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PRIORITIZING SOCIAL-EMOTIONAL COMPETENCIES AMONG HIGH SCHOOL STUDENTS USING THE FUZZY AHP METHOD: IMPLICATIONS FOR DEVELOPING A SCHOOL PSYCHOLOGICAL HANDBOOK

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Abstract

This study determines the priority levels of social-emotional competencies among high school students and proposes implications for developing a school psychological handbook. Based on the Social and Emotional Learning (SEL) framework, five core competencies were examined: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. Data were gathered from six experts with relevant knowledge and experience in education and student psychology, and subsequently analyzed using the Fuzzy Analytic Hierarchy Process (Fuzzy AHP) method. The pairwise comparison matrix satisfied the consistency requirement, with a Consistency Ratio (CR) of 0.0429. The results indicate that self-management ranks first, with a normalized weight of 0.2465, followed by responsible decision-making in second place (0.2202). The remaining competencies, in descending order of priority, are social awareness (0.1869), self-awareness (0.1852), and relationship skills (0.1613). These findings provide an empirical foundation for structuring content, allocating material, designing reflective prompts, and establishing support mechanisms in school psychological handbooks for high school students in Vietnam.

Keywords: High School Students; School Psychological Handbook; Fuzzy AHP; SEL.

1. INTRODUCTION

High school students are in a critical transitional phase from adolescence to adulthood, during which cognitive faculties, emotional states, and personal identities continue to develop within the context of relationships with family, peers, and the wider social environment (Branje et al., 2021). This developmental period unfolds concurrently with heightened academic pressure, examinations, career decision-making, and familial expectations. While these demands can act as catalysts for personal growth, they can also transform into severe stressors when they exceed students' adaptive capacities. In the absence of foundational abilities to recognize and regulate emotions, cope with stress, resolve interpersonal conflicts, and evaluate the behavioral consequences of their choices, students are susceptible to experiencing impediments to academic achievement, social functioning, and overall psychological well-being.

Several empirical studies conducted in Vietnam provide evidence supporting this issue. A survey of 6,407 adolescents aged 13 to 17 across four geographical regions revealed that 31.7% of participants exhibited depressive symptoms, and 11% reported suicidal ideation within the 12 months preceding the survey (Tran et al., 2020). Using a sample of

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1,336 Vietnamese adolescents, Ho et al. (2023) identified a positive correlation between academic stress and depressive symptoms, with psychological resilience operating within the mechanisms of this relationship. Approaching the issue from the perspective of social-emotional health, Giang et al. (2023) demonstrated that student development is concurrently influenced by individual, familial, school-level, and broader social environmental factors. These empirical findings underscore that school-based psychological support should not be reserved solely for crisis intervention after difficulties escalate. Instead, educational institutions need to proactively implement preventive interventions that empower students to recognize psychological states early, regulate their emotions, adopt adaptive coping mechanisms, and actively seek help when necessary.

One foundational approach underpinning such supportive initiatives is Social and Emotional Learning (SEL). School-based SEL programs have been shown to enhance students' social-emotional competencies, behavioral adjustment, adaptive capacities, and academic performance, with certain positive outcomes persisting long after program completion (Durlak et al., 2011; Taylor et al., 2017; Cipriano et al., 2023). In this study, social-emotional competence is conceptualized across five core dimensions: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. While mutually interrelated, these competencies perform distinct functional roles in enabling students to recognize emotions, regulate behavior, cultivate empathy, build interpersonal relationships, and make reasoned behavioral choices. In Vietnam, a scale assessing these five competencies has been validated among adolescent cohorts (Dinh et al., 2021). Nevertheless, integrating SEL into high schools continues to face obstacles concerning curricular alignment, implementer readiness, and organizational resources (Huynh et al., 2021).

In this context, a school psychological handbook can be developed as a practical tool to support students in exercising and reinforcing their social-emotional competencies. Through reflective prompts and structured writing exercises, students can actively record and process their emotions, thoughts, stressors, behavioral responses, and help-seeking needs. A systematic review by Travagin et al. (2015) indicated that expressive writing holds considerable potential for supporting adolescent mental health, although effect sizes vary across studies. Similarly, Guo (2023) documented that expressive writing yields a small yet statistically significant effect on mitigating depressive, anxiety, and stress symptoms among students. These findings demonstrate that structured writing can serve as an effective supportive modality; however, the overall efficacy of a psychological handbook remains contingent upon prompt design, frequency of use, perceived confidentiality, feedback mechanisms, and structural pathways connecting students with support personnel.

The implementation of a school psychological handbook aligns closely with the objective of empowering students to cultivate self-awareness, engage in self-reflection, and practice social-emotional competencies. However, the architecture of such a handbook must be empirically informed by prioritized competencies, rather than serving merely as

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an arbitrary compilation of generic prompts or journaling activities. Within the scope of reviewed literature, existing research has predominantly centered on characterizing adolescent mental health, identifying associated determinants, or evaluating the overall efficacy of intervention programs.

In contrast, empirical evidence regarding the relative prioritization of the five core social-emotional competencies to inform the systematic design of a concrete support tool-such as a school psychological handbook-remains scarce. Establishing this priority order constitutes a multi-criteria decision-making (MCDM) problem, wherein evaluators' assessments are inherently expressed through qualitative linguistic terms that entail considerable subjectivity and ambiguity.

To address this research gap, the present study employs the Fuzzy Analytic Hierarchy Process (Fuzzy AHP) to determine the hierarchical priority of the five core social-emotional competencies and to derive actionable implications for the deployment of a school psychological handbook. This method facilitates the conversion of linguistic evaluations into triangular fuzzy numbers, synthesizes multi-expert judgments, and computes the relative weights of individual criteria (Buckley, 1985). Specifically, this study systematizes the theoretical foundation of social-emotional learning and psychological handbooks; establishes an evaluative framework comprising five criteria-self-awareness, self-management, social awareness, relationship skills, and responsible decision-making; and calculates the relative weights to establish the priority ranking of each competency.

Drawing upon these prioritized weightings, the study proposes strategic frameworks for content structuring, reflective prompt design, targeted activities, and accompanying support mechanisms during the implementation of the psychological handbook for high school students.

2. THEORETICAL BACKGROUND

2.1. Students' Social-Emotional Competencies

Concept and Definition

Social and Emotional Learning (SEL) is the process through which individuals acquire and apply the knowledge, skills, and attitudes to develop healthy identities, manage emotions, achieve personal and collective goals, feel and show empathy for others, establish and maintain supportive relationships, and make responsible and caring decisions (CASEL, 2020). Rather than functioning as an isolated instructional component, SEL is integrated into learning activities and the broader school environment, thereby simultaneously fostering students' emotional, social, and academic development.

The pivotal role of SEL in student development has been widely documented across empirical literature. Domitrovich et al. (2017) conceptualize social-emotional competence as a critical developmental asset that promotes positive youth development and mitigates emotional and behavioral risks. A meta-analysis by Durlak et al. (2011) demonstrated that

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universal, school-based SEL programs exert a significant positive impact on students' social-emotional skills, attitudes, prosocial behaviors, and academic achievement. More recently, Cipriano et al. (2023) corroborated these benefits while highlighting that intervention outcomes often vary as a function of learner characteristics, program content, and contextual implementation factors. These empirical insights indicate that the efficacy of fostering social-emotional competencies remains contingent upon the alignment among program design, student developmental profiles, and institutional delivery conditions.

Dimensions of Social-Emotional Competence

According to the Collaborative for Academic, Social, and Emotional Learning (CASEL, 2020) framework, social-emotional competence comprises five interrelated core competencies. Each dimension reflects a distinct facet of how students understand themselves, regulate behavior, and navigate social environments:

- **Self-Awareness:** The ability to understand one's own emotions, thoughts, values, strengths, limitations, and personal goals. This competency enables students to recognize the interconnectedness of emotions, cognitions, and behaviors, thereby identifying personal challenges and recognizing when to seek help.
- **Self-Management:** The ability to regulate one's emotions, thoughts, and behaviors across diverse contexts. This competency encompasses managing stress, controlling impulses, sustaining motivation, setting goals, and maintaining organizational agency. Self-management does not denote emotional suppression; rather, it entails recognizing, expressing, and modulating affective states adaptively to contextual demands.
- **Social Awareness:** The ability to understand the perspectives of and empathize with others, including those from diverse backgrounds and cultures. This competency is manifested through empathy, respect for diversity, and an understanding of broader social norms, enabling students to evaluate interpersonal situations from multiple viewpoints.
- **Relationship Skills:** The ability to establish and maintain healthy, supportive relationships. This competency involves communicating clearly, actively listening, cooperating, negotiating constructively, resolving conflicts peacefully, resisting inappropriate social pressure, and seeking assistance when needed. Within the school environment, relationship skills govern student interactions with peers, educators, families, and supportive personnel.
- **Responsible Decision-Making:** The ability to make constructive choices about personal behavior and social interactions across varied situations based on ethical standards, safety concerns, and behavioral consequences. This competency requires students to identify problems, evaluate alternatives, anticipate outcomes, and assume accountability for their decisions.

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Regarding the interrelationships among these competencies, self-awareness provides the foundation for self-management; social awareness underpins relationship building; and responsible decision-making requires the orchestration of self-understanding, emotional regulation, and consideration of consequences for others. In an empirical study of 1,250 Vietnamese adolescents across four provinces, Dinh et al. (2021) demonstrated that both a five-factor first-order model and a higher-order hierarchical model-wherein all five dimensions load onto a single general social-emotional competence construct-exhibited an adequate fit to the empirical data. These findings provide empirical support for treating the five competencies as interrelated dimensions that can nonetheless be evaluated individually within the Vietnamese context.

In the present study, these five dimensions serve as evaluation criteria to determine relative priority. Assessing each competency individually is not intended to isolate it from the others, but rather to identify the dimensions that warrant greater structural emphasis in the development of a school psychological handbook. The developmental characteristics and support needs of high school students-factors that can influence the relative necessity of each competency-are elaborated in the following section.

*2.*2. Psychological Characteristics and Developmental Needs for Social-Emotional Competencies among High School Students

High school students are typically in late adolescence, a transitional period wherein cognitive, emotional, and social development coincides with preparation for higher education, career entry, and adult life (Branje et al., 2021). This stage extends beyond knowledge acquisition; it marks a crucial juncture where students progressively define their identity, values, and life aspirations. Consequently, the imperative to foster social-emotional competencies must be examined in conjunction with three primary domains: self-concept and cognitive attributes, emotional dynamics and psychological stressors, and interpersonal relationships.

- **Cognitive and Self-Identity Attributes:** During high school, abstract reasoning, self-reflection, and the capacity to anticipate behavioral consequences mature significantly. Students increasingly focus on clarifying their core values, personal strengths, limitations, life aspirations, and societal roles within familial and broader community contexts. Identity formation during this phase is continuously negotiated through interactions with parents, peer networks, and the school environment (Branje et al., 2021). While enhanced self-awareness facilitates autonomous decision-making, it can concurrently give rise to self-doubt regarding academic self-efficacy, self-image, and future trajectories. High schoolers therefore require targeted scaffolding to decode their affective states, acknowledge individual traits, and establish attainable personal goals.
- **Emotional Dynamics and Psychological Stressors:** High school students confront simultaneous demands from academic coursework, standardized examinations, career pathway decisions, and parental expectations. While these demands can serve as developmental catalysts, they frequently evolve into potent stressors when exceeding students' adaptive capacities. Ho et al. (2023) demonstrated that academic

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stress is significantly associated with depressive symptoms among Vietnamese adolescents, with psychological resilience serving as a partial mediator and life satisfaction moderating this relationship. These findings indicate that the adverse impacts of academic pressure are contingent upon students' emotion regulation capacities and their ability to mobilize coping resources. Consequently, interventions fostering social-emotional competencies must equip students with the skills to recognize internal psychological states, regulate stress, and employ adaptive coping strategies.

- **Interpersonal Relationships and Support Needs:** During the high school years, adolescents exhibit an intensified need for autonomy and personal privacy, alongside heightened sensitivity to social evaluation, peer acceptance, and rejection. While peer affiliations assume an increasingly central role, the family system and school climate continue to exert a profound influence on adolescent socio-emotional adjustment. Tran et al. (2020) revealed that experiences of school violence and bullying are significantly associated with elevated depressive symptoms and suicidal ideation among Vietnamese high school students.

Furthermore, Giang et al. (2023) demonstrated that adolescent social-emotional health is inextricably linked to multifaceted individual and ecological systems, including family dynamics, cultural practices, normative belief systems, and living environments. Consequently, adolescent psychosocial maladjustment must be situated within students' relational and ecological matrices rather than interpreted solely through an individual-level deficit lens.

These three domains are intimately intertwined. Ambiguity surrounding personal identity can heighten adolescents' sensitivity to social evaluation; chronic academic stress can disrupt emotional equilibrium and behavioral regulation; concurrently, the quality of relationships within the family, peer group, and school environment can either buffer against adversity or impede adaptive coping. Consequently, high school students require both a supportive environment and targeted scaffolding to recognize internal psychological states, regulate emotional responses, adopt multiple perspectives, resolve interpersonal conflicts constructively, and anticipate consequences prior to behavioral execution.

2.3. The School Psychological Handbook and Its Potential to Support Social-Emotional Competence Development

In this study, the school psychological handbook is operationalized as a structured reflective journal designed for high school students within educational settings. The handbook integrates reflective prompts, situational vignettes, self-assessment exercises, and dedicated spaces for students to document emotions, cognitions, lived experiences, behavioral responses, and help-seeking needs. Distinct from unstructured freewriting, the architecture of this handbook is purposefully organized around the developmental objectives of social-emotional learning.

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Guided journaling provides structured opportunities for adolescents to identify challenges, label affective states, examine cognitive patterns, and reflect on behavioral reactions. While reflective writing does not directly eliminate external stressors, it facilitates the cognitive processing of personal experiences and promotes perspective clarity regarding individual difficulties. Facchin et al. (2014) demonstrated that specific writing prompts and instructional framing differentially impact adolescent self-awareness during critical school transitions. This evidence suggests that the intervention efficacy of a psychological handbook depends not merely on engagement in writing per se, but fundamentally on the architectural prompt design and targeted outcomes of each exercise. Consequently, the school psychological handbook requires scientifically grounded structuring, standardized usage guidelines, and empirically validated prompts.

2.4. Conceptual and Analytical Framework

The analytical framework of this study is grounded in a multi-criteria decision-making (MCDM) approach designed to determine the relative priorities among core social-emotional competencies requiring development in high school students. Drawing upon the CASEL (2020) framework, five competencies are operationalized as peer criteria at the same hierarchical tier: self-awareness (C1), self-management (C2), social awareness (C3), relationship skills (C4), and responsible decision-making (C5).

Positioning these competencies within a unified hierarchical level enables evaluators to systematically weigh which dimensions warrant heightened strategic prioritization within the scope of school-based psychological interventions.

The Fuzzy Analytic Hierarchy Process (Fuzzy AHP) is deployed to synthesize pairwise comparison judgments and derive the normalized weights for each criterion. Crucially, these weights indicate the relative systemic prioritization of each competency rather than students' baseline proficiency levels, the magnitude of direct effect on psychological health, or directional causal pathways among constructs. Criteria are subsequently ranked in descending order according to their normalized priority weights.The derived empirical rankings provide a foundational blueprint for operationalizing the school psychological handbook. Competencies yielding higher weights are allocated proportional primacy across thematic units, reflective prompts, guided journaling exercises, and self-assessment modules.

However, these weightings should not be interpreted as rigid mathematical quotas for content volume, nor do lower-ranked competencies imply obsolescence. Given the synergistic and mutually reinforcing nature of social-emotional development, the functional architecture of the handbook must maintain ecological coherence and structural integration across all five dimensions. The operational structure of this analytical framework is illustrated in Figure 1.

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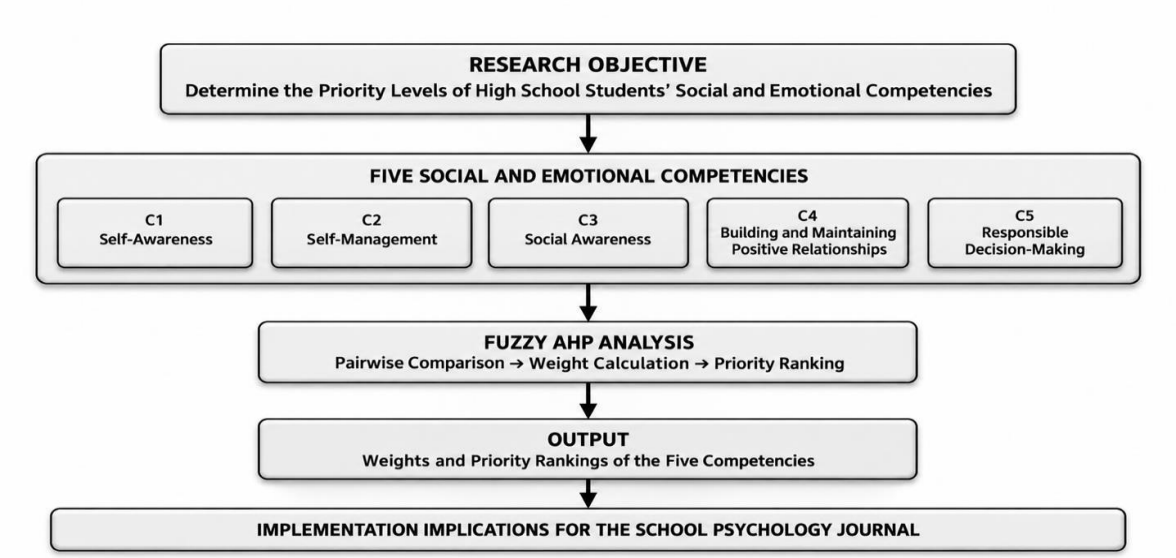


Figure 1: Analytical Framework of the Study

Source: Proposed by the authors

3. RESEARCH METHODOLOGY

3.1. Data Collection Method

This study utilizes primary data collected via an expert evaluation method employing a structured pairwise comparison questionnaire. The questionnaire was specifically designed to capture professional judgments regarding the relative priority levels among core social-emotional competencies requiring development in high school students. The expert evaluation panel comprised six experts selected via purposive sampling. Selection criteria required participants to possess substantive domain knowledge or direct practical experience in high school education, school counseling, school psychology, or educational administration. The evaluative panel consisted of high school homeroom teachers, classroom subject teachers, school psychologists/counselors, and educational administrators. Engaging panel members with verified domain expertise ensured rigorous comparative evaluations across the criteria within a standardized context. Prior to completing the questionnaire, participants were informed of the research objectives, the descriptions of the five competencies, and instructions for conducting the pairwise comparisons. Concepts were explained consistently to prevent discrepancies in how participants understood the criteria. Participation was entirely voluntary; personal information was used solely to describe the panel's characteristics and was kept strictly confidential throughout the analysis and publication of the results. The questionnaire required experts to evaluate each distinct pair among the five competencies: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making.

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For a decision problem comprising n criteria, the total number of pairwise comparisons is determined by the combinatorial formula:

$$\frac{n(n-1)}{2} = \frac{5(5-1)}{2} = 10$$

Thus, each participant performed 10 pairwise comparisons. For each pair, participants identified the competency with higher priority and rated the degree of relative importance using a standardized scale. The linguistic evaluation scores were subsequently converted into triangular fuzzy numbers for aggregation, consistency testing, and processing using the Fuzzy AHP method. The collected results reflect the evaluators' judgments regarding the priority order among the five competencies, rather than serving as a direct measurement of high school students' current social-emotional competence levels.

3.2. Development of the Evaluation Criteria System

The criteria system was established based on three main foundations: (1) CASEL's (2020) Social and Emotional Learning framework; (2) empirical findings validating the five-factor structure of social-emotional competencies among Vietnamese adolescents by Dinh et al. (2021); and (3) the developmental relevance of these competencies to the psychological characteristics and support needs of high school students.

On this basis, the study selected five core competencies as criteria for priority evaluation. Each criterion represents an essential dimension to be addressed when supporting high school students' social-emotional development.

These criteria were evaluated at the macro-competency level; sub-competencies-such as emotion recognition, stress management, empathy, or conflict resolution-were deliberately not decomposed into lower-tier criteria in this model. The operational definitions used in the evaluation questionnaire are presented in Table 1.

Table 1: Evaluation Criteria System for Social-Emotional Competencies

Code	Social-Emotional Competency	Description
C1	Self-awareness	The student's ability to recognize personal emotions, thoughts, strengths, limitations, values, and individual goals.
C2	Self-management	The student's ability to regulate emotions, manage stress, adjust behaviors adaptively, set goals, and sustain personal motivation.
C3	Social awareness	The student's ability to understand the feelings, contexts, and perspectives of others, demonstrate empathy, and respect diversity.
C4	Relationship skills	The student's ability to communicate effectively, actively listen, collaborate, resolve interpersonal conflicts, and seek support when needed.
C5	Responsible decision-making	The student's ability to anticipate behavioral consequences and make constructive, safe, and ethical choices.

Source: Developed by the authors based on CASEL (2020) and Dinh et al. (2021)

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The content in Table 1 was provided to participants prior to the evaluation to ensure a standardized understanding of each criterion. In each pairwise comparison, participants determined which competency should be prioritized for development among high school students, along with the degree of relative importance between the two competencies. Consequently, the evaluation results reflect relative priority levels rather than students' current baseline competence.

3.3. Fuzzy Analytic Hierarchy Process (Fuzzy-AHP)

3.3.1. Rationale for Method Selection

The Analytic Hierarchy Process (AHP) is a decision-support methodology utilized when evaluating multiple criteria simultaneously. Within this framework, the decision problem is structured into an overarching goal and a set of evaluative criteria. Participants systematically perform pairwise comparisons across criteria to determine relative importance and the degree of preference between each pair. However, traditional AHP represents individual judgments using crisp, deterministic numbers, whereas human evaluations are inherently relative, subjective, and difficult to capture with precision through a single numerical value.

Consequently, Fuzzy AHP integrates the hierarchical structuring and pairwise comparison approach of AHP with fuzzy set theory. This methodology transforms qualitative linguistic assessments into triangular fuzzy numbers (TFNs), conventionally denoted as $\tilde{a} = (l, m, u)$, where l, m, and u represent the lower bound, modal value (most likely), and upper bound of the judgment, respectively.

The interval $[l, u]$ captures the degree of uncertainty and fuzziness in the evaluation, thereby reflecting participant judgments with greater flexibility than a crisp single-value representation (Buckley, 1985).

In the present study, Fuzzy AHP was employed to synthesize expert judgments, compute relative weights, and establish priority rankings across the five social-emotional competencies. The study adopted the geometric mean method developed by Buckley (1985) to aggregate individual pairwise comparison matrices and derive fuzzy weights. Subsequently, the fuzzy weights underwent defuzzification into crisp values and were normalized to establish the empirical priority ranking of each competency.

3.3.2. Linguistic Scale and Triangular Fuzzy Number

The scale consists of five direct levels and four reciprocal levels. The central values correspond to the 1, 3, 5, 7, and 9 comparison scale of AHP. The reciprocal fuzzy number is determined using the formula:

$$\tilde{a}_{ji} = \tilde{a}_{ij}^{-1} = \left(\frac{1}{u}, \frac{1}{m}, \frac{1}{l}\right)$$

The linguistic scale and its corresponding triangular fuzzy numbers utilized in this study are presented in Table 2.

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Table 2: Linguistic Scale and Triangular Fuzzy Numbers (TFNs)

Linguistic Variable	Code	Triangular Fuzzy Number (l, m, u)	Reciprocal Fuzzy Number (1/u,1/m,1/l)
Equal importance	E	(1, 1, 1)	(1, 1, 1)
Moderate importance	SL	(2, 3, 4)	(1/4, 1/3, 1/2)
Strong importance	M	(4, 5, 6)	(1/6, 1/5, 1/4)
Very strong importance	VM	(6, 7, 8)	(1/8, 1/7, 1/6)
Extreme importance	O	(8, 9, 10)	(1/10, 1/9, 1/8)

Source: Developed by the authors based on the AHP comparison scale and represented using triangular fuzzy numbers

During the evaluation process, if criterion i is judged to be of higher priority than criterion j according to a specific linguistic level, the comparison value aji is assigned the corresponding triangular fuzzy number from Table 2. Conversely, the value aij is determined by the reciprocal fuzzy number of aji. Utilizing triangular fuzzy numbers allows the model to capture the uncertainty and divergence in expert judgments when evaluating the relative priority among the competencies.

The data processing procedure using Fuzzy AHP consists of the following steps:

Step 1: Define the research objective and evaluation criteria.

The objective is to determine the priority order of social-emotional competencies among high school students. The criteria include C1, C2, C3, C4 and C5.

Step 2: Construct pairwise comparison matrices.

Participants evaluate the relative importance between each pair of criteria.

Step 3: Test for consistency.

The pairwise comparison matrices are verified using the consistency ratio (CR). The aggregated pairwise comparison matrix is also verified using CR.

Step 4: Convert evaluations into triangular fuzzy numbers.

The pairwise comparison scores are transformed into triangular fuzzy numbers according to the conversion scale.

Step 5: Aggregate evaluation judgments.

The judgments of the experts/participants are aggregated using the fuzzy geometric mean.

Step 6: Compute the fuzzy weights for each criterion.

The fuzzy weights are determined based on the aggregated pairwise comparison matrix.

Step 7: Defuzzify and normalize the weights.

The fuzzy weights undergo defuzzification to obtain crisp weights, which are subsequently normalized so that their sum equals 1.

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Step 8: Rank the social-emotional competencies.

The criteria are ranked in descending order according to their normalized weights.

4. RESEARCH RESULTS

4.1. Consistency Test Results

The analyzed data were aggregated from the evaluations of six individuals possessing domain knowledge or practical experience in secondary education, educational management, and psychological support for high school students. The expert panel comprised five females and one male across professional roles including school administrators, classroom teachers, youth union officers, and psychological specialists. This composition enabled a multidimensional perspective spanning administration, pedagogy, student affairs, and psychological counseling. The demographic and professional profile of the participants is presented in Table 3.

Table 3: Demographic and Professional Profile of Fuzzy AHP Evaluators

Code	Gender	Age	Professional Field	Years of Experience
E1	Female	40	Educational Management	20 years
E2	Female	41	Teaching	18 years
E3	Female	38	Youth Union Secretary	14 years
E4	Female	47	Educational Management	13 years
E5	Male	32	Teaching	7 years
E6	Female	33	Psychological Counseling	9 years

Source: Compiled from the authors' survey results

Prior to determining the criteria weights, the study verified the consistency of the aggregated pairwise comparison matrix. This step aims to evaluate the logical coherence among judgments. For instance, if C1 is prioritized over C2, and C2 is prioritized over C3, the evaluation for the pair C1-C3 must exhibit a corresponding transitive trend. A matrix with substantial internal contradictions can compromise the reliability of the resulting priority rankings. According to Saaty (1980), a comparison matrix is considered acceptable when the consistency ratio satisfies CR < 0.10. The computational results indicate that the maximum eigenvalue of the matrix is λmax = 5.19, yielding a consistency index of CI = 0.05. With a random index of RI = 1.12 (for n=5), the resulting consistency ratio is CR = 0.0429, which is well below the 0.10 threshold. Therefore, the aggregated pairwise comparison matrix fulfills the consistency requirements and is statistically robust for computing Fuzzy AHP weights.

4.2. Aggregated Pairwise Comparison Matrix

The evaluation judgments of the six participants were aggregated using the geometric mean method. The resulting output is the aggregated fuzzy pairwise comparison matrix across the five social-emotional competencies. Each element $\tilde{a}_{ij}$ is represented as a triangular fuzzy number (l_{ij}, m_{ij}, u_{ij}), capturing the relative importance of criterion i compared to criterion j. The main diagonal elements take the value (1,1,1),

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representing self-comparison for each criterion. Elements symmetrical across the main diagonal are established through reciprocal relationships. The aggregated results are presented in Table 4.

Table 4: Aggregated Fuzzy Pairwise Comparison Matrix

Criteria	C1	C2	C3	C4	C5
C1	(1.00, 1.00, 1.00)	(0.66, 0.92, 1.26)	(0.79, 1.09, 1.51)	(0.66, 0.84, 1.05)	(0.67, 0.83, 1.05)
C2	(0.79, 1.09, 1.51)	(1.00, 1.00, 1.00)	(1.59, 2.05, 2.57)	(1.05, 1.27, 1.51)	(0.86, 1.09, 1.35)
C3	(0.66, 0.92, 1.26)	(0.39, 0.49, 0.63)	(1.00, 1.00, 1.00)	(1.41, 1.89, 2.49)	(0.71, 0.87, 1.09)
C4	(0.95, 1.19, 1.51)	(0.66, 0.79, 0.95)	(0.40, 0.53, 0.71)	(1.00, 1.00, 1.00)	(0.56, 0.72, 0.93)
C5	(0.95, 1.20, 1.48)	(0.74, 0.92, 1.16)	(0.92, 1.15, 1.41)	(1.07, 1.38, 1.78)	(1.00, 1.00, 1.00)

Source: Synthesized from the authors' survey dataset

The modal values (m) for the comparisons C1 - C2, C1 - C3, C1 - C4 and C1 - C5 are 0.92, 1.09, 0.84, and 0.83, respectively. These values cluster closely around 1, indicating that self-awareness was evaluated as having an importance level comparable to the other four competencies, without showing pronounced dominance in any individual pairwise comparison.

Among the pairs involving C2, the modal value for C2 - C3 reached 2.05, the highest in the aggregated matrix. This result demonstrates that self-management was rated moderately higher in importance than social awareness by a discernible margin. The modal values for C2 - C4 and C2 - C5 were 1.27 and 1.09, respectively. Thus, self-management was prioritized over relationship skills, whereas the relative priority between self-management and responsible decision-making remained comparatively balanced.

Regarding the remaining pairs, the modal value for C3 - C4 was 1.89, indicating that social awareness was prioritized over relationship skills in direct comparison. Conversely, the modal values for C3 - C5 and C4 - C5 were 0.87 and 0.72, respectively, reflecting an evaluative tendency to prioritize responsible decision-making over these two competencies.

The aggregated pairwise comparison matrix serves as an intermediate computational milestone for determining the fuzzy geometric means, fuzzy weights, defuzzified values, and normalized priority weights. Consequently, the definitive priority ranking across the five competencies must be derived from the systemic synthesis of the entire matrix rather than inferred from isolated pairwise evaluations.

4.3. Fuzzy AHP Weight Results and Priority Ranking of Social-Emotional Competencies

Based on the aggregated pairwise comparison matrix, the fuzzy geometric mean ($\tilde{r}_i$) and fuzzy weight ($\tilde{w}_i$) for each social-emotional competency were computed. The fuzzy weights were subsequently defuzzified to derive the Best Non-fuzzy Performance (BNP) values. These BNP values were then normalized to determine the relative priority weights and final rankings across the five competencies. The computational results are summarized in Table 5.

Tianjin Daxue Xuebao (Ziran Kexue yu Gongcheng Jishu Ban)/
Journal of Tianjin University Science and Technology
ISSN (Online):0493-2137
E-Publication: Online Open Access
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Table 5: Priority Weights and Rankings of Social-Emotional Competencies Derived from Fuzzy AHP

Code	Social-Emotional Competency	$r = (l, m, u)$	$w = (l, m, u)$	BNP	Normalized Weight (w_i)	Rank
C1	Self-awareness	(0.75, 0.93, 1.16)	(0.121, 0.184, 0.280)	0.195	0.1852	4
C2	Self-management	(1.03, 1.25, 1.51)	(0.166, 0.248, 0.365)	0.260	0.2465	1
C3	Social awareness	(0.76, 0.94, 1.17)	(0.123, 0.186, 0.281)	0.197	0.1869	3
C4	Relationship skills	(0.68, 0.81, 0.99)	(0.110, 0.161, 0.239)	0.170	0.1613	5
C5	Responsible decision-making	(0.93, 1.12, 1.34)	(0.151, 0.221, 0.324)	0.232	0.2202	2
	Total			**1.054**	**1.0000**	

Source: Computed from the authors' survey dataset

Self-management achieved a normalized weight of 0.2465, ranking first, followed by responsible decision-making in second place with a weight of 0.2202. Social awareness ranked third with a normalized weight of 0.1869, while self-awareness registered a weight of 0.1852, placing fourth. The marginal gap of merely 0.17 percentage points between the two reflects near parity in their evaluative priority. Ranking fifth was relationship skills, with a normalized weight of 0.1613. Overall, the weights across the five competencies ranged from 0.1613 to 0.2465. These findings indicate that stakeholder priorities gravitate primarily toward self-management and responsible decision-making, whereas the remaining three competencies exhibit comparatively balanced weights. This hierarchy provides the empirical foundation for discussing the implications of each competency and proposing practical recommendations for implementing school psychological handbooks. The structural distribution of weights and the corresponding priority hierarchy of the five social-emotional competencies are illustrated in Figure 2.

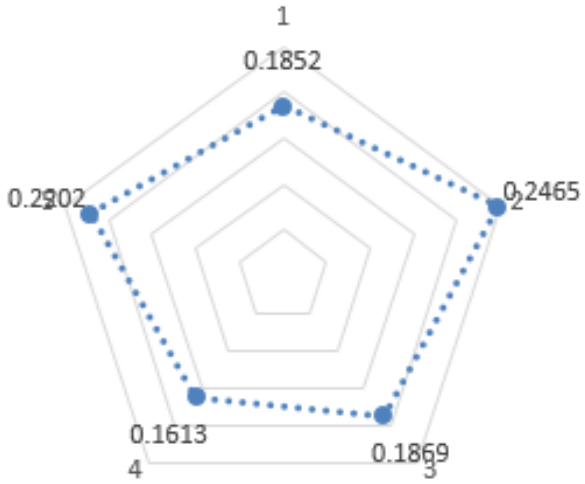


Figure 2: Normalized Weights of Social-Emotional Competencies

Source: Compiled by the authors based on Fuzzy AHP computational results

Tianjin Daxue Xuebao (Ziran Kexue yu Gongcheng Jishu Ban)/
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5. DISCUSSION AND PRACTICAL IMPLICATIONS FOR THE SCHOOL PSYCHOLOGICAL HANDBOOK

5.1. Discussion of Research Findings

The priority hierarchy derived from the Fuzzy AHP results reflects an evaluative structure prioritizing competencies directly tied to students' emotional self-regulation, behavioral control (C2), and coping selection (C5). This outcome can be explained through the intrinsic characteristics of school psychological handbooks. In this study, the handbook is conceptualized as a guided emotional journal, creating a safe reflective space for students to engage in self-expression and retrospective examination of their personal experiences. By documenting emotions, thoughts, stressors, and behavioral responses to specific scenarios, students are facilitated to recognize their internal states, examine their past behaviors, and identify more adaptive coping strategies.

- Self-management (C2) emerged as the highest priority. Self-management encompasses the capacities to regulate emotions, cope with stress, control behaviors, maintain motivation, and pursue individual goals. These aspects can be practiced directly through self-directed expressive writing and reflection. The psychological handbook helps students pinpoint underlying stressors, recognize cognitive-behavioral reactions, and choose constructive responses. The preeminence of this competency aligns with the contextual reality of Vietnamese high school students, who routinely encounter acute academic pressure, standardized examinations, career decisions, and familial expectations. Supporting this perspective, Ho et al. (2023) demonstrated that academic stress is significantly associated with depressive symptoms among Vietnamese adolescents, with psychological resilience functioning as a partial mediator in this relationship.
- Responsible decision-making (C5) ranked second, indicating that the psychological handbook should not only facilitate emotional tracking but also guide students toward actionable cognitive strategies. When reflecting on an interpersonal or academic challenge, students can deliberately weigh alternatives, anticipate consequences, and assess the safety and ethical dimensions of each option. This function is vital during adolescence, a developmental period where students must make independent choices concerning academics, career paths, peer interactions, social media engagement, and risk management. Prompts within the handbook should therefore guide students beyond passive emotional venting toward proactive problem-solving.
- Social awareness (C3) and self-awareness (C1) registered weights of 0.1869 and 0.1852, respectively. The negligible gap of 0.0017 (0.17 percentage points) indicates near parity between these two domains. Self-awareness serves as the initial cognitive anchor for expressive writing, as students must accurately identify their emotions, cognitive patterns, strengths, and personal needs before self-regulation can take place. Concurrently, social awareness equips students to evaluate interpersonal situations from alternative viewpoints, understand the root causes of conflict, and

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Journal of Tianjin University Science and Technology
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temper egocentric behavioral reactions. Consequently, both domains serve as foundational prerequisites that scaffold self-management and responsible decision-making.

- Relationship skills (C4) ranked fifth, with a normalized weight of 0.1613. This relative position may stem partly from the individual and introspective modality of a psychological handbook, whereas communication, teamwork, and active conflict resolution inherently require direct interpersonal interactions. Nonetheless, the handbook still fosters relationship skills through structured reflective prompts that encourage students to dissect interpersonal friction, re-evaluate their communication strategies, and identify trustworthy social support networks.

5.2. Practical Implications for Implementing the Psychological Handbook

Based on the Fuzzy AHP results and the characteristics of the psychological handbook as a form of guided emotional journal, the study proposes several implementation implications as follows:

- **Regarding the Structure of the Psychological Handbook.** Based on the determined priority order, the handbook needs to cover all five social-emotional competencies, in which self-management and responsible decision-making are the two focal contents; self-awareness and social awareness support the reflective process; and establishing and maintaining positive relationships is linked to communication activities and seeking assistance. According to this orientation, the handbook may consist of four parts. The first part introduces the purpose, instructions for use, confidentiality principles, and cases requiring support. The second part helps students identify their own emotions, thoughts, and needs, and view situations from the perspective of others. The third part guides students in managing stress, regulating reactions, maintaining motivation, considering alternatives, and choosing solutions. The fourth part helps students reflect on communication methods, conflict resolution, and identifying people who can provide support when necessary. At the end of each topic, there should be a summary page for students to record what they have realized, the coping strategies they want to try, and subsequent support needs.
- **Regarding the Content of the Handbook.** The content should be organized according to the process through which students reflect on and process an experience. First, students identify the event, name emotions, record thoughts, and recognize personal needs. Next, they examine the causes of stress, evaluate how they reacted, and select appropriate adjustment measures. Afterward, students perceive the situation from the perspective of others, weigh alternatives, anticipate consequences, and choose coping solutions. This sequence connects self-awareness, social awareness, self-management, and responsible decision-making within the same activity. The topics need to be close to the life of high school students, such as grade pressure, examinations, loss of study motivation, subject selection, career orientation, family conflicts, peer relationships, social media use, and the imbalance between study and rest. Each topic can combine an emotional self-assessment scale, a situation -

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Journal of Tianjin University Science and Technology
ISSN (Online):0493-2137
E-Publication: Online Open Access
Vol: 59 Issue:10 :2026
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emotion - reaction journal, root-cause identification questions, and a short-term action plan. Topics on social relationships should incorporate hypothetical situations or exercises on listening, expressing needs, appropriate feedback, resolving conflicts, and seeking support.

The handbook should combine free expressive writing with guided questions. Questions must be concise, clear, appropriate for high school students, and focused on a single topic at a time. An activity may sequentially use questions such as: "What happened?", "How did you feel and think?", "How did you react?", "What outcome did that reaction lead to?", "Is there an alternative solution?", and "What do you want to do next?". This progression helps the writing activity move from emotional expression to experiential reflection and coping selection.

- **Regarding the Utilization of the Psychological Handbook.** Each activity should have a moderate workload and be completed within a short timeframe. Guo (2023) demonstrated that expressive writing has a small but significant effect on reducing symptoms of depression, anxiety, and stress, with effects potentially emerging after a period of time. Therefore, students should be encouraged to use the handbook regularly without being required to write extensively or complete multiple contents in a single session. The instruction section must clearly state the objectives, logging methods, suggested duration, and students' autonomy in selecting topics. The handbook can be utilized after a stressful event, when students need to deliberate over a decision, or when they wish to reflect on their school week. Usage must be voluntary. While writing, students have the right to skip questions or discontinue the activity if they feel uncomfortable. Teachers and school counselors should only provide guidance and support, refraining from treating the handbook as a mandatory assignment, an assessment tool, or a criterion for evaluating students. The psychological handbook also does not serve as a substitute for professional psychological counseling or therapy.
- **Regarding Privacy Rights and Support Mechanisms.** The handbook must distinguish between personal private notes and support request sections. Personal notes are self-managed by students and do not have to be shared without their consent. The support request section can be designed as an optional mechanism, enabling students to express their desire to consult with teachers, school counselors, or family members without disclosing the full content of their written entries.

Schools need to clearly delineate authorized personnel with access to information, the boundaries of confidentiality, and circumstances requiring intervention to ensure safety. The handbook should also provide contact details for designated teachers, the psychological counseling unit, or appropriate external support services.

When students actively signal a need for support, disclose intentions of self-harm, report experiencing violence, or indicate being in imminent danger, the school must execute a timely intake and support protocol. This protocol must be established prior to deploying the handbook.

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- **Regarding Pilot Testing and Refinement of the Psychological Handbook.** The psychological handbook should be piloted with a small cohort of students prior to broader implementation. The pilot testing process needs to examine the comprehensibility of instructions, the appropriateness of prompts, completion time, perceived safety, and the sustainability of journaling habits. Student feedback helps identify ambiguous questions, stress-inducing content, or activities unaligned with practical needs. Teachers and psychological specialists also need to evaluate the operational feasibility of implementation methods, confidentiality protocols, and support procedures. The structure and content of the handbook are refined on the basis of pilot findings. During scaled rollout, schools must continuously monitor and update the handbook to align with student characteristics, available human resources, and the specific counseling context of each institution.

6. CONCLUSION

This study utilized the Fuzzy AHP method to determine the priority levels of five social-emotional competencies, serving as the empirical foundation for proposing implementation implications of a school psychological handbook for high school students. The pairwise comparison matrix satisfied the consistency requirement with CR = 0.0429. The findings indicate that self-management ranked first with a normalized weight of 0.2465, followed by responsible decision-making (0.2202), social awareness (0.1869), self-awareness (0.1852), and establishing and maintaining positive relationships (0.1613).

This hierarchy reflects an evaluative tendency to prioritize emotional regulation, stress coping, and appropriate behavioral selection. However, the differences among the three lower-ranked competencies are relatively small, particularly between social awareness and self-awareness. Therefore, the psychological handbook must encompass all five competencies while placing greater emphasis on self-management and responsible decision-making.

The study has certain limitations as it relied solely on expert evaluations and did not directly gather students' perspectives. The current model examined only five overarching criteria without developing sub-criteria, did not perform a sensitivity analysis, and has not yet pilot-tested the handbook in practice. Consequently, the results reflect the priority structure of the expert evaluation panel rather than denoting students' actual competency levels or the intervention efficacy of the product. Future studies could expand the sample size and diversity of evaluators by incorporating perspectives from students, parents, teachers, and psychological specialists across multiple geographical regions.

The criteria system should also be elaborated at the sub-criteria level and tested for ranking robustness using sensitivity analysis. Additionally, the psychological handbook should be pilot-tested to evaluate usability, journaling sustainability, alignment with student needs, and its effectiveness in supporting social-emotional competence development.

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Tianjin Daxue Xuebao (Ziran Kexue yu Gongcheng Jishu Ban)/
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