotional intelligence, personality traits, psychopathology). Since coping styles, life satisfaction, and cognitive functioning are influenced by cultural norms and social support systems, direct generalization to different cultural groups may be inappropriate. Cross-cultural comparative studies will provide enhanced understanding of these relationships. Finally, while the psychometric scales demonstrated established validity and reliability, conceptual boundaries and measurement distortion inherent in psychological assessment must be acknowledged.

Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

During manuscript preparation, the authors utilized AI-powered tools solely to assist with English translation of specific sections. Following tool usage, the authors reviewed and edited all content as necessary and assume full responsibility for the published article's content.

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TABLES

Table 1.

Findings related to descriptive statistics

Variable	A.M.	S.S.	Kr	Sk	1	2	3	4	Tolerance	VIF
1. Cognitive Flexibility	53.60	8.55	0.09	-0.38	1	-0.30***	-0.29***	0.28***		
2. Perceived Stress	30.11	6.33	0.86	-0.27	-0.30***	2	0.21***	-0.42***	0.78	1.28
3. Cognitive distortions	48.02	20.45	0.35	0.99	-0.29***	0.21***	3	-0.15**	0.95	1.05
4. Life Satisfaction	15.04	4.32	0.25	-0.16	0.28***	-0.42***	-0.15**	4	0.75	1.33

Note: A.M: Arithmetic mean, S.S: Standard deviation, Kr: Kurtosis, Sk: Skewness, VIF: Variance inflation factor

**p<.05, **p<.01, ***p<.001*

Table 2.

Model fit indices

Fit Index	Value	Acceptable Limit
χ^2 (df)	1.616 (1), p = .204	p > .05
CFI	.995	≥ .95
TLI	.972	≥ .95
SRMR	.020	≤ .08
RMSEA	.043	≤ .06

Table 3.

The Mediating Role of Life Satisfaction and Cognitive distortions in the Effect of Perceived Stress on Cognitive Flexibility: Structural Path Coefficients (N = 330)

Path	B (Standardized)	SE	z	p
Direct Effect				

Perceived Stress → Cognitive Flexibility (c)	-0.179	0.087	-2.776	.005
Mediating Paths (a and b)				
Perceived Stress → Life Satisfaction (a1)	-0.415	0.032	-8.723	<.001
Life Satisfaction → Cognitive Flexibility (b1)	0.170	0.131	2.558	.011
Perceived Stress → Cognitive distortions (a2)	0.212	0.180	3.801	<.001
Cognitive distortions → Cognitive Flexibility (b2)	-0.227	0.025	-3.801	<.001
Indirect Effects				
Perceived Stress → Life Satisfaction → Cognitive Flexibility (ind1)	-0.070	0.038	-2.500	.012
Perceived Stress → Cognitive distortions → Cognitive Flexibility (ind2)	-0.048	0.025	-2.548	.011
Total Indirect Effect (ind1 + ind2)	-0.119	0.045	-3.530	<.001
Total Effect (c + ind1 + ind2)	-0.298	0.075	-5.344	<.001

FIGURE

Figure 1.

Depicts the dual mediation model, illustrating the indirect effects of perceived stress on cognitive flexibility through life satisfaction and cognitive distortions.