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Identifying the Components of Cognitive Decline from the Perspective of Older Adults and Examining the Roles of Self-Criticism, Fear of Aging, and Psychological Distress: A Mixed-Methods Study

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ABSTRACT

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Purpose: This study aimed to identify the components of cognitive decline from the perspective of older adults and examine their relationships with self-criticism, fear of aging, and psychological distress.

Methods and Materials: This applied study employed a mixed-methods design comprising qualitative and quantitative phases. The study population in both phases consisted of older adults residing in Districts 1 and 3 of Tehran, Iran. In the qualitative phase, participants were selected purposively, and semi-structured interviews were conducted with 17 older adults until theoretical saturation was achieved. Interview data were analyzed qualitatively to identify the perceived components of cognitive decline. Based on the qualitative findings, a questionnaire assessing cognitive decline was developed and subjected to validity assessment. In the quantitative phase, 106 older adults were recruited through convenience sampling, with the sample size determined according to the Tabachnick and Fidell formula. Participants completed the developed Cognitive Decline Questionnaire, the Lasher and Faulkender Anxiety about Aging Scale (1993), the Levels of Self-Criticism Scale (LOSC; Lewis, 2004), and the Kessler Psychological Distress Scale (Kessler et al., 2003). Quantitative data were analyzed using Pearson correlation coefficients.

Findings: Pearson correlation analyses demonstrated statistically significant positive relationships between the components of cognitive decline and self-criticism among older adults ($p < .05$). Significant positive correlations were also observed between cognitive decline components and fear of aging ($p < .05$). Furthermore, higher levels of psychological distress were significantly and positively associated with the identified components of cognitive decline ($p < .05$). These findings indicate that greater self-criticism, stronger fear of aging, and higher psychological distress are each associated with greater perceived cognitive decline in older adults.

Conclusion: The findings suggest that psychological factors, particularly self-criticism, fear of aging, and psychological distress, are significantly associated with perceived cognitive decline among older adults. Assessment and intervention programs targeting these psychological characteristics may contribute to identifying individuals vulnerable to cognitive difficulties and supporting psychological and cognitive well-being in later life.

Keywords: *Cognitive Decline; Psychological Distress; Fear of Aging; Self-Criticism; Older Adults; Mixed-Methods Study*

1. Introduction

Population aging has become one of the most significant demographic and public health developments of contemporary societies, bringing increasing attention to the preservation of physical, psychological, and cognitive functioning in later life. Although aging is a natural developmental process, it is accompanied by considerable heterogeneity in the trajectory of cognitive functioning. Some older adults maintain relatively stable cognitive abilities, whereas others experience changes in memory, attention, processing speed, executive functioning, language, orientation, and everyday problem solving. These changes may range from subtle subjective complaints to mild cognitive impairment and, in some individuals, progressive neurocognitive disorders. Consequently, identifying the earliest manifestations of cognitive decline and understanding the psychological and contextual factors associated with them have become important priorities in gerontology, psychology, and preventive health care. Evidence increasingly suggests that cognitive aging should not be understood solely as a neurological or biological phenomenon, because its course and subjective experience are closely intertwined with physical health, psychological functioning, social conditions, lifestyle, and individuals' interpretations of aging itself (Panza et al., 2018; Sugimoto et al., 2022).

Cognitive decline in older adulthood encompasses a broad range of changes rather than a single homogeneous deficit. Difficulties may emerge in remembering recent information, concentrating for sustained periods, finding appropriate words, making decisions, solving problems, adapting to unfamiliar situations, or performing complex daily activities. Executive functions are particularly relevant because they coordinate higher-order processes involved in planning, inhibitory control, working memory, behavioral regulation, and goal-directed action; impairment in these functions can therefore influence both cognitive performance and individuals' capacity to regulate everyday behavior (Hofmann et al., 2012). Cognitive difficulties may also interact with physical vulnerability. Research on cognitive frailty has demonstrated that the co-occurrence of cognitive impairment and physical frailty is associated with unfavorable health outcomes and greater functional vulnerability among older people (Bu et al., 2021; Yuan et al., 2021). Similarly, cognitive impairment and physical frailty frequently overlap in clinical populations of older adults, suggesting that cognitive changes should be

interpreted within the broader context of multidimensional aging (Mello et al., 2021). Cognitive frailty is particularly important because it has consequences for everyday functioning, including the ability to perform daily activities independently (Shimada et al., 2016).

The significance of cognitive decline extends beyond objective neuropsychological performance. Older adults may notice cognitive changes before these changes reach a level detectable through formal diagnostic procedures, giving rise to the concept of subjective cognitive decline. Such perceptions can be clinically meaningful. A large nationwide cohort study demonstrated that subjective cognitive decline may be associated with an increased likelihood of subsequent dementia, indicating that older adults' own reports of cognitive change should not automatically be dismissed as ordinary complaints of aging (Lee et al., 2020). Subjective perceptions are also important because they directly influence quality of life, emotional functioning, confidence, autonomy, and social participation. A mixed-method investigation among older adults showed meaningful relationships among loneliness, subjective cognitive decline, and quality of life, further emphasizing that subjective cognitive difficulties are embedded in broader psychological and social experiences (Sanprakhon et al., 2024). Therefore, understanding how older individuals themselves conceptualize and describe cognitive decline may reveal dimensions that standardized assessments alone cannot fully capture.

The lived experience of cognitive decline may be influenced by older adults' interpretation of their own cognitive changes. Appraisal is important because identical cognitive difficulties may be interpreted differently depending on individuals' emotional regulation strategies, expectations, previous experiences, and beliefs about aging. Recent evidence among older individuals with mild cognitive impairment indicates that cognitive decline-related appraisals are associated with cognitive emotion-regulation strategies and positive and negative affect (Li et al., 2025). This suggests that perceived cognitive deterioration is not merely the passive recognition of a deficit but may involve an active psychological process in which individuals attribute meaning to changes in memory, attention, or daily functioning. Such interpretations can potentially intensify worry and emotional distress, particularly when cognitive lapses are interpreted as evidence of inevitable deterioration or loss of independence.

The social meaning attached to aging may further shape these interpretations. Older individuals are exposed to

cultural narratives and stereotypes that depict later life as a period of physical decline, dependency, social withdrawal, cognitive incompetence, or loss of attractiveness and productivity. Daily exposure to negative aging stereotypes has been associated with real-life cognitive functioning, suggesting that age-related beliefs may have consequences beyond attitudes alone (Ma et al., 2023). Perceptions of aging are also influenced by age, gender, cultural expectations, and social context, illustrating that people do not experience aging independently of the cultural framework in which they live (Musaiger & D'Souza, 2009). At very advanced ages, awareness of age-related gains and losses appears to be associated with health-related characteristics, highlighting the importance of how older individuals perceive the balance between continuing capacities and emerging limitations (Kaspar et al., 2023). Older adults' decisions regarding independence and aging in place are likewise influenced by their perceptions of future time, vulnerability, and proximity to adverse age-related outcomes (Golant, 2020). Consequently, perceptions of aging may contribute to the emotional meaning assigned to cognitive changes.

Fear of aging is one psychological construct that may be particularly important in this context. Fear of aging can include apprehension about physical deterioration, loss of independence, social isolation, changes in appearance, encounters with older people, and anticipated psychological or interpersonal losses. Iranian evidence has shown that fear of aging is a measurable phenomenon associated with a range of individual and contextual factors (Ebrahimi et al., 2020). Broader educational research also demonstrates that knowledge about aging and exposure to structured aging-related education can influence ageist attitudes and gerascophobia, underscoring the modifiable nature of beliefs and fears surrounding later life (Elgharib et al., 2024). When older adults already fear the aging process, ordinary memory failures or temporary lapses in concentration may acquire threatening meanings and be interpreted as confirmation of progressive deterioration. Conversely, increasing concern about cognitive decline may reinforce fear of aging, potentially producing a reciprocal psychological cycle.

Age-related stereotypes and fears also intersect with psychological distress. Negative ageist attitudes can contribute to emotional vulnerability among older individuals, and recent research has demonstrated an association between ageist attitudes and psychological distress, with reflective functioning potentially modifying this relationship (Bergman & Weissberger, 2024).

Psychological distress is particularly relevant because emotional symptoms may both accompany and exacerbate perceived cognitive difficulties. Anxiety in later life has long been associated with cognitive impairment, and evidence suggests that anxiety symptoms can interfere with attentional control, working memory, and other cognitive processes while also increasing subjective awareness of cognitive failures (Beaudreau & O'Hara, 2008). Depression is similarly associated with poorer cognitive functioning among older adults (Wei et al., 2019), and systematic evidence indicates that depression is associated with cognitive frailty, further demonstrating the interdependence of emotional and cognitive health in aging (Zou et al., 2023).

Psychological distress is not restricted to specific psychiatric diagnoses but encompasses a broader spectrum of emotional suffering, including nervousness, hopelessness, agitation, fatigue, and depressive or anxious affect. In older populations, distress may reflect multiple interacting pressures, including declining health, bereavement, reduced independence, chronic illness, social isolation, financial concerns, and worries about cognitive deterioration. Psychological distress has been shown to make an important contribution to quality of life among older people, including after consideration of relatively fixed risk factors, emphasizing its potentially modifiable nature (Atkins et al., 2013). Functional limitations may further intensify distress, and evidence among older adults has demonstrated important associations between activities of daily living and psychological distress through interconnected psychosocial mechanisms (Xiao et al., 2022). Physical multimorbidity may also contribute to serious psychological consequences through increased distress (Jing et al., 2021), while late-life depression frequently occurs in the context of multimorbidity and polypharmacy (Holvast et al., 2017). These findings collectively suggest that psychological distress may represent an important pathway through which age-related difficulties become subjectively burdensome.

Stress itself may also influence cognitive trajectories. A systematic review examining self-reported psychological stress and cognitive decline found evidence supporting an association between greater psychological stress and subsequent deterioration in cognitive functioning (Franks et al., 2023). This relationship may operate through multiple mechanisms, including persistent physiological stress responses, sleep disturbance, reduced health behaviors, diminished attentional resources, and increased negative interpretation of cognitive lapses. Psychological distress may therefore be associated not only with how older adults

perceive cognitive decline but also with processes that contribute to cognitive vulnerability over time. In the Iranian context, the Kessler Psychological Distress Scale has demonstrated satisfactory psychometric properties, supporting its application for assessing nonspecific psychological distress in research populations (Yaghubi, 2016).

Another potentially important psychological factor is self-criticism. Self-criticism refers to a tendency toward harsh self-evaluation, feelings of inadequacy, unfavorable comparison with others, and punitive responses toward perceived failures or shortcomings. Although self-criticism has been studied extensively in relation to depression, perfectionism, shame, and emotional disorders, its possible relevance to perceived cognitive deterioration among older adults has received considerably less attention. Self-critical processes can become particularly salient when individuals experience reduced performance in areas that previously contributed to their self-concept, competence, or independence. The close relationship between perfectionistic standards and self-critical evaluation illustrates how perceived inability to meet internal expectations may generate persistent negative self-appraisal (Cheli et al., 2020). Experimental and observational work has also demonstrated that self-criticism is accompanied by discernible emotional and behavioral responses, supporting its conceptualization as an affectively powerful process rather than merely a cognitive judgment (Halamová et al., 2023).

High self-criticism is also associated with lower self-compassion and broader psychological vulnerability. Research across helping professions, for example, has shown meaningful relationships among self-criticism, self-compassion, and emotional exhaustion-related experiences (Ondrejková & Halamová, 2022). Furthermore, meta-analytic evidence indicates that interventions focused on compassion can significantly reduce self-criticism and enhance self-soothing capacities (Vidal & Soldevilla, 2023). These findings are relevant to aging because older adults who respond to cognitive mistakes with harsh self-judgment may experience greater distress than those who interpret similar difficulties with acceptance and self-compassion. A forgotten name, misplaced object, or slower decision may therefore become psychologically consequential when it is interpreted as personal failure rather than as an understandable age-related difficulty. Negative self-evaluations within interpersonal contexts may further shape an individual's broader view of the self (McCord Stafford &

Burke Draucker, 2019), indicating that self-perception is constructed through both personal and relational experiences.

Lifestyle and physical functioning provide another important context for understanding cognitive decline. Physical activity has repeatedly been investigated as a potentially protective factor against cognitive deterioration. A recent systematic review and meta-analysis found evidence linking physical activity with cognitive outcomes among older adults (Iso-Markku et al., 2024), while research focusing specifically on older populations has emphasized the intertwined relationships among physical activity, cognitive decline, and quality of life (Faraziani & Eken, 2024). Iranian evidence has likewise suggested that social isolation, physical activity, and dietary habits may contribute to age-related cognitive decline and executive functioning (Mahmoudi et al., 2023). Physical changes associated with aging, including muscle weakness and alterations in gait, also affect adaptation and functional independence (Arakawa et al., 2021). Such findings reinforce the view that cognitive aging occurs within a multidimensional system in which psychological, behavioral, social, and physical processes continuously interact.

The recognition that cognitive decline is multidimensional has encouraged preventive approaches that move beyond a single risk factor. Multidomain lifestyle interventions targeting modifiable risk factors have recently been investigated as strategies for preventing or slowing cognitive decline among at-risk older adults (Brodsky et al., 2025). Such approaches reflect a broader transition from viewing cognitive deterioration as inevitable toward identifying factors that may support resilience, adaptation, and maintenance of function. However, effective prevention depends on accurately identifying not only measurable cognitive deficits but also how older adults recognize, interpret, and respond to emerging cognitive changes. This distinction is particularly relevant when psychological variables such as fear, distress, or self-critical thinking may influence both subjective complaints and coping responses.

Despite growing research on cognitive frailty, subjective cognitive decline, depression, anxiety, lifestyle factors, and attitudes toward aging, several gaps remain. First, many investigations have approached cognitive decline through predetermined clinical or psychometric categories rather than beginning with older adults' own accounts of the changes they experience. Such an approach may overlook culturally specific manifestations or dimensions of perceived cognitive decline. Second, self-criticism, fear of

aging, and psychological distress are usually examined separately, although theoretically they may operate within a closely connected psychological system. An older adult who notices increasing forgetfulness, for instance, may interpret the change through negative beliefs about aging, respond with harsh self-evaluation, and subsequently experience greater psychological distress. Understanding these interrelationships may therefore contribute to a more psychologically informed account of subjective cognitive decline.

A mixed-methods framework is particularly appropriate for addressing this gap because qualitative inquiry can first identify cognitive-decline components grounded in the perspectives of older adults, after which quantitative analysis can examine their relationships with theoretically relevant psychological variables. Constructivist grounded approaches emphasize that meanings are generated through interaction between individuals and their social and experiential contexts rather than existing independently of those contexts (Charmaz, 2017). This perspective is especially valuable when studying aging because cognitive changes are experienced through culturally shaped expectations concerning competence, independence, family roles, physical decline, and the meaning of becoming old. By initially eliciting older adults' descriptions of their own cognitive experiences, it becomes possible to construct a context-sensitive framework and subsequently examine whether the resulting dimensions are associated with self-criticism, fear of aging, and psychological distress.

Accordingly, the aim of the present study was to identify the components of cognitive decline from the perspective of older adults and to examine the roles of self-criticism, fear of aging, and psychological distress in relation to these components.

2. Methods and Materials

The present study was applied in terms of purpose and employed a mixed-methods design integrating qualitative and quantitative approaches. The study population in both phases consisted of older adults residing in Districts 1 and 3 of Tehran, Iran. The qualitative phase was conducted first because no comprehensive and contextually grounded framework was available for describing cognitive decline from the perspective of Iranian older adults in a manner consistent with the sociocultural characteristics of the Iranian context. Participants in the qualitative phase were selected using theoretical sampling. Data collection and

analysis proceeded concurrently, and sampling continued until theoretical saturation was achieved. After interviews with 17 older adults, the main categories and subcategories had been sufficiently elaborated, newly collected data no longer contributed additional properties or dimensions to the emerging categories, and no new codes or concepts were identified. At this point, theoretical saturation was considered to have been reached in accordance with the principles described by Charmaz (2014). The qualitative phase ultimately resulted in the identification of nine components representing cognitive decline as perceived and experienced by Iranian older adults. These components subsequently formed the conceptual basis for developing a researcher-made questionnaire for use in the quantitative phase.

The quantitative phase was designed to examine the relationships between the components of cognitive decline identified qualitatively and the psychological variables of self-criticism, fear of aging, and psychological distress. The required sample size was determined according to the recommendations of Tabachnick and Fidell (2007), and 106 older adults were recruited through convenience sampling from Districts 1 and 3 of Tehran. Participants completed the study instruments in person. The questionnaire package included the researcher-made Cognitive Decline Questionnaire developed on the basis of the qualitative findings as well as standardized measures of fear of aging, self-criticism, and psychological distress. After completion, questionnaires were reviewed for suitability for statistical processing, and the resulting data were prepared for entry into SPSS version 23.

The primary data collection instrument in the qualitative phase was a semi-structured interview developed to explore older adults' subjective perceptions and experiences of cognitive decline. The interview was intended to provide participants with sufficient freedom to describe their experiences in their own words while ensuring that major domains potentially related to cognitive functioning were systematically explored across interviews. Participants were initially asked whether they had noticed changes in their memory or thinking during recent years and, if so, which changes had been most prominent. They were then asked what factors they believed had contributed to these changes and whether family members or other people around them had also noticed such alterations. Further questions explored everyday memory difficulties, including forgetting people's names or routine appointments, experiencing greater difficulty retaining new information than in the past, and

misplacing personal belongings or having difficulty finding them. Attention and concentration were examined by asking whether participants lost concentration during conversations or activities and whether they had become more easily distracted. Executive functioning was explored through questions concerning increased difficulty in decision-making, problem solving, and perceived reductions in the speed of cognitive processing. Participants were also asked about language-related difficulties, such as problems retrieving appropriate words during conversation or experiencing situations in which others had difficulty understanding what they intended to communicate. Questions concerning spatial orientation and practical cognitive functioning addressed whether participants became disoriented in familiar locations, forgot familiar routes, or experienced greater difficulty using electronic devices or equipment that they had previously been able to operate. The interview also explored the consequences of these cognitive changes for daily functioning and interpersonal relationships, the degree to which such changes caused worry or anxiety, and the strategies participants had used to cope with perceived cognitive difficulties. The overall purpose of the semi-structured interviews was to identify culturally relevant components of cognitive decline from the perspective of Iranian older adults and to provide an empirical foundation for constructing a quantitative assessment instrument.

The Researcher-Made Cognitive Decline Questionnaire was developed directly from the findings of the qualitative phase. Qualitative analysis of the semi-structured interviews resulted in the identification of nine components of cognitive decline. To operationalize these components for quantitative assessment, five items were developed for each identified component, resulting in an instrument designed to represent the dimensions of cognitive decline emerging from participants' lived experiences. Item development was therefore grounded in the qualitative data rather than being based exclusively on an existing theoretical model. The questionnaire was subjected to validity assessment before being used in the quantitative phase. Its purpose was to quantify individual differences across the nine empirically identified components and thereby permit examination of their associations with self-criticism, fear of aging, and psychological distress among the sampled older adults.

Fear of aging was assessed using the Anxiety about Aging Scale developed by Lasher and Faulkender (1993). The instrument consists of 20 items organized into four dimensions: fear of older people, psychological concerns,

physical appearance, and fear of losses. Items are rated on a six-point Likert-type response scale ranging from strong agreement to strong disagreement. The fear of older people subscale comprises Items 1, 3, 10, 13, and 19 and reflects individuals' emotional and interpersonal reactions to older adults, including their degree of comfort, enjoyment, or positive engagement when interacting with older people. The psychological concerns subscale includes Items 5, 7, 11, 16, and 18 and addresses concerns about the psychological implications of growing older, including expectations regarding emotional well-being and the ability to continue performing everyday activities in later life. The physical appearance subscale consists of Items 4, 9, 12, 15, and 20 and evaluates concerns regarding age-related changes in outward appearance and discomfort associated with looking older. The fear of losses subscale comprises Items 2, 6, 8, 14, and 17 and assesses concerns about losses that may accompany aging, such as losing friends, social relationships, independence, or receiving less attention from other people. The psychometric properties of the instrument have previously been examined in Iran. In the Iranian validation study reported by Sanagoo et al., Cronbach's alpha coefficients were .72 for fear of older people, .52 for psychological concerns, .66 for physical appearance, and .63 for fear of losses.

Self-criticism was measured using the Levels of Self-Criticism Scale developed by Thompson and Zuroff (2004), which is referred to as the LOSC. The instrument contains 22 items scored on a seven-point scale ranging from 0 to 6, where 0 represents "completely false," 1 "almost completely false," 2 "somewhat false," 3 "neither true nor false," 4 "somewhat true," 5 "almost completely true," and 6 "completely true." The scale assesses two dimensions of self-critical functioning: comparative self-criticism and internalized self-criticism. Comparative self-criticism reflects negative self-evaluation arising from comparisons with other individuals and the perception that one is inferior or less successful than others, whereas internalized self-criticism reflects the tendency to judge oneself harshly against personally internalized ideals, expectations, or standards. The LOSC has been used in several Iranian studies, and evidence has supported its construct validity and reliability. In an Iranian psychometric evaluation involving 468 university students, factor analysis and item-total correlations provided evidence of satisfactory validity. Internal consistency for the total scale was reported as .89, while Cronbach's alpha coefficients for comparative and internalized self-criticism were .84 and .88, respectively.

Thompson and Zuroff (2004) also reported theoretically consistent associations with related constructs; comparative and internalized self-criticism were negatively correlated with self-worth at $-.66$ and $-.52$, respectively, and positively correlated with the neuroticism-related emotional instability dimension of the NEO measure at $.60$ and $.54$, respectively.

Psychological distress was measured using the 10-item Kessler Psychological Distress Scale developed by Kessler et al. (2003). The scale assesses the frequency of nonspecific symptoms of psychological distress and uses a five-point response format. Responses are scored from 0 to 4, with “none of the time” scored 0, “rarely” scored 1, “some of the time” scored 2, “most of the time” scored 3, and “all of the time” scored 4. Consequently, total scores can range from 0 to 40, with higher scores indicating greater psychological distress. Previous research has demonstrated satisfactory reliability and validity for the Kessler measure. Anderson et al. (2011) reported favorable psychometric characteristics for the scale. Evidence from Iranian research has also supported its use. Yaghoubi reported satisfactory confirmatory construct validity and an item-total correlation of $.74$. In the same study, Cronbach’s alpha for the questionnaire was $.93$, while split-half and Spearman-Brown reliability coefficients were $.91$. In another Iranian study, Ramezani and Bakhtiari reported a Cronbach’s alpha coefficient of $.85$, further indicating acceptable internal consistency for the measure.

Data analysis was conducted separately for the qualitative and quantitative phases in accordance with the sequential mixed-methods design. In the qualitative phase, the interview data were examined systematically to identify recurring concepts, similarities and differences across participants’ accounts, and broader patterns representing perceived cognitive decline. The analysis proceeded through coding, conceptual comparison, and progressive organization of related codes into subcategories and higher-order categories. Data collection and analysis were carried out iteratively so that emerging concepts could inform subsequent interviews and be further elaborated through theoretical sampling. Analysis continued until additional interviews no longer generated new codes, categories, or meaningful conceptual properties. This process resulted in nine components of cognitive decline, which were subsequently translated into questionnaire items for the quantitative phase.

In the quantitative phase, completed questionnaires were coded and entered into SPSS version 23 for statistical analysis. Pearson product-moment correlation coefficients were calculated to determine the direction and strength of the bivariate relationships between the identified components of cognitive decline and self-criticism, fear of aging, and psychological distress. Regression analysis was additionally employed to examine the predictive contribution of the psychological variables to cognitive decline and to determine the extent to which variations in self-criticism, fear of aging, and psychological distress were associated with variation in cognitive decline scores. Statistical significance was evaluated at the $.05$ level.

3. Findings and Results

A total of 106 older adults participated in the quantitative phase of the study. The participants ranged in age from 60 to 84 years, with a mean age of 69.84 years ($SD = 6.42$). Of the participants, 58 (54.72%) were women and 48 (45.28%) were men. Regarding marital status, 71 participants (66.98%) were married, 27 (25.47%) were widowed, and 8 (7.55%) were single or divorced. In terms of educational attainment, 29 participants (27.36%) had primary education or less, 34 (32.08%) had completed secondary school, 25 (23.58%) held a high school diploma, and 18 (16.98%) had an academic degree. With respect to living arrangements, 69 participants (65.09%) lived with a spouse or other family members, 24 (22.64%) lived with their children, and 13 (12.26%) lived alone. The qualitative phase, which preceded the quantitative phase, involved 17 older adults and continued until theoretical saturation was reached. Analysis of the qualitative interviews resulted in the identification of nine major components of perceived cognitive decline: memory decline, difficulty in learning and retaining new information, attention and concentration problems, executive and decision-making difficulties, reduced cognitive processing speed, language and word-finding difficulties, spatial orientation problems, difficulties in instrumental and technology-related functioning, and functional and social consequences of cognitive changes. These nine components formed the basis of the researcher-made Cognitive Decline Questionnaire administered in the quantitative phase.

Table 1

Descriptive Statistics for the Study Variables and Components of Cognitive Decline (N = 106)

Variable	Mean	SD	Minimum	Maximum	Skewness	Kurtosis
Memory Decline	3.27	0.74	1.40	4.80	-0.18	-0.41
Difficulty in Learning and Retaining New Information	3.11	0.71	1.40	4.80	0.09	-0.36
Attention and Concentration Problems	3.18	0.69	1.60	4.80	-0.06	-0.29
Executive and Decision-Making Difficulties	2.96	0.72	1.20	4.60	0.14	-0.32
Reduced Cognitive Processing Speed	3.22	0.68	1.60	4.80	-0.11	-0.24
Language and Word-Finding Difficulties	2.89	0.70	1.20	4.60	0.21	-0.37
Spatial Orientation Problems	2.43	0.66	1.00	4.20	0.39	-0.18
Instrumental and Technology-Related Difficulties	2.91	0.77	1.20	4.80	0.17	-0.45
Functional and Social Consequences	2.78	0.73	1.20	4.60	0.25	-0.30
Overall Cognitive Decline	2.97	0.56	1.62	4.31	0.08	-0.27
Self-Criticism	3.31	0.91	1.18	5.45	0.12	-0.35
Fear of Aging	3.58	0.79	1.65	5.45	-0.04	-0.42
Psychological Distress	1.86	0.82	0.30	3.80	0.28	-0.51

As shown in Table 1, the mean scores of the nine components of cognitive decline indicated variation in the extent to which different forms of cognitive difficulty were perceived by the participating older adults. Memory decline obtained the highest mean score ($M = 3.27$, $SD = 0.74$), followed by reduced cognitive processing speed ($M = 3.22$, $SD = 0.68$), attention and concentration problems ($M = 3.18$, $SD = 0.69$), and difficulty in learning and retaining new information ($M = 3.11$, $SD = 0.71$). Executive and decision-making difficulties had a mean score of 2.96 ($SD = 0.72$), while instrumental and technology-related difficulties had a mean of 2.91 ($SD = 0.77$). Language and word-finding difficulties ($M = 2.89$, $SD = 0.70$), functional and social

consequences ($M = 2.78$, $SD = 0.73$), and spatial orientation problems ($M = 2.43$, $SD = 0.66$) showed comparatively lower mean scores. The overall mean score for perceived cognitive decline was 2.97 ($SD = 0.56$). Among the psychological variables, the mean item score for fear of aging was 3.58 ($SD = 0.79$), the mean score for self-criticism was 3.31 ($SD = 0.91$), and the mean score for psychological distress was 1.86 ($SD = 0.82$). Examination of skewness and kurtosis showed that all values were within the range of -1 to $+1$. Therefore, no substantial departure from univariate normality was observed, and the distributions were considered sufficiently normal for the application of Pearson correlation and multiple regression analyses.

Table 2

Pearson Correlations Between Components of Cognitive Decline and Self-Criticism, Fear of Aging, and Psychological Distress (N = 106)

Cognitive Decline Component	Self-Criticism, r	p	Fear of Aging, r	p	Psychological Distress, r	p
Memory Decline	.38	<.001	.41	<.001	.47	<.001
Difficulty in Learning and Retaining New Information	.34	<.001	.39	<.001	.44	<.001
Attention and Concentration Problems	.42	<.001	.37	<.001	.52	<.001
Executive and Decision-Making Difficulties	.36	<.001	.43	<.001	.48	<.001
Reduced Cognitive Processing Speed	.31	.001	.40	<.001	.46	<.001
Language and Word-Finding Difficulties	.29	.003	.35	<.001	.39	<.001
Spatial Orientation Problems	.24	.013	.30	.002	.32	.001
Instrumental and Technology-Related Difficulties	.33	.001	.45	<.001	.41	<.001
Functional and Social Consequences	.40	<.001	.48	<.001	.50	<.001
Overall Cognitive Decline	.46	<.001	.53	<.001	.59	<.001

The results of the Pearson correlation analyses presented in Table 2 indicated that all nine components of cognitive decline were positively and significantly related to self-criticism, fear of aging, and psychological distress. Regarding self-criticism, correlation coefficients ranged from .24 to .42 across the cognitive decline components. The

strongest relationship with self-criticism was observed for attention and concentration problems ($r = .42$, $p < .001$), followed by functional and social consequences ($r = .40$, $p < .001$) and memory decline ($r = .38$, $p < .001$). The weakest, although still statistically significant, association was found between self-criticism and spatial orientation problems ($r =$

.24, $p = .013$). The overall cognitive decline score was moderately and positively correlated with self-criticism ($r = .46$, $p < .001$), indicating that older adults reporting higher levels of self-critical evaluation also tended to report greater cognitive difficulties. Fear of aging was also positively related to all cognitive decline dimensions, with coefficients ranging from .30 to .48. Its strongest component-level association was with functional and social consequences of cognitive change ($r = .48$, $p < .001$), followed by instrumental and technology-related difficulties ($r = .45$, $p < .001$) and executive and decision-making difficulties ($r = .43$, $p < .001$). Fear of aging was significantly correlated with overall cognitive decline at $r = .53$ ($p < .001$). Psychological distress showed the strongest pattern of association with

perceived cognitive decline. Correlations ranged from .32 for spatial orientation problems ($p = .001$) to .52 for attention and concentration problems ($p < .001$). Psychological distress was also strongly related to functional and social consequences ($r = .50$, $p < .001$), executive and decision-making difficulties ($r = .48$, $p < .001$), and memory decline ($r = .47$, $p < .001$). At the overall level, psychological distress showed a statistically significant positive correlation of $r = .59$ ($p < .001$) with cognitive decline. Collectively, these results indicated that higher self-criticism, greater fear of aging, and greater psychological distress were consistently associated with greater perceived cognitive decline among the older adults.

Table 3

Multiple Regression Model Predicting Overall Cognitive Decline from Self-Criticism, Fear of Aging, and Psychological Distress (N = 106)

Model	R	R ²	Adjusted R ²	Standard Error of Estimate	F	df1	df2	p
Self-Criticism, Fear of Aging, and Psychological Distress	.662	.438	.421	0.43	26.50	3	102	<.001

As presented in Table 3, the multiple regression model in which self-criticism, fear of aging, and psychological distress were entered simultaneously as predictors of overall cognitive decline was statistically significant, $F(3, 102) = 26.50$, $p < .001$. The multiple correlation coefficient was $R = .662$, indicating a relatively strong combined relationship between the three psychological predictors and perceived cognitive decline. The coefficient of determination was $R^2 = .438$, showing that self-criticism, fear of aging, and psychological distress collectively accounted for 43.8% of the variance in overall cognitive decline scores. After adjustment for the number of predictors and sample size, the

adjusted R^2 remained .421, indicating that approximately 42.1% of the variance could be explained after correcting for potential model overestimation. The relatively small difference between R^2 and adjusted R^2 suggested that the model retained substantial explanatory capacity after adjustment. The standard error of the estimate was 0.43. Accordingly, the regression findings supported the results of the bivariate correlation analysis and demonstrated that the psychological variables considered jointly were significantly associated with individual differences in perceived cognitive decline among older adults.

Table 4

Regression Coefficients for Self-Criticism, Fear of Aging, and Psychological Distress in Predicting Overall Cognitive Decline (N = 106)

Predictor	B	SE B	β	t	p	95% CI for B
Constant	1.12	0.22	—	5.09	<.001	[0.68, 1.56]
Self-Criticism	0.14	0.05	.23	2.65	.009	[0.04, 0.24]
Fear of Aging	0.19	0.06	.27	3.13	.002	[0.07, 0.31]
Psychological Distress	0.23	0.06	.34	3.91	<.001	[0.11, 0.35]

The regression coefficients presented in Table 4 showed that each of the three psychological variables made a statistically significant independent contribution to the prediction of overall cognitive decline when the effects of the other predictors were statistically controlled. Self-criticism was a significant positive predictor of cognitive decline ($B = 0.14$, $SE = 0.05$, $\beta = .23$, $t = 2.65$, $p = .009$, 95%

CI [0.04, 0.24]). This finding indicated that, holding fear of aging and psychological distress constant, greater self-criticism was associated with higher levels of perceived cognitive decline. Fear of aging also significantly and positively predicted cognitive decline ($B = 0.19$, $SE = 0.06$, $\beta = .27$, $t = 3.13$, $p = .002$, 95% CI [0.07, 0.31]). Thus, older adults with stronger concerns and fears related to the aging

process tended to report more pronounced cognitive difficulties even after the effects of self-criticism and psychological distress had been taken into account. Psychological distress emerged as the strongest unique predictor in the regression model ($B = 0.23$, $SE = 0.06$, $\beta = .34$, $t = 3.91$, $p < .001$, 95% CI [0.11, 0.35]). The standardized regression coefficient indicated that psychological distress made the largest independent contribution to variation in cognitive decline among the three predictors. Because all three unstandardized regression coefficients were positive, increases in each psychological variable were associated with increases in perceived cognitive decline. The confidence intervals for all three predictors did not include zero, further supporting the statistical significance of their independent associations. Overall, the regression analysis demonstrated that self-criticism, fear of aging, and psychological distress were not only correlated with cognitive decline at the bivariate level but also remained significant predictors when considered simultaneously. Among these variables, psychological distress showed the strongest independent association, followed by fear of aging and self-criticism. Taken together, the findings suggest that perceived cognitive decline in older adults is meaningfully associated with a constellation of adverse psychological experiences and that individuals reporting greater emotional distress, stronger concerns about aging, and more pronounced self-critical tendencies also tend to perceive greater deterioration across memory, attention, executive functioning, processing speed, language, orientation, and everyday cognitive functioning.

4. Discussion and Conclusion

The present mixed-methods study was conducted to identify the components of cognitive decline from the perspective of older adults and to examine the relationships of these components with self-criticism, fear of aging, and psychological distress. The qualitative findings showed that older adults' experiences of cognitive decline were multidimensional and could be organized into nine components, including memory decline, difficulty learning and retaining new information, attention and concentration problems, executive and decision-making difficulties, reduced cognitive processing speed, language and word-finding difficulties, spatial orientation problems, instrumental and technology-related difficulties, and functional and social consequences. The quantitative findings further showed that all components of perceived

cognitive decline were positively and significantly associated with self-criticism, fear of aging, and psychological distress. At the overall level, psychological distress demonstrated the strongest association with cognitive decline, followed by fear of aging and self-criticism. Regression analysis also showed that all three psychological variables made significant independent contributions to the prediction of cognitive decline, with psychological distress emerging as the strongest predictor.

The identification of multiple components of cognitive decline supports the view that cognitive aging cannot be adequately represented by a single symptom such as forgetfulness. Older adults in the present study described changes across memory, attention, processing speed, language, decision-making, orientation, technological functioning, and everyday life. This finding is consistent with contemporary conceptualizations of cognitive decline as a multidimensional phenomenon involving several cognitive and functional domains. Executive functions, for example, are fundamental to planning, monitoring, inhibition, working memory, and goal-directed behavior, and disturbances in these processes can affect a broad range of everyday activities (Hofmann et al., 2012). Similarly, the cognitive frailty literature demonstrates that cognitive difficulties often coexist with functional vulnerability and can contribute to adverse health and independence-related outcomes (Panza et al., 2018; Sugimoto et al., 2022). Evidence that cognitive frailty predicts adverse outcomes among older people further supports the clinical relevance of detecting early and multidimensional cognitive difficulties (Bu et al., 2021). The present findings therefore reinforce the importance of assessing cognitive decline in a manner that includes both conventional cognitive domains and the consequences of cognitive changes for everyday functioning.

The qualitative findings concerning functional and instrumental difficulties are also compatible with earlier evidence showing that cognitive impairment can interfere with daily activities and independent living. Shimada et al. demonstrated that cognitive frailty has meaningful consequences for older adults' ability to perform daily activities (Shimada et al., 2016), while Mello et al. reported an important overlap between cognitive impairment and physical frailty among older adults receiving secondary health care (Mello et al., 2021). Physical vulnerability can further restrict functional adaptation, as age-related muscle weakness and gait alterations may complicate everyday mobility and task performance (Arakawa et al., 2021). These

relationships may help explain why participants in the present study did not describe cognitive decline solely in terms of internal mental changes but also in terms of practical consequences, such as difficulty using devices, managing familiar tasks, or maintaining previous levels of efficiency and independence.

The finding that perceived cognitive decline was significantly associated with self-criticism represents an important psychological dimension of the results. Older adults who reported greater self-critical tendencies also reported higher levels of cognitive difficulty. Self-criticism is characterized by harsh self-evaluation, perceived inadequacy, negative comparison with others, and difficulty responding compassionately to personal limitations. When older adults begin to experience forgetfulness, slower information processing, difficulties in decision-making, or other cognitive changes, these experiences may activate self-critical interpretations, particularly when cognitive competence has previously been central to autonomy and self-worth. Rather than construing occasional cognitive failures as understandable age-related changes, highly self-critical individuals may interpret them as evidence of incompetence, deterioration, or personal failure.

This interpretation is consistent with research demonstrating that self-criticism is closely intertwined with perfectionistic standards and negatively biased self-evaluation (Cheli et al., 2020). Self-critical individuals often evaluate themselves against rigid internal standards and may therefore experience greater emotional difficulty when they perceive reductions in their previous abilities. Halamová et al. further demonstrated that self-criticism is accompanied by observable affective and behavioral responses, illustrating that self-critical processing is not merely an abstract cognitive style but an emotionally activating psychological process (Halamová et al., 2023). Consequently, an older adult who repeatedly evaluates cognitive mistakes through a self-critical lens may become increasingly vigilant to further errors, thereby intensifying the subjective salience of cognitive decline.

The relationship between self-criticism and cognitive decline may also be understood through the role of self-compassion and emotional regulation. Self-criticism is generally associated with reduced self-soothing and a more punitive response to perceived weakness. Research has demonstrated important relationships between self-criticism, self-compassion, and psychological strain (Ondrejková & Halamová, 2022). Moreover, meta-analytic evidence indicates that compassion-focused interventions can reduce

self-criticism and improve self-soothing (Vidal & Soldevilla, 2023). These findings provide indirect support for the present results by suggesting that self-critical processing may intensify the emotional burden associated with cognitive difficulties. When cognitive lapses are accompanied by shame, harsh self-judgment, or unfavorable comparison with younger people or peers, subjective cognitive decline may become more distressing and more prominent in everyday awareness.

The second major finding was the significant positive association between fear of aging and all components of cognitive decline. Older adults who expressed greater fear of aging tended to report more extensive cognitive difficulties. This finding is theoretically plausible because fear of aging involves negative anticipation of age-related changes, including dependency, physical deterioration, social loss, reduced attractiveness, illness, and psychological decline. Cognitive difficulties may therefore become especially threatening to individuals who already associate old age with loss of competence or independence. In such individuals, minor forgetfulness or slowed performance may be interpreted as confirmation that feared age-related deterioration has begun.

Previous findings support this interpretation. Fear of aging has been documented as a meaningful psychological phenomenon within Iranian samples and has been associated with several demographic and psychosocial factors (Ebrahimi et al., 2020). Furthermore, educational interventions concerning aging have been shown to influence knowledge, ageist attitudes, and gerascophobia, suggesting that fear of aging is shaped partly by beliefs and information rather than being an inevitable consequence of chronological age (Elgharib et al., 2024). The present findings may therefore reflect the role of cognitive appraisal: older adults who hold more threatening beliefs about aging may interpret cognitive changes more negatively and may consequently experience and report them as more severe.

The association between fear of aging and cognitive decline is also consistent with research on negative aging stereotypes. Ma et al. found that everyday exposure to negative aging stereotypes is related to real-life cognitive functioning among older adults (Ma et al., 2023). This suggests that culturally transmitted beliefs about aging may influence not only emotional responses but also cognitive experiences in everyday settings. Perceptions of aging are shaped by social and cultural contexts and may vary by age and gender (Musaiger & D'Souza, 2009). Moreover, awareness of age-related gains and losses is associated with

health-related outcomes even among very old adults (Kaspar et al., 2023). Older adults who focus predominantly on age-related losses may become increasingly vigilant toward evidence of decline, whereas those who perceive aging in a more balanced manner may interpret similar difficulties less catastrophically.

The present findings also showed that fear of aging was particularly related to the functional and social consequences of cognitive decline. This pattern may be explained by the fact that fears surrounding aging are frequently concerned with dependency, social withdrawal, reduced autonomy, and loss of control. Golant argued that older adults' perceptions of future decline and proximity to death can shape their decisions about remaining in familiar environments and maintaining independence (Golant, 2020). Accordingly, cognitive changes that threaten the ability to manage daily tasks or remain socially independent may carry special psychological significance. The association between aging-related attitudes and psychological distress reported by Bergman and Weissberger also supports the possibility that negative beliefs about aging contribute to emotional vulnerability (Bergman & Weissberger, 2024).

The strongest finding of the quantitative phase was the relationship between psychological distress and cognitive decline. Psychological distress showed the highest overall correlation with perceived cognitive decline and also made the largest independent contribution in the regression model. This finding is consistent with a substantial body of evidence showing close relationships between emotional distress and cognitive functioning in later life. Anxiety, depression, chronic stress, and nonspecific psychological distress can influence concentration, attention, working memory, information processing, motivation, sleep, and perceived cognitive efficiency. Older adults experiencing elevated distress may therefore both perform less efficiently in cognitive tasks and become more aware of everyday cognitive failures.

The present finding is strongly supported by research on late-life anxiety and cognition. Beaudreau and O'Hara reviewed evidence linking anxiety with cognitive impairment in older adults and noted that anxiety may be associated with impairments across multiple cognitive domains (Beaudreau & O'Hara, 2008). Depression has likewise been associated with reduced cognitive functioning in later life (Wei et al., 2019). Systematic and meta-analytic evidence further indicates that depression is significantly related to cognitive frailty (Zou et al., 2023). These findings suggest that emotional disorders and cognitive vulnerability

often coexist and may reinforce one another, especially in older populations where additional medical, functional, and social stressors are common.

The relationship between psychological distress and cognition may also operate through chronic stress processes. Franks et al. reported in a systematic review that self-reported psychological stress is associated with cognitive decline (Franks et al., 2023). Persistent distress can consume attentional resources, disrupt sleep, increase rumination, reduce motivation, and interfere with efficient encoding and retrieval of information. Over time, these processes may contribute to both subjective and objective cognitive difficulties. The present finding that attention and concentration problems showed a particularly strong relationship with psychological distress is consistent with this mechanism, because distressed individuals commonly experience intrusive thoughts, worry, and reduced capacity to sustain attention.

Psychological distress in older adults is also closely connected with quality of life and physical functioning. Atkins et al. showed that psychological distress makes an important contribution to quality of life among older adults even in the presence of fixed and modifiable risk factors (Atkins et al., 2013). Difficulties in activities of daily living have also been associated with psychological distress through interconnected pathways (Xiao et al., 2022). In addition, physical multimorbidity can contribute to psychological distress and serious emotional outcomes among older adults (Jing et al., 2021), while late-life depression commonly occurs in the context of multimorbidity and polypharmacy (Holvast et al., 2017). These findings are relevant because cognitive decline may occur within a broader cycle in which physical limitations, emotional distress, and perceived cognitive difficulties mutually reinforce one another.

The association between psychological distress and cognitive decline also accords with research on subjective cognitive decline. Subjective cognitive complaints are clinically relevant because they can precede more serious impairment. Lee et al. found that subjective cognitive decline was associated with subsequent dementia in a large nationwide cohort (Lee et al., 2020). However, subjective cognitive complaints are also influenced by emotional and contextual factors. Sanprakhon et al. showed that subjective cognitive decline is interconnected with loneliness and quality of life among older adults (Sanprakhon et al., 2024). Thus, subjective cognitive decline may simultaneously represent an early cognitive warning sign and a

psychologically mediated experience shaped by distress, social conditions, and self-perception.

The present results may further be interpreted through appraisal and emotion-regulation processes. Li et al. demonstrated that appraisal of cognitive decline is associated with cognitive emotion-regulation strategies and positive and negative affect in older adults with mild cognitive impairment (Li et al., 2025). Cognitive difficulties may therefore become more burdensome when interpreted through negative emotional frameworks. An older adult who perceives forgetfulness as catastrophic or irreversible may experience anxiety, sadness, and hopelessness, which in turn can worsen concentration and memory confidence. This reciprocal process may partly explain why psychological distress emerged as the strongest predictor in the present study.

Lifestyle-related findings from previous research provide an additional context for interpreting the results. Physical activity has been associated with better cognitive outcomes and a lower likelihood of cognitive decline in older adulthood (Iso-Markku et al., 2024). The relationship between physical activity, cognitive decline, and quality of life has also been emphasized in older populations (Faraziani & Eken, 2024). Within Iran, cognitive decline and executive functioning have been associated with social isolation, physical activity, and dietary habits (Mahmoudi et al., 2023). These findings indicate that psychological distress, fear of aging, and self-criticism should not be regarded as isolated determinants. Rather, they operate within a broader network of behavioral, physical, and social factors that may either increase vulnerability or promote resilience.

The multidimensional nature of these relationships also supports current preventive approaches. Recent work on multidomain lifestyle interventions has shown that cognitive decline in at-risk older adults may be addressed through integrated preventive strategies rather than single-component interventions (Brodaty et al., 2025). This perspective is consistent with contemporary models of cognitive frailty emphasizing the potentially modifiable nature of some cognitive and functional risks (Sugimoto et al., 2022). The present findings extend this perspective by highlighting psychological factors that may deserve greater attention in such interventions. Programs designed to support cognitive aging may be strengthened by incorporating components focused on emotional distress, realistic and adaptive beliefs about aging, self-compassion, and constructive responses to cognitive mistakes.

Another important contribution of the present study is methodological. By beginning with qualitative interviews, the study identified cognitive decline components grounded in older adults' own descriptions rather than imposing only predetermined categories. This approach is consistent with constructivist grounded theory principles, in which meaning is understood as emerging through individuals' experiences and interpretations within particular social and cultural contexts (Charmaz, 2017). The resulting nine-component framework therefore provides a culturally contextualized perspective on how cognitive decline is perceived among Iranian older adults. Such contextualization is important because beliefs about aging, dependence, competence, family roles, and acceptable expressions of distress may vary substantially across societies.

Overall, the findings suggest that perceived cognitive decline among older adults is not solely a reflection of cognitive functioning but is embedded within a broader psychological context. Self-criticism may intensify negative evaluation of cognitive errors, fear of aging may amplify the threatening meaning assigned to those errors, and psychological distress may directly interfere with cognitive efficiency while also increasing subjective awareness of cognitive difficulties. The fact that all three variables remained significant in the regression model indicates that each may contribute a distinct psychological pathway. Psychological distress appears to represent the strongest of these pathways, but fear of aging and self-criticism also provide meaningful explanatory value. Taken together, the findings support a multidimensional understanding of cognitive aging in which cognitive, emotional, evaluative, and sociocultural processes interact.

The present study has several limitations that should be considered when interpreting its findings. First, the quantitative phase used a cross-sectional design; therefore, the observed relationships between cognitive decline, self-criticism, fear of aging, and psychological distress cannot establish causal direction. It remains possible that psychological distress contributes to perceived cognitive difficulties, that cognitive difficulties increase distress, or that reciprocal relationships exist between these variables. Second, participants were recruited from Districts 1 and 3 of Tehran, and convenience sampling was used in the quantitative phase; consequently, the findings may not be fully generalizable to older adults living in other areas of Tehran, rural communities, other provinces, or populations with different socioeconomic and cultural backgrounds. Third, the main cognitive decline measure was a researcher-

made self-report questionnaire based on qualitative interviews. Although this approach enhanced cultural and experiential relevance, subjective reporting may be influenced by mood, expectations, response tendencies, and participants' awareness of their own cognitive functioning. Fourth, objective neuropsychological measures of memory, attention, executive functioning, language, and processing speed were not incorporated, making it impossible to determine the extent to which perceived cognitive decline corresponded with objectively measured impairment. Fifth, potentially influential variables such as neurological disease, medication use, sleep quality, chronic medical conditions, social support, physical activity, and socioeconomic status were not comprehensively controlled. Finally, the relatively modest sample size may have limited the ability to examine more complex multivariate relationships or subgroup differences.

Future studies should replicate the present findings using larger and more diverse samples of older adults recruited from multiple geographical regions and socioeconomic groups. Longitudinal designs would be particularly valuable for determining the direction of relationships among self-criticism, fear of aging, psychological distress, and cognitive decline and for examining whether these psychological variables predict subsequent changes in cognitive functioning. Future research should combine subjective measures of cognitive decline with standardized neuropsychological assessments to determine whether psychological variables are related primarily to perceived cognitive difficulties, objective cognitive performance, or both. Structural equation modeling could also be used to test more complex pathways in which fear of aging influences cognitive decline indirectly through psychological distress or self-critical processes. Further studies may examine potential moderators such as gender, age, educational level, marital status, living arrangement, socioeconomic status, physical health, and social support. Intervention studies could additionally evaluate whether reductions in psychological distress, self-criticism, or fear of aging are accompanied by improvements in cognitive confidence, perceived cognitive functioning, or objective performance. Finally, further qualitative research across different Iranian cultural and regional contexts could examine whether the nine components identified in the present study remain stable or whether additional culturally specific dimensions emerge.

The findings have practical implications for professionals working with older adults in psychological, geriatric,

rehabilitation, and community health settings. Assessment of cognitive complaints should include not only questions about memory and executive functioning but also evaluation of psychological distress, fear of aging, and self-critical thinking. Older adults who report cognitive difficulties may benefit from brief screening for emotional distress so that potentially modifiable psychological factors can be identified early. Psychoeducational programs should provide realistic information about normal cognitive aging and distinguish ordinary age-related changes from signs requiring specialized assessment, thereby reducing catastrophic interpretations of minor cognitive lapses. Interventions may also incorporate self-compassion and cognitive restructuring techniques to help older adults respond less harshly to errors, slower performance, or temporary forgetfulness. Programs addressing fear of aging can challenge negative stereotypes, promote balanced views of age-related gains and losses, and strengthen perceptions of competence and autonomy. Community centers and health services may further support cognitive well-being through integrated programs combining psychological support, physical activity, social engagement, cognitive stimulation, and training in everyday technologies. Such multidimensional approaches may reduce distress, improve adaptation to age-related changes, and support greater independence and quality of life among older adults.

Authors' Contributions

All authors significantly contributed to this study.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

In this study, to observe ethical considerations, participants were informed about the goals and importance of the research before the start of the interview and participated in the research with informed consent.

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