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Development and Validation of a Schema-Based Communication Literacy Training Package and Its Effectiveness on Social Adjustment and Academic Motivation among Female Secondary School Students in Qazvin

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A B S T R A C T

Purpose: This study aimed to develop and validate a schema-based communication literacy training package and investigate its effectiveness in improving social adjustment and academic motivation among female secondary school students in Qazvin.

Methods and Materials: This mixed-methods study comprised a qualitative content-analysis phase and a quantitative quasi-experimental phase using a pretest–posttest design with a control group. In the qualitative phase, research articles published during the previous ten years in the field of communication literacy were analyzed to develop the educational package, whose content validity was subsequently confirmed by experts. In the quantitative phase, the statistical population consisted of female upper-secondary school students in Qazvin during the 2024–2025 academic year. Forty students were selected through multistage sampling and assigned to intervention and control groups. Data were collected using Vallerand's Academic Motivation Scale (1992) and the Sinha and Singh Social Adjustment Questionnaire (1993). Qualitative data were analyzed using MAXQDA, whereas quantitative data were analyzed using multivariate analysis of covariance in SPSS version 27.

Findings: Multivariate analysis of covariance demonstrated significant posttest differences between the intervention and control groups. The schema-based communication literacy intervention significantly increased academic motivation ($F = 196.623$, $df = 1, 40$, $p < .001$) and social adjustment ($F = 76.675$, $df = 1, 40$, $p < .001$), with participants receiving the intervention obtaining significantly higher adjusted posttest scores than those in the control group.

Conclusion: Schema-based communication literacy training appears to be an effective educational intervention for enhancing academic motivation and social adjustment among female secondary school students. Integrating communication-literacy skills with schema-oriented psychological principles may strengthen adolescents' cognitive, interpersonal, and behavioral competencies and facilitate more adaptive functioning in academic and social contexts.

Keywords: *Communication literacy, schema-based approach, social adjustment, academic motivation, female students.*

1. Introduction

Adolescence is a critical developmental period characterized by rapid cognitive, emotional, interpersonal, and identity-related changes that shape individuals' subsequent patterns of functioning in educational and social contexts. During this period, adolescents increasingly move beyond family-centered interactions and become more deeply involved in peer relationships, school environments, digital spaces, and broader social networks. These expanding relational demands require not only the ability to express needs and emotions effectively, but also the capacity to interpret others' messages, negotiate interpersonal differences, regulate emotional reactions, and make reasoned decisions in complex communicative situations. At the same time, adolescence is a period in which moral values, social attitudes, self-perceptions, and behavioral tendencies become progressively consolidated, making it especially important for educational systems to provide structured opportunities for the development of adaptive interpersonal and psychosocial competencies (Sharma & Joglekar, 2024). Programs designed to foster meaningful values and purposeful engagement in adolescence similarly emphasize that developmental experiences during these years may influence how young people understand themselves, others, and their roles within society (Zhurba et al., 2022). Therefore, attention to adolescents' communicative capacities should not be limited to linguistic competence alone, because communication in this period functions as a core mechanism through which adjustment, belonging, autonomy, identity, and academic engagement are negotiated.

Communication literacy may be conceptualized as a multidimensional capacity that enables individuals to understand, evaluate, produce, and regulate communication across verbal, nonverbal, written, interpersonal, and digital contexts. Such literacy extends beyond the mechanical exchange of information and involves the appropriate use of language, emotional awareness, interpretation of nonverbal cues, critical thinking, perspective taking, respect for interpersonal boundaries, and adaptive use of media and technological tools. The increasing integration of digital media into adolescents' daily lives has made this broader conception particularly important. Young people are now required to communicate across face-to-face and virtual environments in which the speed, reach, and ambiguity of information can increase both opportunities and psychosocial risks. Critical media literacy is therefore essential for enabling students to analyze messages, distinguish credible from misleading information, understand persuasive communication, and interact with media content in a more reflective manner (Akbari & Nourellahzadeh Khiavi, 2024). Digital literacy is also related to young people's ability to recognize and respond to misinformation and disinformation while maintaining awareness of digital security and responsible online behavior (Luthfia et al., 2023). Accordingly, communication literacy in contemporary adolescence should incorporate not only interpersonal competence but also critical and responsible engagement with digital environments.

The importance of such capacities becomes clearer when the potential harms of uncontrolled or poorly regulated cyberspace involvement are considered. Excessive or maladaptive engagement with virtual environments may expose children and adolescents to distorted social comparisons, misinformation, cyberaggression, dependency-producing interactions, reduced face-to-face communication, and weakening of interpersonal boundaries (Bagheri et al., 2023). At the same time, cyberspace offers important educational, social, and informational opportunities when it is used with adequate critical judgment and self-regulation (Mashayegh & Hajizadeh, 2023). Thus, the central challenge is not simply reducing adolescents' access to digital communication, but strengthening the psychosocial and cognitive competencies that allow them to participate in such environments more adaptively. The development of digital life skills through social media-based interventions has accordingly emerged as a promising preventive and educational approach for adolescents (Zimmermann & Tomczyk, 2024). Similarly, pedagogical approaches such as digital storytelling have been proposed as means of strengthening young learners' social-emotional skills, suggesting that structured communication experiences can simultaneously contribute to emotional understanding, expression, collaboration, and interpersonal competence (Khan et al., 2025). These findings support the view that communication literacy should be treated as an integrated developmental competency rather than as a narrowly defined academic skill.

One of the most important outcomes potentially associated with communication literacy is social adjustment. Social adjustment refers to the individual's capacity to function effectively within interpersonal and social environments, respond flexibly to social demands, establish satisfactory relationships, and regulate behavior in

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accordance with contextual expectations while maintaining psychological well-being. Adolescents' social adaptation is influenced by a combination of individual, familial, and environmental factors. A systematic review of community-based adolescent samples showed that family climate is consistently associated with social adaptation, underscoring the importance of relational environments in shaping adolescents' social functioning (Kurock et al., 2022). Similarly, adjustment during the transition to upper secondary education may follow different developmental trajectories, and these trajectories are shaped by the interaction between personal characteristics and environmental conditions (Jaruseviciute et al., 2024). Such evidence suggests that social adjustment is not merely an individual trait but a dynamic process that emerges through repeated interactions between adolescents and their relational contexts.

Communication competence may contribute to this process by reducing interpersonal misunderstanding, improving emotional expression, strengthening empathy, and facilitating more constructive responses to social challenges. Effective communication skills are especially important in situations in which adolescents must negotiate disagreement, seek support, manage peer pressure, or maintain appropriate boundaries. Communication skills training has been shown to improve communicative abilities in students within professional training contexts, illustrating that interpersonal communication can be strengthened through systematic educational interventions rather than being regarded as a fixed personal characteristic (Reith & Montgomery, 2023). Civic education research has likewise shown that structured social and participatory activities can stimulate early adolescents' reflective thinking about purpose, responsibility, and engagement, further demonstrating the developmental value of guided interpersonal experiences (Bauml et al., 2023). Consequently, communication literacy education may provide a practical platform through which adolescents learn to identify ineffective interactional patterns and replace them with more adaptive verbal, nonverbal, emotional, and cognitive responses.

Social adjustment is also strongly influenced by adolescents' underlying cognitive structures. Schema theory provides a useful framework for explaining why some adolescents repeatedly interpret social interactions through rigid, negative, or maladaptive patterns. Early maladaptive schemas are enduring cognitive-emotional patterns concerning the self, others, and relationships that develop when core emotional needs are not adequately met and may become activated in situations resembling earlier experiences. Evidence suggests that dysfunctional schemas emerging as early as preadolescence can constitute a major pathway through which meaning-making processes affect subsequent mental health (Andre & Baumeister, 2023). Research among adolescents has also demonstrated clinically meaningful associations between early maladaptive schemas and psychological difficulties. For example, adolescents with attention-deficit/hyperactivity disorder have been found to display distinct maladaptive schema patterns, indicating that schema-related processes may be relevant to emotional and interpersonal functioning during adolescence (Sireli et al., 2024). Similarly, early maladaptive schemas have been shown to mediate the relationship between illness perception and pain coping strategies in adolescents with migraine, suggesting that schemas influence not only emotional responses but also coping patterns and behavioral adjustment (Kayar et al., 2023).

Within educational settings, maladaptive schemas may also interfere with school adjustment. Adolescents who interpret academic and interpersonal experiences through schemas involving failure, defectiveness, mistrust, social isolation, dependence, or unrelenting standards may be more likely to experience school-related difficulties, avoid challenges, misinterpret feedback, or engage in maladaptive coping strategies. Research has reported a relationship between early maladaptive schemas and school adjustment, with psychological capital functioning as an important mediating mechanism (Nasirian et al., 2022). Schema therapy has therefore increasingly been examined as an intervention for academic and psychosocial outcomes. Schema therapy has been found to improve academic adjustment and reduce procrastination among students (Shafiei et al., 2022), while schema-based interventions among upper secondary school students have been associated with improvements in well-being and academic self-efficacy (Samadi-Manaf & Moradi, 2025). Emotional schema therapy has also shown effectiveness in improving academic self-efficacy, distress tolerance, academic resilience, and test-related outcomes among students experiencing test anxiety (Moradpour & Bavi, 2025). These findings provide a strong rationale for integrating schema-oriented principles into communication training, particularly when the goal is to modify both overt interactional behavior and the cognitive-emotional processes that underlie it.

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Schema-focused interventions may be especially relevant because maladaptive interpersonal responses often persist despite individuals' awareness that those responses are ineffective. This persistence may reflect schema-driven interpretations that are automatically activated in relational contexts. Schema-based treatments attempt to identify these patterns, examine their developmental origins, and strengthen healthier alternatives through cognitive, emotional, behavioral, and experiential techniques. Evidence across different populations supports the broader interpersonal relevance of this approach. Schema-based couple therapy has been shown to reduce relationship distress and marital boredom (Ardeh et al., 2025), and schema-focused couple interventions have produced changes in dysfunctional relationship beliefs (Kordvani & Khaleghipour, 2023). An integrated schema therapy and Imago therapy approach has also been reported to reduce interpersonal problems among young couples (Mahmoudi Mozafar, 2023). Although these studies concern adults rather than adolescents, they demonstrate that schema-oriented interventions can meaningfully alter relationship-related beliefs and interactional patterns.

Additional evidence supports the applicability of schema-based methods to problems involving social cognition and interpersonal threat. An online contextual schema therapy workshop has been shown to reduce social anxiety symptoms, indicating that schema-oriented techniques can be effectively adapted to structured and even technology-mediated intervention formats (Stefan et al., 2023). More recent studies have also emphasized the importance of schema modes in understanding maladaptive behavioral patterns among young people, including university students engaging in nonsuicidal self-injury (Ulbe et al., 2026). Furthermore, attachment insecurity and dysregulated empathy have been linked to social anxiety, particularly where maladaptive interpersonal responses generalize from significant relationships to interactions with acquaintances (Ecer et al., 2026). Collectively, these findings highlight the importance of cognitive-emotional templates, relational expectations, and empathy regulation in social functioning. A communication literacy intervention that incorporates schema-based principles may therefore help adolescents not only learn *what* effective communication looks like, but also understand *why* they repeatedly engage in ineffective patterns and how those patterns can be modified.

A second major outcome relevant to communication literacy and schema-based education is academic motivation. Academic motivation is a multidimensional construct referring to the internal and external processes that energize, direct, and sustain students' engagement in learning activities. Contemporary motivational theories emphasize that behavior is shaped by multiple interacting mechanisms, including intrinsic interest, external incentives, self-efficacy, goal orientation, perceived competence, autonomy, and the satisfaction of psychological needs (Bandhu et al., 2024). In educational contexts, motivation is central to persistence, classroom participation, self-regulated learning, academic achievement, and resilience in the face of setbacks. Conceptual work on academic motivation has similarly emphasized the need to integrate prominent theoretical frameworks in order to explain students' motivational functioning under changing contextual conditions (Fong, 2022). Because adolescence is a developmental stage in which autonomy and self-definition become increasingly important, school environments that support competence, autonomy, and meaningful engagement are likely to be particularly consequential for sustaining academic motivation.

Empirical evidence indicates that academic motivation is strongly associated with psychological need satisfaction and self-regulatory capacities. Parental autonomy support, satisfaction of psychological needs, and self-control have all been identified as important contributors to academic motivation in adolescents (Celik, 2024). Academic self-efficacy and academic self-concept are likewise closely related to students' motivational functioning, as students are more likely to invest effort and persist when they perceive themselves as capable and academically competent (Kapoor, 2024). Feedback processes are also influential; constructive feedback can operate as a form of reward, and students' emotional reactions to perceived feedback may mediate its association with task interest (Jansen et al., 2025). These findings suggest that motivation is partly relational and communicative in nature. Students continuously interpret messages from teachers, parents, and peers, and these interpretations may either reinforce competence, autonomy, and engagement or activate negative beliefs and avoidance.

From a schema-oriented perspective, maladaptive beliefs may weaken academic motivation by shaping the meaning students assign to failure, evaluation, interpersonal feedback, and achievement demands. A student with a failure schema may interpret ordinary academic setbacks as confirmation of global incompetence, whereas a student with defectiveness or social isolation schemas may experience classroom interaction as threatening or humiliating. Similarly, maladaptive approval-seeking or unrelenting

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standards may produce externally controlled engagement rather than adaptive intrinsic motivation. This interpretation is consistent with evidence that schema therapy can improve academic self-efficacy and psychological well-being in upper secondary school students (Samadi-Manaf & Moradi, 2025) and that emotional schema interventions can promote academic resilience and reduce maladaptive responses to evaluative stress (Moradpour & Bavi, 2025). Consequently, combining communication literacy with schema-based techniques may address both the interpersonal environment in which academic motivation develops and the cognitive-emotional patterns through which students interpret that environment.

This integrated approach is particularly relevant for female secondary school students, who may encounter simultaneous developmental, academic, interpersonal, and social demands during adolescence. Effective communication may help students obtain social support, express needs, resolve conflict, manage academic feedback, navigate peer relationships, and use digital communication more responsibly. At the same time, schema awareness may enable them to identify automatic beliefs that distort social information, intensify emotional reactions, or promote avoidance and maladaptive coping. The integration of these domains therefore creates the possibility of a more comprehensive intervention than communication-skills instruction alone. Rather than merely teaching discrete skills such as speaking, listening, or assertiveness, a schema-based communication literacy package can potentially address verbal and nonverbal communication, emotional understanding, empathy, critical thinking, interpersonal boundaries, digital communication, problem solving, and maladaptive relational beliefs within a unified framework.

Despite the growing literature on communication training, digital literacy, adolescent adjustment, academic motivation, and schema-based interventions, relatively few studies have attempted to integrate these domains into a single structured educational package for secondary school students. Existing studies have frequently examined digital literacy separately from interpersonal communication (Luthfia et al., 2023; Zimmermann & Tomczyk, 2024), studied schemas primarily in relation to psychopathology or specific academic problems (Nasirian et al., 2022; Sireli et al., 2024), or evaluated schema-based interventions without explicitly targeting broad communication literacy (Shafiei et al., 2022; Stefan et al., 2023). Likewise, research on adolescent adjustment often emphasizes family or environmental factors (Jaruseviciute et al., 2024; Kurock et al., 2022), whereas motivational research tends to focus on autonomy, self-efficacy, feedback, or self-regulation (Celik, 2024; Jansen et al., 2025). These separate lines of inquiry point toward a need for an integrated, developmentally appropriate intervention that simultaneously addresses communication competencies, schema-driven cognitive-emotional processes, and adaptive functioning across educational, social, and digital contexts.

Accordingly, the present study aimed to develop and validate a schema-based communication literacy training package and to examine its effectiveness in improving social adjustment and academic motivation among female secondary school students in Qazvin.

2. Methods and Materials

In terms of purpose, this study was fundamental in the first phase and applied in the second phase. Based on the nature of the study and the method of data collection, this was a mixed-methods study integrating content analysis (development of a schema-based communication literacy training package) in the qualitative phase and a quasi-experimental method in the quantitative phase. Accordingly, in the qualitative phase, given the research topic, an attempt was made to identify the fundamental dimensions of communication literacy through a careful review of library-based sources (identification of categories and subcomponents). After identifying the dimensions of the concept of communication literacy and determining its components, the researcher carefully examined the theoretical foundations, dimensions, major principles, and protocols based on the schema therapy approach. Drawing on the knowledge obtained in the preceding stage and subsequently on the perspectives and guidance of expert faculty members, psychologists, and experienced counselors, a schema-based communication literacy training package was designed and validated. To validate the educational package, after its preparation and development, its content validity was examined based on expert opinions. For this purpose, each exercise and assignment, together with the stages of implementing the package, was provided to the experts in written form, and they expressed their opinions regarding whether each item was essential or nonessential. The Content Validity Ratio (CVR) was then calculated for each exercise, and exercises with an acceptable score were retained in the educational package. In accordance with the purpose of the study, the concept of communication literacy and related concepts

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(communication, communication skills, and communication competence) were considered the units of analysis.

In the quantitative phase, using a quasi-experimental pretest–posttest design with a control group, the developed schema-based communication literacy training package was implemented in the experimental group. Accordingly, six secondary schools in Qazvin were selected, and the research questionnaires were distributed among the sampled students. Participants who obtained low scores on either of the dependent-variable measures were identified (75 students among the 300 respondents who completed the questionnaires). The selected individuals were then screened according to the inclusion criteria, including provision of informed consent, obtaining parental consent, being female, and having adequate mental health, as well as the exclusion criteria, including concurrent use of psychotropic medications, a history of frequent and irregular school attendance, and not residing within the geographical area in which the intervention was conducted. After applying the inclusion and exclusion criteria, 53 students were found eligible to participate in the study. Of these, 40 students who had obtained the lowest scores on the research questionnaires were randomly assigned to the experimental and control groups, with 20 participants in each group. Participants in the experimental group received the schema-based communication literacy training package over 12 sessions. Following implementation of the intervention, both the experimental and control groups completed the posttest, and the resulting data were analyzed. The statistical population in the first (qualitative) phase consisted of valid domestic and international research articles published in the field of communication literacy during the preceding 10 years, while the population in the second (quantitative) phase consisted of approximately 10,000 female students enrolled in upper-secondary schools in Qazvin during the 2024–2025 academic year. The sample in the first phase was selected through a census approach. Accordingly, 30 valid research articles were selected from among 200 articles on the basis of their greatest relevance to the research objectives and were analyzed to identify the components of communication literacy. The statistical sample in the second phase consisted of 40 tenth-grade students from secondary schools in Qazvin who were selected using random sampling. Specifically, six schools were randomly selected, and two classes were selected from each school.

Table 1

Validity of the Schema-Based Communication Literacy Training Package

Worksheet Title	Essential	Useful but Not Essential	Not Essential	CVR	Status
Worksheet No. 1	8	0	0	1.00	Accepted
Worksheet No. 2	8	0	0	1.00	Accepted
Worksheet No. 3	8	0	0	1.00	Accepted
Worksheet No. 4	3	—	5	0.37	Worksheet deleted
Worksheet No. 5	8	0	0	1.00	Accepted
Worksheet No. 6	8	0	0	1.00	Accepted
Worksheet No. 7	8	0	0	1.00	Accepted
Worksheet No. 8	8	0	0	1.00	Accepted
Worksheet No. 9	8	0	0	1.00	Accepted
Worksheet No. 10	8	0	0	1.00	Accepted
Worksheet No. 11	2	1	5	0.25	Worksheet deleted
Worksheet No. 12	8	0	0	1.00	Accepted
Worksheet No. 13	7	0	1	0.87	Accepted
Worksheet No. 14	8	0	0	1.00	Accepted
Worksheet No. 15	8	0	0	1.00	Accepted
Worksheet No. 16	8	0	0	1.00	Accepted

To validate the designed educational package, the opinions of eight experts and researchers in the fields of psychology and counseling were obtained using purposive sampling. The Content Validity Ratio was calculated separately for each exercise and assignment included in the schema-based communication literacy training package, and the necessary modifications to the categorization of life skills were made based on their opinions. Ultimately, while the designed exercises and assignments were generally approved, items judged to be nonessential were excluded from the educational package, resulting in the deletion of two worksheets. The following standardized questionnaires were used to collect data in this study.

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Vallerand Academic Motivation Scale (1992): This questionnaire was originally developed by Vallerand in 1992 to measure academic motivation through items rated on a seven-point Likert scale ranging from *does not correspond at all* to *corresponds exactly*. The instrument includes the dimensions of intrinsic motivation (to know, toward accomplishment, and to experience stimulation), extrinsic motivation (identified regulation, introjected regulation, and external regulation), and amotivation. Vallerand et al. (1992) confirmed the validity of the instrument and reported a reliability coefficient of .71. Ghomi, Moslemi, and Mohammadi (2019) confirmed its content validity and reported a test–retest reliability coefficient of .73 and a Cronbach's alpha coefficient of .81. In the present study, the overall reliability coefficients of the instrument at the pretest and posttest stages, calculated using Cronbach's alpha, were .76 and .85, respectively.

Sinha and Singh Social Adjustment Questionnaire (1993): The Social Adjustment Questionnaire was developed and validated by Sinha and Singh in 1993 for adolescent students. The questionnaire consists of 55 items and uses a dichotomous Yes/No response format. The instrument is designed to assess adjustment across three dimensions: social, emotional, and educational adjustment. Ahghar (2011), in evaluating the validity of this instrument using exploratory factor analysis and content validity, confirmed the validity of the questionnaire construct. Khankhanizadeh and Bagheri (2012) reported a Cronbach's alpha reliability coefficient of .75 for the questionnaire. In the present study, the overall reliability coefficients at the pretest and posttest stages, calculated using Cronbach's alpha, were .62 and .71, respectively.

Table 2

Description of the Schema Therapy-Based Communication Literacy Training Sessions

Session	Title	Objectives	Session Content
Session 1	Familiarization of group members with one another and introduction to communication literacy and effective communication skills	Familiarizing group members with one another; introducing the concept of communication literacy through examples; introducing the advantages and benefits of communication literacy in the contemporary world	Group discussion and participants' descriptions of the concept of communication and problems experienced individually or in interactions with others; completion of the worksheet on understanding positive and negative communication after the trainer's explanations and group discussion (Exercise 1.1); review of the concept of communication literacy and its influence on life; completion of the worksheet on the usefulness of appropriate and rational communication in a challenging world based on an understanding of communication literacy (Worksheet 1.2); homework: completion of a home worksheet recording positive and negative communication experiences
Session 2	Self-understanding (understanding beliefs and schemas) to determine the pathway for developing communication competencies	Introducing the concept of schemas and examining participants' beliefs and schemas; explaining the reciprocal relationship between schemas and different aspects of positive and negative communication; identifying areas for short- and long-term communication activities based on the communication principles and concepts presented	Review of the previous session and its main points; review of different types of communication skills and methods of developing each skill under simple and complex communication conditions (Worksheet 2.1); introduction to basic human needs and the development of schemas following inadequate satisfaction of needs, together with explanation of their various aspects through group work (Brochure or Worksheet 2.2); practice in identifying irrational beliefs and negative thoughts that interfere with effective communication with others; session summary by participants
Session 3	Training and assessment of verbal and nonverbal life skills	Identifying participants' schemas using the Young questionnaire; introduction to fundamental verbal and nonverbal communication skills involved in communication literacy; individual assessment to determine participants' communication literacy competencies	Review of the previous session and its principal points; completion of a self-understanding worksheet through interviews, group discussions, and completion of the Young Schema Questionnaire to enhance schema-based self-awareness (Worksheet 2.2); explaining the importance of verbal and nonverbal communication skills for improving communication literacy in social interactions while maintaining awareness and mastery of schemas; examining the effects of low communication literacy on the persistence of schemas and maladaptive coping styles (Worksheet 3.1); session summary by participants
Session 4	Understanding trust within the real context of social communication	Introducing realistic patterns of trusting and challenging communication and the skills required in these situations; examining participants' competencies in the dimensions of communication literacy and verbal and nonverbal skills; introducing the role and importance of listening and speaking in appropriate, purposeful communication	Presenting multiple examples of trusting and challenging communication situations drawn from participants' life experiences, including trust-enhancing verbal and nonverbal communication skills; examining participants' competencies in the dimensions of communication literacy and verbal/nonverbal communication and understanding the relationship between social competencies and the activation

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			and regulation of schemas (Worksheet 3.2); understanding the importance of listening and speaking in appropriate and purposeful communication (Worksheet 3.3); session summary by participants
Session 5	Understanding emotions as an influential communication tool	Introducing the role of emotions in the formation of communication-related beliefs; developing the ability to monitor daily emotions and understand their role in communication problems	Completion of an emotion-monitoring and tracking sheet concerning everyday interactions to increase awareness of emotions and personal needs involved in challenging communication processes (Worksheet 4.3); training in methods of preventing destructive interactions through recognition, control, and regulation of emotions in personal and social life (Worksheet 4.4); session summary by participants
Session 6	Moving beyond mistrust and social pessimism through empirical testing of one's own mindset	Introducing the concept of validation by others and methods of facilitating it; understanding approval seeking and methods of establishing constructive communication; introducing methods for determining the roles of individuals in one's life to reduce mistrust in communication; identifying negative, dependency-producing communication behaviors by reducing circumstances associated with inappropriate validation	Appropriate responses when one does not feel understood or validated by others and moving beyond maladaptive approval seeking (Worksheet 5.1); adopting a continuum perspective in evaluating individuals' roles in one's life to modify pessimism and intense emotions arising from the mistrust schema (Worksheet 5.2); identifying negative communication behaviors that contribute to lack of validation from others and increased interpersonal dependency (Worksheet 5.3); session summary by the facilitator and participants
Session 7	Communication based on gratitude, empathy, and affection toward others	Introducing the destructive role of entitlement in interpersonal challenges and relationship deterioration; introducing the role of empathy in reducing interpersonal conflicts and maladaptive relationships; introducing gratitude and applying it in relationships characterized by security, autonomy, and happiness	Discussion of the role of the positive moral characteristic of empathy in developing constructive interpersonal bonds (Worksheet 7.1); discussion of the role of gratitude in developing constructive interpersonal bonds (Worksheet 7.2); discussion of the role of pride and entitlement in schema development and methods of modifying them; session summary by the facilitator and participants
Session 8	Communication based on satisfying fundamental needs in oneself and others	Introducing basic human needs and adaptive social behavior based on those needs; introducing methods of establishing appropriate communication while respecting others' autonomy; introducing methods of establishing appropriate communication while respecting others' sense of competence	Understanding communication that preserves personal boundaries and respects others' personality, right to choose, and personal competencies; understanding the role of autonomy in developing relationships based on constructive interaction while satisfying individual needs; understanding the role of respect for others' individual competencies in developing constructive relationships while satisfying individual needs; discussion of the emergence of adaptive social behavior following satisfaction of basic human needs; session summary by the facilitator and participants
Sessions 9 and 10	Understanding friendship through respect for rights and maintenance of interpersonal boundaries	Introducing the importance of and methods for making adaptive communication a life goal; understanding the concept of positive encoding in interpersonal and challenging relationships	Discussion of the importance of making adaptive communication a positive life goal within one's value system and learning principles for establishing relationships characterized by clear boundaries (Worksheet 10.1); identifying others' rights in virtual communication and learning methods of respecting these rights in both face-to-face and virtual communication (Worksheet 10.2); session summary by the facilitator and participants
Session 11	Understanding validation and working toward its improvement through problem solving	Introducing signs of the overcompensation coping style, such as resentment and revenge, in social relationships; learning communication methods free from overcompensation in order to develop constructive relationships; learning problem-solving principles for confronting communication challenges	Learning to apply step-by-step problem-solving ability as a practical tool for behavioral pattern breaking in relationships influenced by schemas of mistrust, dependence, negativity, entitlement, and other destructive interpersonal schemas (Worksheet 11.1); controlling distancing and hostile verbal and nonverbal behaviors in relationships with others to promote calmness in interpersonal relationships (Worksheet 11.2); session summary by the facilitator and participants
Session 12	Communication literacy in the virtual environment for constructive behavior	Introducing the concept of constructive virtual communication based on critical analysis; introducing the role and importance of maintaining boundaries in virtual communication; introducing the maladaptive effects of cyberspace on the reinforcement and expansion of maladaptive schemas	Discussion of the importance of respecting one's own and others' rights and boundaries in virtual and media-based communication; discussion of maladaptive communication resulting from problematic and approval-seeking behaviors in cyberspace; identifying others' rights in virtual communication and methods of respecting these rights in both face-to-face and virtual communication (Worksheet 10.2); overall review of the sessions and collection of participants' feedback

As presented in Table 2, the objectives and content of each session of the schema-based communication literacy training package were described. This educational package was designed for adolescents and consisted of 12 training sessions lasting 45–60 minutes each. Accordingly, the sessions were developed on the basis of the main and subsidiary themes extracted from the components of communication literacy and grounded in the principles and strategies of schema therapy. Some of the exercises and assignments used for therapeutic purposes were developed

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creatively and implemented for the first time, whereas most of the other exercises and assignments were based on schema therapy principles. Qualitative data analysis was conducted through coding to derive categories and components of communication literacy from the reviewed literature using MAXQDA 2018. In the quantitative phase, multivariate analysis of covariance (MANCOVA) and its underlying assumptions were used to test the research hypotheses in SPSS version 27.

3. Findings and Results

In the qualitative analysis phase, a conceptual model of communication literacy based on qualitative analysis and a schema-oriented approach was developed according to expert perspectives and comprised the following components and subcomponents. Table 3 presents the dimensions and components of the communication literacy model, consisting of four main dimensions and 20 core components. Accordingly, four fundamental dimensions were identified. Verbal and nonverbal communication skills, with 87 codes; establishing appropriate relationships at various levels of communication, with 77 codes; using virtual media tools in communication, with 38 codes; and communication based on thinking and logical reasoning, with 37 codes, respectively, had the highest frequencies of codes among the important components and dimensions of the conceptual communication literacy model. Subsequently, the validity of the model was examined based on expert agreement.

Table 3

Dimensions and Components of the Communication Literacy Model

Main Dimensions	Underlying Subcomponents
Verbal and nonverbal communication skills	Appropriate comprehension and transmission of messages in verbal communication
	Writing and comprehension of content in written communication
	Use of the five senses in communication
	Vocabulary knowledge and verbal fluency
	Use of body language and nonverbal cues
	Understanding and expressing emotions during the communication process
Establishing appropriate relationships at various levels of communication	Appropriate communication in formal settings
	Appropriate communication with God and other beings
	Participation within family, friendship, and social groups
	Appropriate communication with other cultures
	Understanding cultural differences in interactions with other communities
	Communication competence in financial exchanges
Use of virtual media tools in communication	Learning communication through technological tools
	Using scientific and research-oriented communications
	Managing maladaptive and destructive communications
	Using information for personal development
Communication based on thinking and logical reasoning	Discourse based on critical and logical thinking in verbal communication
	Reliance on accurate scientific information in comprehension and communication
	Logical reasoning in understanding written communication texts
	Adherence to conventional communication rules and norms

Descriptive quantitative analysis of the demographic variables showed that, with respect to age, in the experimental group, 4 participants were aged 16 years or younger (20%), 9 were 17 years old (45%), and 7 were 18 years old (35%). In the control group, 5 participants were aged 16 years or younger (25%), 8 were 17 years old (40%), and 7 were 18 years old (35%). With respect to maternal education, in the experimental group, 6 mothers had a high-school diploma or lower level of education (30%), 9 had an associate or bachelor's degree (45%), and 5 had a master's or doctoral degree (25%). In the control group, 7 mothers had a high-school diploma or lower level of education (35%), 9 had an associate or bachelor's degree (45%), and 5 had a master's or doctoral degree (25%). Regarding paternal education, in the experimental group, 7 fathers had a high-school diploma or lower level of education (35%), 8 had an associate or bachelor's degree (40%), and 5 had a master's or doctoral degree (25%). In the control group, 7 fathers had

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a high-school diploma or lower level of education (35%), 9 had an associate or bachelor's degree (45%), and 4 had a master's or doctoral degree (20%). Regarding the descriptive statistics of the research variables, the mean academic motivation scores of participants in the experimental group at pretest and posttest were 93.80 and 128.01, respectively, compared with 95.30 and 95.85 in the control group. The mean social adjustment scores of participants in the experimental group at pretest and posttest were 7.65 and 11.35, respectively, compared with 7.01 and 7.10 in the control group.

After describing the study sample in terms of demographic variables and examining the research variables, the research hypotheses were tested using multivariate analysis of covariance. For this purpose, the assumptions underlying MANCOVA were first examined, after which changes in social adjustment and academic motivation from pretest to posttest were compared between the experimental and control groups. Normality of the data was confirmed using the Kolmogorov–Smirnov test. For social adjustment, the test statistics at pretest and posttest were .113 and .137, with significance levels of .65 and .40, respectively. For academic motivation, the corresponding statistics were .185 and .165, with significance levels of .11 and .26, respectively. The assumption of homogeneity of covariance matrices of the dependent variables across levels of the independent variable was confirmed using Box's M test (statistic = 2.603, p = .48). The assumption of homogeneity of variances was also satisfied according to Levene's test for social adjustment and academic motivation (p = .18 and p = .27, respectively). A key assumption of analysis of covariance is that the relationship between the covariate (pretest score) and the dependent variable is equivalent across groups; that is, the slopes of the regression lines should be equal or very similar across groups, and the lines should not intersect significantly or exhibit clearly different slopes.

Based on the results, the assumption of homogeneity of regression slopes was satisfied for academic motivation, with positive and approximately parallel regression lines. Similarly, the assumption of homogeneity of regression slopes was satisfied for social adjustment, with positive and approximately parallel regression lines.

Table 4

Significance of Multivariate Analysis of Covariance Results

Multivariate Test	Statistic Value	F	df1	df2	p
Pillai's Trace	.956	236.468	3	33	< .001
Wilks' Lambda	.044	236.468	3	33	< .001
Hotelling's Trace	21.497	236.468	3	33	< .001
Roy's Largest Root	21.497	236.468	3	33	< .001

As shown in Table 4, the multivariate test statistics used in MANCOVA, namely Pillai's Trace, Wilks' Lambda, Hotelling's Trace, and Roy's Largest Root, indicated that at the .001 significance level, significant posttest differences existed between the schema-based communication literacy training group and the control group in social adjustment and academic adjustment.

Table 5

Results of Multivariate Analysis of Covariance for Differences Between the Experimental and Control Groups

Source	Dependent Variable	Sum of Squares	df	F	p	Effect Size
Group	Posttest academic motivation	10990.157	1	201.073	< .001	.84
	Posttest social adjustment	131.438	1	79.915	< .001	.67
Error	Posttest academic motivation	1967.670	36			
	Posttest social adjustment	59.210	36			
Total	Posttest academic motivation	512135	40			
	Posttest social adjustment	3907	40			

Table 5 presents the results of the multivariate analysis of covariance. Accordingly, a significant difference was observed between the experimental and control groups in participants' posttest academic motivation scores, with academic motivation being higher in the schema-based communication literacy training group than in the control

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group, $F = 201.073$, $p < .001$. Similarly, the mean social adjustment score was higher in the schema-based communication literacy training group than in the control group, $F = 79.915$, $p < .001$. Therefore, following implementation of the schema-based communication literacy training package, participants in the experimental group demonstrated higher levels of academic motivation and social adjustment at posttest than participants in the control group. Accordingly, in testing the first hypothesis, a significant posttest difference in academic motivation was observed between the experimental and control groups, and the mean posttest academic motivation score in the schema-based communication literacy training group was higher than that in the control group; therefore, the first research hypothesis was supported. Likewise, in testing the second hypothesis, the analysis of covariance examining the effects of schema-based communication literacy training on social adjustment showed that the mean posttest social adjustment score in the schema-based communication literacy training group was higher than that in the control group; therefore, the second research hypothesis was supported.

4. Discussion and Conclusion

The present study was conducted to develop and validate a schema-based communication literacy training package and to evaluate its effectiveness in improving academic motivation and social adjustment among female secondary school students in Qazvin. The qualitative findings led to the identification of four principal dimensions of communication literacy: verbal and nonverbal communication skills, establishing appropriate relationships at different levels of communication, effective use of virtual media tools, and communication based on thinking and logical reasoning. In the quantitative phase, the results of multivariate analysis of covariance showed that the developed intervention had a statistically significant effect on both academic motivation and social adjustment. Students who participated in the schema-based communication literacy program obtained significantly higher posttest scores in academic motivation than those in the control group, with a large effect size. Similarly, the intervention group demonstrated significantly higher social adjustment scores at posttest than the control group, again with a substantial effect size. These findings indicate that combining communication literacy training with principles derived from schema therapy may represent an effective approach for strengthening both educational and interpersonal functioning during adolescence.

The qualitative finding that communication literacy is a multidimensional construct is consistent with contemporary perspectives that conceptualize communication competence as extending beyond simple verbal exchange. The dimensions identified in the present study included not only verbal and nonverbal skills but also digital communication, critical reasoning, interpretation of information, emotional expression, and appropriate interpersonal engagement. This finding is consistent with research emphasizing critical media literacy as an essential competency in contemporary social environments, particularly because adolescents increasingly encounter complex and potentially misleading information through digital platforms (Akbari & Nourellahzadeh Khiavi, 2024). Similarly, the importance of digital literacy and the ability to evaluate misinformation has been emphasized in studies of young people's online functioning, suggesting that adolescents require both technical and interpretive competencies to communicate safely and effectively in cyberspace (Luthfia et al., 2023). The dimension related to the use of virtual media tools is also compatible with studies showing that adolescents' digital environments may create both educational opportunities and substantial psychosocial risks, depending on how these environments are used (Bagheri et al., 2023; Mashayegh & Hajizadeh, 2023). Therefore, the structure of the developed package appears to reflect the contemporary ecology of adolescent communication, in which face-to-face, emotional, academic, and digital interactions are increasingly interdependent.

The finding concerning improvement in academic motivation is consistent with theoretical models that view motivation as the product of interactions among cognitive appraisals, perceived competence, autonomy, psychological needs, and environmental feedback. Contemporary analyses of motivational theories indicate that students' behavior is shaped by multiple internal and external mechanisms rather than by a single motivational process (Bandhu et al., 2024). The schema-based communication literacy intervention may have strengthened academic motivation by modifying students' interpretations of educational experiences and interpersonal feedback. For example, students with maladaptive schemas related to failure, defectiveness, social isolation, dependence, or approval seeking may interpret ordinary academic difficulties as evidence of personal inadequacy. Such interpretations can reduce persistence and willingness to engage in challenging tasks. Through schema

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identification, cognitive restructuring, emotional awareness, and adaptive communication exercises, participants may have developed more balanced interpretations of academic situations and a stronger sense of competence.

This interpretation is consistent with findings showing that schema-focused interventions can improve academic functioning. Schema therapy has been reported to improve academic adjustment and reduce procrastination among students (Shafiei et al., 2022). Likewise, schema therapy has been found to enhance well-being and academic self-efficacy among upper secondary school students (Samadi-Manaf & Moradi, 2025). The present findings also align with evidence that emotional schema therapy can improve academic self-efficacy, academic resilience, distress tolerance, and test-related psychological outcomes (Moradpour & Bavi, 2025). Taken together, these studies support the proposition that maladaptive cognitive-emotional structures are relevant to educational motivation and that interventions targeting such structures can improve students' engagement with academic demands.

The improvement in academic motivation may also be explained through enhanced self-regulation and satisfaction of psychological needs. Research has shown that academic motivation in adolescents is strongly associated with autonomy support, satisfaction of basic psychological needs, and self-control (Celik, 2024). The present intervention included content related to identifying personal needs, respecting autonomy, regulating emotions, strengthening competence, and developing constructive communication. These elements may have contributed to students' sense of agency and psychological ownership over their behavior, which in turn may have increased motivation. Academic motivation is also related to academic self-efficacy and academic self-concept (Kapoor, 2024). Therefore, when students become more capable of expressing themselves effectively, receiving feedback constructively, managing interpersonal challenges, and interpreting communication in a less threatening manner, they may also develop stronger beliefs in their own academic competence.

The role of feedback is particularly important in this regard. Constructive feedback has been shown to function as a rewarding educational experience, while students' emotional responses to feedback can influence subsequent task interest (Jansen et al., 2025). In adolescents with maladaptive schemas, feedback may be filtered through pre-existing beliefs and interpreted as criticism, rejection, or proof of inadequacy. The schema-oriented component of the intervention may have reduced this cognitive bias by helping students recognize automatic interpretations and replace them with more adaptive cognitive responses. Improved communication literacy may also have enabled students to ask for clarification, seek support, and respond more effectively to teachers and peers, thereby transforming feedback from a perceived threat into a useful learning resource.

The finding that the intervention significantly improved social adjustment is likewise consistent with previous research. Social adjustment during adolescence is shaped by the interaction of individual competencies and environmental conditions. A systematic review has shown that family climate is strongly associated with adolescent social adaptation, illustrating the central role of relational environments in psychosocial development (Kurock et al., 2022). In addition, longitudinal and developmental research has demonstrated that adolescents follow different trajectories of adjustment when transitioning to upper secondary education and that both individual characteristics and contextual factors contribute to these trajectories (Jaruseviciute et al., 2024). The present intervention may have improved social adjustment because it explicitly targeted several competencies needed for adaptive functioning, including listening, empathy, emotional awareness, trust, respect for boundaries, problem solving, and constructive responses to interpersonal conflict.

The effect on social adjustment can also be understood through the schema framework. Early maladaptive schemas influence how individuals interpret social situations and may create persistent expectations of rejection, mistrust, failure, dependence, or emotional deprivation. Dysfunctional schemas that emerge during preadolescence have been identified as an important pathway through which personal meaning systems affect later psychological functioning (Andre & Baumeister, 2023). Similarly, early maladaptive schemas have been associated with poorer school adjustment, partly through their relationship with psychological resources such as psychological capital (Nasirian et al., 2022). The intervention used in the present study was designed not only to teach communication techniques but also to help students identify schema-driven interpretations and coping responses. This combination may explain why it produced substantial improvements in social adjustment.

The findings are also consistent with evidence showing that schema-related processes are strongly connected to interpersonal and emotional functioning. Early maladaptive schemas have been identified among adolescents with

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attention-deficit/hyperactivity disorder, highlighting their relevance to emotional and social difficulties during adolescence (Sireli et al., 2024). Schema processes have also been shown to mediate adolescents' coping responses in the context of chronic physical conditions (Kayar et al., 2023). In addition, research on social anxiety suggests that interpersonal insecurity and dysregulated empathy may generalize from close relationships to broader social interactions (Ecer et al., 2026). Such findings suggest that adolescents' social behavior is often influenced by deeper cognitive-emotional structures rather than by isolated skill deficits. Therefore, a schema-based communication literacy intervention may be effective because it simultaneously addresses observable communication behavior and the underlying beliefs that shape that behavior.

The positive effect on social adjustment can further be explained through improvements in empathy, validation, and emotional communication. Several sessions of the intervention focused directly on recognizing emotions, developing empathy, expressing appreciation, reducing entitlement, overcoming approval seeking, and learning to maintain appropriate interpersonal boundaries. These competencies are central to adaptive social functioning because they reduce misunderstanding and increase the likelihood of reciprocal, respectful relationships. The importance of social-emotional skills in educational contexts is supported by evidence showing that structured pedagogical approaches such as digital storytelling can improve young learners' social-emotional competencies (Khan et al., 2025). Communication skills training has likewise been shown to improve interpersonal and communicative abilities among students (Reith & Montgomery, 2023). These findings support the assumption that social adjustment can be strengthened when communication skills are explicitly taught and practiced rather than assumed to develop automatically.

The intervention's effectiveness may also be related to its attention to values, purpose, and socially responsible behavior. Adolescence is a period during which ethical, moral, and spiritual values become increasingly important in shaping identity and behavior (Sharma & Joglekar, 2024). Programs designed to strengthen adolescents' values and sense of meaning have likewise emphasized the developmental importance of purposeful engagement and socially responsible functioning (Zhurba et al., 2022). The present training package included components such as respect for others' rights, gratitude, responsibility in virtual communication, constructive problem solving, and adherence to interpersonal boundaries. These elements may have contributed to a broader orientation toward responsible social participation, thereby enhancing adjustment beyond the acquisition of isolated communication techniques.

The results are further supported by research showing that schema-based interventions can modify dysfunctional interpersonal beliefs and relationship patterns. Schema-based couple therapy has been effective in reducing marital boredom and desire for divorce (Ardeh et al., 2025), while schema-focused couple interventions have been shown to influence maladaptive relationship beliefs (Kordvani & Khaleghipour, 2023). An integrated schema therapy and Imago therapy approach has also demonstrated beneficial effects on interpersonal problems (Mahmoudi Mozafar, 2023). Although these studies were conducted primarily with adults, their findings illustrate an important mechanism relevant to the present study: when enduring relational beliefs are modified, interpersonal behavior may also change. The same process may have operated among adolescents in the present study, particularly through exercises targeting mistrust, dependency, negativity, entitlement, approval seeking, and other maladaptive schemas.

The intervention's attention to digital communication may have provided an additional pathway for improving adjustment. Adolescents increasingly conduct important peer interactions through virtual environments, making online communication an integral component of their social lives. Digital life-skills interventions are therefore increasingly considered necessary for helping adolescents navigate social media and online communication more safely and adaptively (Zimmermann & Tomczyk, 2024). The current package addressed virtual communication, digital boundaries, critical analysis, responsible media use, and respect for others' rights online. This may have increased students' ability to regulate behavior in one of the most socially important environments of contemporary adolescence. Because difficulties in cyberspace can affect offline relationships, school functioning, and emotional well-being, improving digital communication competence may have contributed indirectly to both social adjustment and academic motivation.

The findings are also consistent with broader evidence supporting the psychological utility of schema-based intervention formats. Contextual schema therapy delivered through an online workshop has been shown to reduce social anxiety symptoms (Stefan et al., 2023), suggesting that schema-based methods can be adapted to structured

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psychoeducational formats rather than being limited to intensive individual psychotherapy. More recent research has demonstrated the relevance of schema modes in explaining maladaptive behavior among young adults (Ulbe et al., 2026). These findings reinforce the theoretical plausibility of using schema concepts within preventive and educational programs for adolescents. The present study extends this line of research by integrating schema principles with communication literacy rather than treating schemas solely as clinical treatment targets.

Overall, the findings suggest that schema-based communication literacy training may operate through several complementary mechanisms. First, it increases knowledge and practical competence in verbal, nonverbal, emotional, and digital communication. Second, it helps students identify dysfunctional beliefs and maladaptive schemas that distort social and academic experiences. Third, it strengthens emotional awareness, empathy, problem solving, and respect for interpersonal boundaries. Fourth, it may improve perceptions of competence, autonomy, and control, thereby supporting academic motivation. Finally, by combining cognitive, emotional, behavioral, interpersonal, and digital elements, the intervention provides a more comprehensive educational approach than programs focusing on communication skills alone. This integrative structure may explain the large effects observed for both academic motivation and social adjustment.

A number of limitations should be considered when interpreting the findings. First, the quantitative sample was relatively small and consisted exclusively of female tenth-grade students from secondary schools in Qazvin, which limits the generalizability of the results to male students, other age groups, different educational levels, and students from other geographical or sociocultural contexts. Second, the study used a quasi-experimental pretest–posttest design without a long-term follow-up assessment, making it impossible to determine whether the observed improvements remained stable over time. Third, the outcomes were assessed primarily using self-report questionnaires, which may be affected by response bias, social desirability, or participants' temporary emotional states. Fourth, although content validity of the intervention was established through expert judgment, additional forms of validation, including construct validation and replication in independent samples, would strengthen confidence in the package. Finally, contextual factors such as teacher behavior, family communication patterns, peer relationships, and students' level of engagement with the training sessions were not examined as potential moderators of intervention effectiveness.

Future studies are recommended to replicate the intervention with larger and more diverse samples, including male students, students from different educational grades, and participants from different cities and cultural contexts. Randomized controlled trials with longer follow-up periods should be conducted to determine the durability of intervention effects and to distinguish short-term changes from sustained developmental outcomes. Future research could also compare schema-based communication literacy training with conventional communication-skills training, cognitive-behavioral interventions, digital literacy programs, or other psychoeducational approaches in order to determine its relative effectiveness. It would also be valuable to examine potential mediating mechanisms such as changes in early maladaptive schemas, emotion regulation, academic self-efficacy, perceived social support, psychological need satisfaction, empathy, and digital self-regulation. Qualitative interviews with students, parents, teachers, and school counselors could further clarify how participants experience the intervention and which components are perceived as most effective.

From a practical perspective, the developed package can be incorporated into school counseling programs, life-skills curricula, and preventive mental health initiatives for adolescents. School psychologists and counselors can use its structured sessions to help students improve interpersonal communication, manage emotional reactions, recognize maladaptive beliefs, respond more constructively to academic and social challenges, and communicate more responsibly in virtual environments. Training teachers in selected components of the package may also help create classroom environments characterized by clearer communication, constructive feedback, respect for autonomy, and supportive interpersonal relationships. Schools may further benefit from integrating schema-informed communication education with parent workshops so that students receive consistent messages about communication, emotional expression, boundaries, and autonomy across both family and educational settings.

Authors' Contributions

Authors equally contributed to this article.

Declaration

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

Transparency Statement

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All procedures performed in studies involving human participants were under the ethical standards of the institutional and, or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

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