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Profiles of depression in adolescents in the context of depressive symptoms, selected psychosocial and demographic characteristics – cluster analysis[1]

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Abstract: The aim of the study was to determine and characterize the profiles of the studied adolescents in terms of depression, psychosocial and demographic characteristics using a hierarchical cluster analysis. In the presented research, the characteristics of the clusters include data on: the occurrence of depressive symptoms, mood (general and situational), basic emotions, loneliness, personal competences, coping with stress, gender and age. During and after the COVID 19 pandemic, a global increase in depression in children and adolescents has been observed. The study of the relationships between symptoms of depression, psychosocial and demographic characteristics aims to deepen the knowledge and use it in the development of programs for interventions, support and therapy in medical and educational practice. The presented research involved students of grades 4-8, aged 11 to 16 (M = 12.5), 53% – girls, 42% – boys, 5% did not answer. The analyzes showed the existence of four clusters. There are significant relationships between the intensity of depressive symptoms, psychosocial features and gender in the surveyed adolescents, i.e. with the severity of depressive symptoms, the following decreases: the level of self-efficacy, the use of active coping, the experience of positive mood and joy, increases level of loneliness, dominance of negative mood and experiencing negative emotions (fear, anger, guilt, sadness). Two different profiles were identified in people with moderate depressive symptoms. The obtained research results confirm the heterogeneity of the phenomenon of depression, which is revealed by different pictures (profiles) of this disorder, also within a specific type. The research results confirm the position that the symptoms of depressive symptoms described by teenagers are not always consistent with the diagnostic criteria, therefore the phenomenon of depression in children and adolescents requires further recognition. The presented results confirm the validity of the position that it is necessary to increase and adapt intervention activities at school aimed at children and youth to gender and gender in order to strengthen their personal resources.
Keywords: depression, psychosocial characteristics, gender, adolescents, cluster analysis

Introduction

Recent analyses of depression in children and adolescents show a global rise in this mental disorder, particularly during and after the COVID-19 pandemic (Madigan, Racine, Vaillancourt, Korczak, Hewitt et al., 2023; Mayne, Hannan, Davis, Young, Kelly et al., 2021; Wang, Chen, Ran, Che, Fang et al., 2022). Meta-analyses by Nicole Racine and colleagues reveal that 25.2% of adolescents (1 in 4) exhibit clinically elevated depressive symptoms, underscoring the urgent need for intervention, prevention, and support to enhance adolescent well-being. Additionally, further research is needed to consider individual differences (Racine, McArthur, Cooke, Eirich, Zhu et al., 2021).

Research on depression, as documented in the literature, often focuses on uncovering the mechanisms underlying the disorder and identifying characteristics specific to different types. Significant attention is given to both external resources, such as social support, and internal resources, related to

1 Article in polish language: https://www.stowarzyszeniefidesetratio.pl/fer/59P_BarA.pdf

psychosocial attributes. However, findings indicate that depressive symptoms reported by adolescents do not always align with diagnostic criteria, highlighting the need for further understanding of depressive disorders in children and adolescents (Twivy, Kirkham, Cooper, 2023).

There remains a gap in the scientific literature regarding empirically developed profiles of adolescents with varying degrees of depressive symptoms, particularly in relation to different psychosocial and demographic characteristics. This study aims to address this gap by identifying configurations of associations between selected psychosocial characteristics–such as mood (general and dispositional), core emotions, loneliness, self-efficacy, and stress coping strategies–and demographic characteristics (age and gender). Using cluster analysis, the study identifies distinct groups of adolescents with different combinations of these characteristics, offering new insights that could benefit clinical and educational practices.

1. Associations of depression with selected psychosocial and demographic characteristics

Depressive disorders are among the most significant mood disorders affecting children and adolescents (Burnett, 2020; Pels, 2020; Radziwiłłowicz, 2020). Depression is commonly understood as a "progressive dysphoric state, an illness, or at least a disorder that inhibits the experience of positive emotions over an extended period" (Barr-Zisowitz, 2005, p. 761). The symptoms of depression typically include negative thinking, self-criticism, pessimism, social withdrawal, reduced activity, low motivation, insomnia, fatigue, changes in appetite (either decreased or increased), and moods characterized by sadness, irritability, and guilt (Hay, 2021; Padesky, Greenberger, 2017). Depression is also one of the most significant risk factors for suicide, with approximately 80% of suicide victims suffering from some form of depression, leading it to be classified as a terminal illness (Ministry of Health, 2018).

Diagnosing depression can be challenging due to the high individual variability in its clinical presentation–different symptoms may be more prominent depending on factors such as the patient's age. Additionally, the diagnosis can be complicated by other conditions that manifest with symptoms similar to those of depression, requiring careful evaluation by specialists to accurately identify "true" depression (Murawiec, 2017).

It is important to note that the prevailing belief is that the clinical presentation of depression during developmental years does not fundamentally differ from that in adults. Both are considered the same disorder, which is why current classification systems do not distinguish separate diagnostic criteria for children and adolescents. As a result, childhood or adolescent depression is not treated as a distinct nosological entity (Jankowicz, 2018).

The literature predominantly frames depression through the lens of biological, psychosocial, developmental, and environmental "deficits". However, with the rise of humanistic, existential, and positive psychology, recent studies on this condition are increasingly focusing on psychosocial attributes and developmental resources (Zhou, Shek, Zhu, Dou, 2020).

1.1. Depression vs. mood and core emotions

Numerous research results show the existence of a link between the experience of emotions and mental health, which is confirmed, among others, by findings in the field of psychoneuroimmunology (Soloey-Nilsen, Nygaard-Odeh, Kristiansen, Kvig, Brekke, Mollnes, Berk, Reitan, Oiesvold, 2024). Pullen et al. present correlations between anger and depression in adolescents (Pullen, Modrcin, McGuire, Lane, Kearnely, Engle, 2015). The results of a longitudinal study presented by Alisson E. Hollender et al. suggest that a deficit in the ability to label anger and surprise in preschool age, which is associated with greater emotional lability, may be associated with depression in adolescence (Hollender, Elsayed, Vogel, Tillman, Barch, Luby, Gilbert, 2024).

Fredric Bush identifies conflictual anger as one of the five central dynamics of depression, which, along with blame and jealousy, leads to behaviours

that harm social relationships and creates confusion about responsibility and self-directed anger (Henriksen, Ulberg, Tallberg, Løvgren, Johnsen Dahl, 2021). Empirical evidence suggests that conflictual anger is a significant aspect of depression. Studies show that anger as a trait predicts loneliness in adolescents and that effective anger management is associated with lower levels of depression and anxiety (Karabab, 2020). Additionally, findings indicate that as anger intensity increases, so do stress levels (Morales-Rodríguez, 2021).

Guilt and shame are also strongly linked to depression (Hay, 2021). The literature distinguishes between two forms of guilt: adequate and pathological. According to Antoni Kępiński (2014), pathological guilt, particularly in neurotic depression, is common in individuals with depression. Children diagnosed with depression often exhibit high levels of guilt and shame, yet they tend to show a lower inclination to take corrective action. It is acknowledged that depressed children may experience intense guilt, often coupled with difficulties in resolving interpersonal issues, and sometimes their guilt is disproportionate to the offense. Dale F. Hay's (2021) research indicates that about 80 percent of depressed children experience feelings of worthlessness and guilt, which significantly impacts their social and emotional development. Empirical studies further support the hypothesis that self-blame is positively correlated with depression, as it was identified as a significant independent predictor of depression in a regression model (Horwitz, Hill, King, 2010).

Fear signals a perceived threat and typically triggers reactions such as avoidance, escape, or, in some cases, fighting (Gasiul, 2007). In adolescents, depression is often associated with high levels of anxiety (Zulkipli, Suliaman, Abidin, Anas, Mohamad et al., 2024). Meta-analyses examining the psychological impact of the pandemic on the mental health of children and adolescents suggest that even those without prior symptoms of psychopathology experienced significant effects: 42.3% reported irritability, 41.7% depression, 34.5% anxiety, 30.8% had difficulty concentrating, and 79.4% showed negative changes in their behavioural and psychological state, with approximately 22.5% experiencing significant fear of COVID-19 (Lopez-Serrano, Díaz-Bóveda, González-Vallespí, Santamarina-Pérez, Bretones-Rodríguez et al., 2023). A cross-sectional study conducted during the COVID-19 pandemic among Chinese students aged 12-18 years revealed a prevalence of 43.7% for depressive symptoms, 37.4% for anxiety symptoms, and 31.3% for a combination of both, with these rates being higher among girls (Zhou, Zhang, Wang, 2020).

Sadness in depression is linked to an increased tendency to recall sad events and words, as well as a focus on negative experiences. This sadness influences cognitive processes and reasoning quality; for instance, individuals with moderate depression often make more accurate judgments. However, it is noted that "excessive sadness can place a burden on others", which is likely the case in depression (Barr-Zisowitz, 2005). "Extreme sadness" can lead to a loss of interest in the external and social world, resulting in "profound depression and withdrawal" (Izard & Ackerman, 2005, p. 335).

Joy, on the other hand, is generally seen as a pleasurable state that arises in safe, familiar situations that require little effort (Johnson, 2020). It is associated with the achievement of personal goals, flexible thinking, more effective and creative problem-solving, the formation of social bonds, the perception of social support, and the strengthening of psychological resilience. Depression, however, may impair the recognition of positive signals, heightening "caution" in detecting signs of joy (Marszałek-Wiśniewska & Fajkowska-Stanik, 2005). When sadness–a "low energizing" emotion–predominates, depression worsens the ability to detect emotions like anger and joy, impairing the perception of energizing emotions, especially anger. Conversely, when joy is the initial emotion, depression may lead to a more conservative, impulsive recognition of positive signals. This can result in 1) weakened "vigilance against threats" in situations that typically reinforce a depressive mood of sadness and 2) activated "defence mechanisms against positive signals" in joyful situations (Marszałek-Wiśniewska & Fajkowska-Stanik, 2005, pp. 119-130). Empirical research suggests that in adolescents, the experience of joy is significantly and positively correlated ($p<0.05$) with a sense of strength, perseverance, and personal competence.

As joy increases, so do these protective factors, which may help guard against depression (Ryś, Mausch, Baranowska, 2023).

1.2. Depression vs. self-efficacy

Self-efficacy refers to the belief in one's ability to successfully cope with challenges. According to Albert Bandura's cognitive-social theory, there is a bidirectional relationship between self-efficacy and depression: a lack of self-efficacy can lead to depressive symptoms due to a perceived gap between one's aspirations and abilities. Adolescents often set high, sometimes unrealistic goals for themselves but may lack the competence to achieve them. This can lead to reluctance to engage in various activities, negatively impacting their well-being and increasing their risk of developing depressive disorders. The belief among young people that they are unable to form satisfying relationships or control intrusive thoughts plays a significant role in the development of depression (Bandura, 2007).

Research supports this view. Empirical studies by Peter Muris, Cor Meesters, Anna Pierik, and Bo De Kock (2016) show that a strong sense of self-efficacy reduces vulnerability to stress, anxiety, and depression in adolescents. Particularly important protective factors against anxiety and depression in children and adolescents include strong self-efficacy beliefs in social functioning, emotional regulation, and academic achievement. Additionally, a study by Daiane Nunes and Andre Faro (2021) found that lower levels of self-efficacy were associated with higher levels of depressive symptoms in adolescents aged 14-19 years.

1.3. Depression vs. coping strategies

Research indicates that individuals experiencing positive affect are better able to utilize their cognitive potential, particularly in memory, decision-making, and problem-solving, and are more effective at recognizing different aspects of situations. Conversely, lower levels of positive affect are associated with coping strategies that focus on negative emotions and psychological withdrawal (Morales-Rodríguez, 2021). Adolescents diagnosed with depression are more likely to rely on less adaptive emotion regulation strategies and face greater learning difficulties, leading to a decreased sense of self-efficacy. This is supported by a study involving 1,341 Dutch students with an average age of around 14 years (Taka, Brunwasser, Litchwark-Aschoff, Engels, 2017). On the other hand, adolescents with lower levels of depression tend to use active coping strategies (Türk, Kul, Kılınç, 2021), while a lack of behavioural engagement – characterized by giving up on trying to cope with a situation – is both a risk factor for and a symptom of depression in adolescents (Kaminsky, Robertson, Dewey, 2006).

Adolescents who use strategies focused on addressing the source of stress are better protected against developing depressive symptoms. In contrast, a preference for strategies that involve emotion regulation or distancing oneself from the problem is linked to higher rates of depression. A study conducted among Polish adolescents (aged 11-18 years) in 2019 and 2020, who were diagnosed with depressive and anxiety disorders, indicates that the greater the severity of depressive symptoms, the more likely they are to rely on emotional coping strategies (Lelek, Mostowik, Kwapniewska, Adamczyk-Banach, 2021). Similarly, research involving adolescents aged 13-17 shows a positive correlation between the use of emotion-focused strategies, such as self-blame, and both depression and suicidal thoughts (Horwitz et al., 2010).

1.4. Depression vs. loneliness

A common hypothesis in the literature is that individuals experiencing severe loneliness struggle with interpersonal interactions and have unmet emotional needs, which can lead to depression (Erzen & Cikrikci, 2018). Notably, there is a bidirectional relationship between loneliness and depression: people with depression often isolate themselves, which in turn exacerbates feelings of loneliness. Psychological literature highlights that loneliness is a relatively enduring aspect of adolescence, often emerging suddenly and without a specific cause. This type of loneliness is subjective and personal, characterized by a sense of inner psychological isolation, primarily stemming from a perceived lack of

connection with others, feelings of alienation, and the absence of a close companion (Wrótniak, 2018). In adolescents, loneliness is positively correlated with negative emotions and negatively correlated with positive emotions (Twenge, Haidt, Blake, McAllister, Lemon et al., 2021). Research also suggests that loneliness leads individuals to perceive their social interactions as more negative and less satisfying, triggering negative emotions such as sadness, anger, and fear. When these emotions persist over time, they can contribute to the development of mental health disorders (Hutten, Jongen, Verboon, Bos, Smeekens et al., 2021).

These findings are supported by empirical research conducted globally. A study by Kubra Kayaoğlu and Mehmet Başcıllar (2022) found a statistically significant positive correlation between overall depression and loneliness scores among adolescents aged 10 to 19 years ($p < 0.05$). As loneliness levels increased in these adolescents, so did their levels of depression. Similar conclusions were drawn by Maria Oleś (2006), whose study of 11- to 13-year-olds revealed that children with a strong sense of loneliness not only experience nervous tension, a tendency to self-blame, and low self-esteem but are also more prone to depression. These children often exhibit a depressed mood and a pessimistic outlook on the future.

1.5. Depression vs. gender and age

Research indicates that girls are about twice as likely as boys to suffer from depression, with hormonal, genetic, and psychosocial factors contributing significantly to this disparity. The symptoms of depression also tend to differ between the sexes: girls are more likely to exhibit internalizing symptoms such as a depressed mood or frequent crying, whereas boys are more prone to externalizing symptoms like attention difficulties and aggressiveness (Baptista, Borges, Serpa, 2017).

Data from the WHO (2021) reveals that depression and anxiety are more prevalent among children aged 15-19 years (4.6%) compared to those aged 10-14 years (3.6%). A meta-analysis by Maggu Gaurav, Suprakash Chaudhury, Vinoda Verma, and Vishal Vindel (2023) on the impact of the pandemic on depression and anxiety in children and adolescents suggests that age is a significant moderator of depression, with the severity of symptoms, particularly anxiety, increasing significantly with age.

2. Research methodology

The aim of this research is to identify and characterize the profiles of adolescents based on selected psychosocial characteristics in the context of depression, and to compare these profiles to highlight similarities and differences. The study utilizes cluster analysis to examine data on various factors, including depressive symptoms, mood (both general and situational), basic emotions, loneliness, self-efficacy, stress coping strategies, gender, and age. By analyzing these characteristics, the research aims to establish connections between them, allowing for the creation of clusters representing groups of individuals with similar traits. Individuals within each cluster exhibit comparable levels of the studied characteristics, enabling the detailed characterization of each profile. These profiles reveal the combinations of traits and the structure of the studied population, including the number and variety of profiles identified.

The following research questions were formulated:

1. What profiles of adolescents emerge based on characteristics such as depressive symptoms, mood (both general and situational), basic emotions, loneliness, self-efficacy, stress coping strategies, gender, and age?
2. What are the similarities and differences among the characteristics of the identified adolescent profiles?

The research was conducted in November 2022 using a paper-and-pencil method through direct contact. The study involved 168 students from grades IV to VIII of primary school, aged 11 to 16 years ($M = 12.5$). Of the participants, approximately 53%

were girls, 42% were boys, and 5% did not specify their gender. The study utilized five distinct tools, described as follows.

Children's Depression Inventory (CDI-2) – Developed by Maria Kovacs, with Polish adaptation by PTPE. Wrocławska-Warchala and R. Wujcik, from the PTP Psychological Tests Laboratory.

The CDI-2 is a comprehensive diagnostic tool used to assess depressive symptoms in children and adolescents aged 7 to 17. It includes a full-length self-report questionnaire, an abbreviated self-report version, and versions for parents and teachers. This set is designed to help identify depressive symptoms in children and adolescents, facilitate early detection of those at risk of depression, and monitor treatment outcomes. Elevated scores on the CDI-2 may suggest clinical depression, though a definitive diagnosis requires a thorough clinical evaluation, including historical and current functioning assessments.

The CDI-2 consists of four independent questionnaires. Two of these are self-report versions for completion by the child: the full self-report version (CDI-2:S) and an abbreviated version (CDI-2:S/S), which was utilized in the current study (taking approximately 5 minutes to complete). The self-report version can be administered individually or in groups; in this study, the questionnaires were completed by respondents in groups.

The CDI-2 adheres to psychometric standards, with a 2013-2014 Polish standardization sample comprising 1,010 children aged 7-18. The reliability of the CDI-2, as indicated by a Cronbach's alpha coefficient of 0.84, is high, and psychometric analyses confirm its accuracy in measuring depressive symptoms.

KompOs – Personal Competence Scale (Zygfryd Juczyński)

The KompOs scale comprises two subscales, each containing six statements, with half of the items worded positively and half negatively. It assesses generalized self-efficacy, including two key components: beliefs about having the necessary power to initiate action and beliefs about the persistence required to sustain it. The KompOs scale is applicable for both healthy and ill children and adolescents. It measures two main factors: strength and perseverance, which are crucial aspects of self-concept related to competence. The scale focuses on subjective confidence in overcoming challenges and achieving goals. The survey can be administered individually or in groups, typically taking around 10 minutes to complete. The internal consistency of the KompOs scale, measured by Cronbach's alpha, is 0.72 for the entire scale.

The JSR Scale, ("Jak Sobie Radzisz" – "How Are You Doing?"), is designed to assess stress and coping mechanisms in children and adolescents. Developed by Zygfryd Juczyński and Nina Ogińska-Bulik, this scale is grounded in the research paradigm of R. Lazarus and S. Folkman. It evaluates both *dispositional and situational coping strategies.* Dispositional coping reflects an individual's typical repertoire of stress management strategies, while situational coping focuses on how the individual dealt with a specific stressful event over the past year.

The scale includes two parts: one that asks respondents how they would cope with a hypothetical scenario (a friend's name-day party to which everyone except the respondent was invited) and another that examines their coping strategies in a real stressful situation they experienced in the past year. Each section comprises nine statements: the statements are written in the present tense for the hypothetical scenario and in the past tense for the actual situation described by the respondent. Answers are provided using a five-point scale. The scale measures three coping strategies: *Active Coping, Focusing on Emotions, and Seeking Social Support*. The test typically takes no more than 10 minutes to complete. It has a good reliability score, with a Cronbach's alpha of 0.86, and the validity of the scale is high, with no significant differences found in its factor structure. Standardization was performed on a random sample of 919 children and adolescents, ensuring its applicability across a wide range of individuals.

The DeJong Gierveld Loneliness Scale (DJGLS) is a tool used for both individual diagnosis and research to assess feelings of loneliness. The Polish adaptation of the scale was developed by Paweł Grygiel, Grzegorz Humenny, Sławomir Rębisz, Piotr Świtaj, and Justyna Sikorska. The DJGLS consists of 11 statements, balanced between 6 negatively worded items that describe dissatisfaction with social contacts and 5 positively

worded items that assess satisfaction with interpersonal relationships. Respondents are asked to indicate the extent to which each statement reflects their current situation and feelings, using a 5-point scale ranging from "definitely yes" to "definitely no." To calculate the loneliness index, the responses to the 6 negatively worded items (statements 2, 3, 5, 6, 9, and 10) are recoded, after which all items are summed.

The Polish version of the DJGLS demonstrates high reliability and homogeneity, with a Cronbach's alpha coefficient of 0.89, a mean inter-item correlation of 0.42, and a Loevinger homogeneity coefficient of 0.47. The scale is predominantly unidimensional and effectively measures generalized feelings of loneliness. It can be used with adolescents and adults, either individually or in groups, and takes approximately 5 minutes to complete.

The Scale for Measuring Mood and Six Emotions, developed by Bogdan Wojciszke and Wiesław Baryła, is composed of four distinct tools: the General Mood Scale, Positive Mood Scale, Negative Mood Scale, and Emotion Questionnaire. The General Mood Scale is designed to assess overall mood, capturing both positive and negative feelings without targeting specific emotions. It includes 10 statements – 5 reflecting a positive mood and 5 with a reverse key for negative mood. Respondents rate their agreement with each statement using a five-point scale. The overall mood score is calculated by averaging the ratings across the individual items, with possible scores ranging from 1 to 5.

For the Positive Mood Scale and Negative Mood Scale, participants are instructed to select all the statements that accurately reflect their current or recent mood. Each selected statement is scored as 1, resulting in possible scores ranging from 0 to 10 for both scales.

The Emotion Questionnaire includes 24 adjectives representing six primary emotions: joy, love, fear, anger, guilt, and sadness, with four adjectives for each emotion. This scale measures the intensity of these emotions, with respondents indicating how often they experienced each emotion during a specified period using a seven-point scale ranging from 1 (never) to 7 (always). The score for each primary emotion is the average of its four corresponding adjectives, yielding a range from 1 to 7.

All the scales enumerated above demonstrate high reliability, validity, and sensitivity to situational factors, making them effective for assessing mediating and dependent variables in research.

The study's authors adhered to all relevant legal and ethical guidelines, including obtaining informed consent, ensuring the confidentiality of results, and clearly explaining the study's purpose to participants.

The cluster analysis was conducted using the agglomerative hierarchical clustering (AHC) method, selected for its robustness and ability to handle outliers without requiring a predetermined number of clusters. This method is advantageous over others like k-means or Partitioning Around Medoids (PAM) due to these characteristics. For the analysis, standard parameters such as Euclidean distance and Ward's linkage method were employed. Before clustering, all variables were standardized to ensure equal weight in the analysis. The normality of the data distribution was checked using the Shapiro-Wilk test. Group comparisons were conducted using the Kruskal-Wallis test, which is suitable for non-parametric data. When statistically significant differences were found, post-hoc analysis with Dunn's test was performed to pinpoint the specific groups that differed significantly. A significance level of 0.05 was set, meaning that p-values below this threshold were considered indicative of significant relationships. The statistical analysis was executed using R software, version 3.5.0 (R Core Team, 2022).

3. Results

The study results indicate that the adolescents surveyed can be divided into four distinct clusters, which can be treated as individual profiles (Figure 1).

Profile 1:
This cluster comprises adolescents who exhibit a low (developmental) level of depressive symptoms and a generally positive psychosocial profile, with a higher proportion of boys. The key characteristics of respondents in this cluster (52%) include:

- Depressive Symptoms: Developmental level of depressive symptoms, with low to average intensity (52%).
- Self-Efficacy: High levels of self-efficacy.
- Sense of Power: High intensity of the sense of power.
- Sense of Perseverance: High intensity of the sense of perseverance.
- Dispositional Coping: Predominantly characterized by active coping strategies (sometimes), with very infrequent focus on emotions and rare seeking of social support.
- Situational Coping: A coping style that is difficult to define ("neither occurring nor not occurring").
- Loneliness: Moderate intensity of loneliness, with low levels of both emotional and social loneliness.
- Mood: Generally positive mood, with a low incidence of general negative mood; generally positive mood, with a low incidence of negative mood.
- Emotional Experience: Frequent experience of joy, occasional experience of love, very rare experiences of fear, anger, guilt, and sadness.
- Demographics: Predominance of boys in this profile (approximately 60%).

Profile 2:

This cluster includes adolescents with very high levels of depressive symptoms and generally negative psychosocial characteristics, with a strong predominance of female respondents. The key characteristics of individuals in this cluster (18%) are as follows:

- Depressive Symptoms: Very high levels of depression (18%).
- Self-Efficacy: Low intensity of self-efficacy.
- Sense of Strength: Low intensity of the sense of strength.
- Sense of Perseverance: Low intensity of the sense of perseverance.
- Dispositional Coping: Characterized by infrequent use of active coping strategies, with occasional focus on emotions and sometimes seeking social support.
- Situational Coping: Active coping is difficult to define ("neither occurring nor not occurring"), with a tendency to focus on emotions and no seeking of social support.
- Loneliness: Significant intensity of loneliness, with high levels of emotional loneliness and average levels of social loneliness.

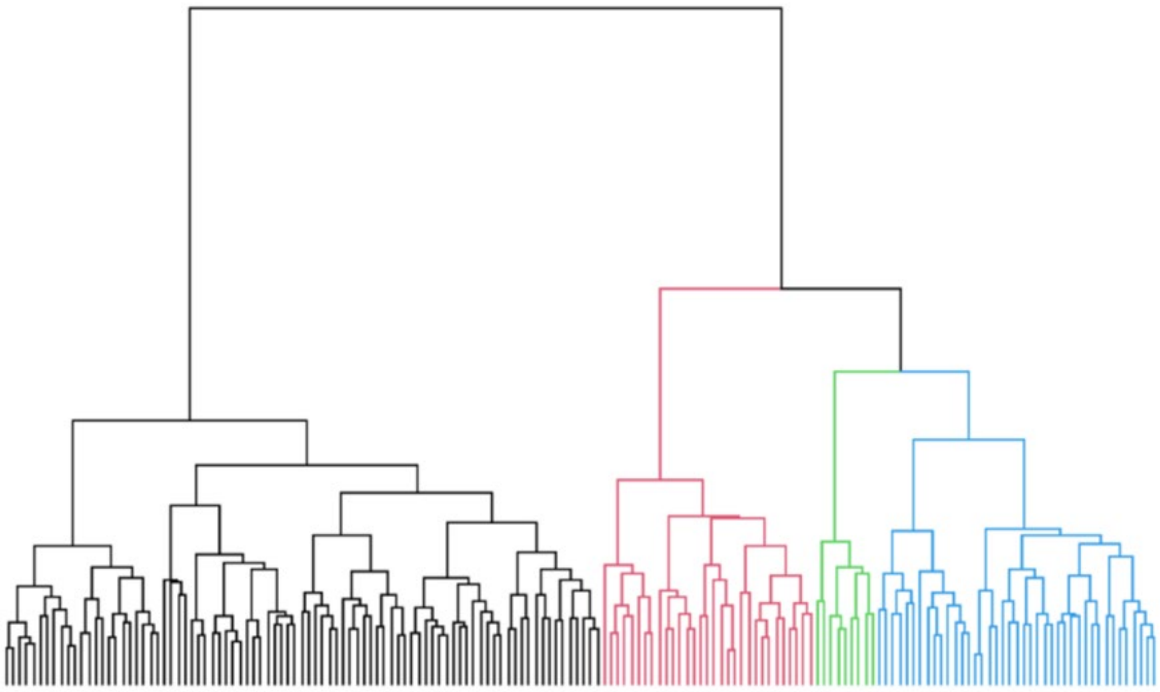

Figure 1: Structure of the Obtained Clusters

Table 1. Descriptive Statistics of the Clusters

Examined variables		Group				p
		A (N = 87)	B (N = 31)	C (N = 9)	D (N = 41)	
CDI2	Mean (SD)	4.22 (2.88)	14.16 (3.77)	8.11 (4.14)	8.8 (2.97)	p<0.001 *
	Median (quartiles)	4 (2-6)	14 (11-16.5)	8 (6-11)	9 (7-10)	
	Range	0-14	7-22	1-15	2-16	
	Missing data	0	0	0	0	
KompOs: sense of power	Mean (SD)	17.66 (3.02)	12.9 (3.23)	14.11 (3.92)	16.76 (3.11)	p<0.001 *
	Median (quartiles)	18 (16-20)	12 (10.5-15)	13 (12-18)	17 (15-19)	
	Range	9-24	8-20	8-20	10-22	
	Missing data	0	0	0	0	
KompOs: sense of perseverance	Mean (SD)	17.4 (2.88)	14.65 (3.27)	14.09 (3.74)	17.32 (3.39)	p<0.001 *
	Median (quartiles)	18 (15-19)	14 (14-17)	14 (11-16)	17 (15-20)	
	Range	10-24	6-21	8-20	9-24	
	Missing data	0	0	0	0	
KompOs: self-efficacy	Mean (SD)	35.06 (4.12)	27.55 (5.37)	28.2 (3.75)	34.07 (4.96)	p<0.001 *
	Median (quartiles)	36 (32-38)	27 (25-31.5)	27 (26-31)	34 (30-37)	
	Range	24-44	16-37	23-35	23-46	
	Missing data	0	0	0	0	
JSR: active coping strategies - dispositional coping	Mean (SD)	1.68 (0.96)	1.44 (0.89)	0.96 (1.16)	1.95 (1.11)	p = 0.029 *
	Median (quartiles)	1.67 (1-2.33)	1.33 (0.67-2)	0.67 (0-1.33)	2 (1.33-2.67)	
	Range	0-3.67	0-3.67	0-3.33	0-4	
	Missing data	0	0	0	0	
JSR: focus on emotions - dispositional coping	Mean (SD)	0.84 (0.8)	2.42 (1.45)	0.67 (0.78)	1.92 (1.06)	p<0.001 *
	Median (quartiles)	0.67 (0.17-1.33)	2.67 (1.5-3.67)	0.33 (0-1)	2 (1-2.67)	
	Range	0-2.67	0-4	0-2	0-4	
	Missing data	0	0	0	0	
JSR: seeking of social support - dispositional coping	Mean (SD)	1.29 (0.97)	1.72 (1.02)	0.26 (0.52)	1.78 (0.91)	p<0.001 *
	Median (quartiles)	1 (0.67-1.67)	1.33 (1.17-2.33)	0 (0-0)	1.67 (1-2.33)	
	Range	0-4	0-4	0-1.33	0-4	
	Missing data	0	0	0	0	
JSR: active coping strategies - situational coping	Mean (SD)	2.37 (0.86)	2.1 (0.85)	1.33 (0.94)	2.67 (0.73)	p<0.001 *
	Median (quartiles)	2.67 (2-3)	2.33 (1.67-2.67)	1.33 (1-2)	3 (2.33-3)	
	Range	0-4	0-3.67	0-2.67	1-4	
	Missing data	0	0	0	0	
JSR: focus on emotions - situational coping	Mean (SD)	1.79 (0.89)	3.13 (0.74)	1.04 (0.59)	2.36 (0.9)	p<0.001 *
	Median (quartiles)	1.67 (1-2.5)	3.33 (2.83-3.83)	1 (0.67-1.33)	2.33 (1.67-3)	
	Range	0-3.33	1.33-4	0-2	0.33-4	
	Missing data	0	0	0	0	
JSR: seeking of social support - situational coping	Mean (SD)	1.67 (0.79)	1.44 (1.09)	0.44 (0.73)	1.98 (0.85)	p<0.001 *
	Median (quartiles)	1.67 (1-2.33)	1.33 (0.5-2)	0 (0-1)	2 (1.33-2.67)	
	Range	0-3.33	0-4	0-2	0.67-4	
	Missing data	0	0	0	0	

Examined variables		Group				p
		A (N = 87)	B (N = 31)	C (N = 9)	D (N = 41)	
DJGLS: loneliness	Mean (SD)	2.87 (2.55)	8.68 (2.4)	7.89 (2.09)	6.93 (3.04)	p<0.001 *
	Median (quartiles)	2 (1-4.5)	9 (7-11)	7 (7-9)	7 (5-9)	
	Range	0-11	2-11	5-11	0-11	
	Missing data	0	0	0	0	
DJGLS: emotional loneliness	Mean (SD)	1.48 (1.44)	5.06 (1.06)	3.44 (1.81)	3.93 (1.72)	p<0.001 *
	Median (quartiles)	1 (0-2.5)	5 (4-6)	4 (2-4)	4 (3-5)	
	Range	0-6	2-6	1-6	0-6	
	Missing data	0	0	0	0	
DJGLS: social loneliness	Mean (SD)	1.39 (1.48)	3.61 (1.69)	4.44 (1.33)	3 (1.75)	p<0.001 *
	Median (quartiles)	1 (0-2)	4 (3-5)	5 (5-5)	3 (2-4)	
	Range	0-5	0-5	1-5	0-5	
	Missing data	0	0	0	0	
Generally positive mood	Mean (SD)	3.96 (0.76)	2.24 (0.72)	2.51 (1.01)	3.14 (0.89)	p<0.001 *
	Median (quartiles)	4.2 (3.6-4.4)	2.2 (1.8-2.7)	2.6 (2.2-3)	3.2 (2.4-3.6)	
	Range	1.6-5	1-4.2	1-4	1.4-5	
	Missing data	0	0	0	0	
Generally negative mood	Mean (SD)	1.74 (0.74)	3.64 (0.69)	2.11 (1.06)	2.6 (0.72)	p<0.001 *
	Median (quartiles)	1.6 (1.2-2.1)	3.6 (3.2-4.1)	2 (1.2-2.4)	2.8 (2-3.2)	
	Range	1-4.2	2.2-5	1-4.4	1-4	
	Missing data	0	0	0	0	
Positive mood	Mean (SD)	4.55 (2.36)	1.35 (1.38)	2.56 (2.13)	2.49 (2.09)	p<0.001 *
	Median (quartiles)	4 (3-6)	1 (0-2)	2 (1-3)	2 (1-4)	
	Range	0-10	0-5	0-6	0-7	
	Missing data	0	0	0	0	
Negative mood	Mean (SD)	1.56 (1.64)	5.42 (2.32)	1.56 (1.88)	3.59 (2.1)	p<0.001 *
	Median (quartiles)	1 (0-3)	6 (4-7)	1 (0-2)	3 (2-5)	
	Range	0-7	0-9	0-6	0-9	
	Missing data	0	0	0	0	
Emotion: joy	Mean (SD)	5.38 (1.02)	3.52 (1.2)	3.44 (1.1)	4.41 (0.82)	p<0.001 *
	Median (quartiles)	5.75 (4.75-6)	3.25 (2.75-4.25)	3.25 (2.75-4.5)	4.5 (4-5)	
	Range	2-7	1.25-6	1.75-5	2.75-6.25	
	Missing data	0	0	0	0	
Emotion: love	Mean (SD)	3.64 (1.24)	3.9 (1.13)	1.64 (0.64)	4.01 (0.86)	p<0.001 *
	Median (quartiles)	3.75 (2.75-4.5)	4 (3-4.75)	1.5 (1-2.25)	3.75 (3.25-4.5)	
	Range	1-7	1.5-6	1-2.5	2.75-6	
	Missing data	0	0	0	0	
Emotion: fear	Mean (SD)	2.43 (0.79)	5.02 (1.17)	1.89 (0.65)	3.65 (1.23)	p<0.001 *
	Median (quartiles)	2.5 (1.75-3)	4.75 (4.5-5.62)	2 (1.25-2.25)	3.75 (2.75-4.5)	
	Range	1-4.25	2.25-7	1-3	1.25-7	
	Missing data	0	0	0	0	

Examined variables		Group				p
		A (N = 87)	B (N = 31)	C (N = 9)	D (N = 41)	
Emotion: anger	Mean (SD)	2.86 (1.2)	5.23 (1.2)	3.08 (1.61)	3.74 (1.11)	p<0.001 *
	Median (quartiles)	2.75 (2-3.5)	5.25 (4.5-6.25)	2.5 (2-3.75)	3.75 (3-4.5)	
	Range	1-7	2.5-7	1-5.75	1.75-6.25	
	Missing data	0	0	0	0	
Emotion: guilt	Mean (SD)	2.24 (0.84)	5.04 (1.19)	1.56 (0.43)	3.2 (1.06)	p<0.001 *
	Median (quartiles)	2.25 (1.5-2.75)	4.75 (4.12-5.75)	1.75 (1.25-2)	3.25 (2.5-3.75)	
	Range	1-4.5	3.25-7	1-2	1.25-5.25	
	Missing data	0	0	0	0	
Emotion: sadness	Mean (SD)	2.06 (0.79)	5.46 (1.07)	2.08 (0.94)	3.82 (0.98)	p<0.001 *
	Median (quartiles)	2 (1.5-2.25)	5.5 (4.62-6.25)	1.75 (1.5-2.25)	4 (3.25-4.25)	
	Range	1-4.75	3.25-7	1-3.75	2-6.25	
	Missing data	0	0	0	0	
Gender	Girls	33 (37.93%)	28 (90.32%)	2 (22.22%)	27 (65.85%)	p<0.001 *
	Boys	50 (57.47%)	1 (3.23%)	6 (66.67%)	13 (31.71%)	
	No response	4 (4.60%)	2 (6.45%)	1 (11.11%)	1 (2.44%)	
Age	11	29 (33.33%)	6 (19.35%)	3 (33.33%)	6 (14.63%)	p = 0.272
	12	25 (28.74%)	8 (25.81%)	4 (44.44%)	10 (24.39%)	
	13	20 (22.99%)	10 (32.26%)	1 (11.11%)	13 (31.71%)	
	14-16	13 (14.94%)	7 (22.58%)	1 (11.11%)	12 (29.27%)	

- Mood: Generally lacks an overall positive mood, with a predominant overall negative mood, lacks of positive mood and occurrence of negative mood.
- Emotional Experience: Occasional experiences of joy and love, but frequent experiences of fear, anger, guilt, and sadness.
- Demographics: A clear predominance of girls in this profile (approximately 94%).

Profile 3:

This cluster represents adolescents with an average level of depressive symptoms, primarily characterized by negative psychosocial factors, yet without a strong dominance of negative mood or frequent negative emotions. The majority of respondents in this profile are boys. The key characteristics of individuals in this cluster (5%) are as follows:

- Depressive Symptoms: Average level of depression.
- Self-Efficacy: Low intensity of self-efficacy.
- Sense of Strength: Low intensity of the sense of strength.
- Sense of Perseverance: Low intensity of the sense of perseverance.
- Dispositional Coping: Very rarely engage in active coping strategies, with infrequent focus on emotions and no seeking of social support.
- Situational Coping: No engagement in active coping, no focus on emotions, and a definite lack of seeking social support.
- Loneliness: Moderate intensity of loneliness, with moderate emotional loneliness and high social loneliness.
- Mood: General positive mood is somewhat present but inconsistent, while general negative mood is mostly absent. Similarly, positive and negative moods are somewhat present but not dominant.
- Emotional Experience: Rarely experience joy or anger, and very rarely experience love, fear, guilt, or sadness.

- Demographics: A predominance of boys in this profile (approximately 72%).

Profile 4:
This cluster includes adolescents with average levels of depressive symptoms, but with a predominance of positive psychosocial traits. The majority of respondents in this group are girls. The key characteristics of individuals in this cluster (25%) are as follows:

- Depressive Symptoms: Average level of depression.
- Self-Efficacy: High intensity of self-efficacy.
- Sense of Strength: High intensity of the sense of strength.
- Sense of Perseverance: High intensity of the sense of perseverance.
- Dispositional Coping: Occasionally engage in active coping, sometimes focus on emotions, and sometimes seek social support.
- Situational Coping: Engage in active coping, with a neutral or uncertain tendency toward focusing on emotions and seeking social support.
- Loneliness: Moderate intensity of loneliness, including both emotional and social loneliness.
- Mood: General positive mood is somewhat present but inconsistent, and general negative mood is also somewhat present. Positive mood is generally not present, while negative mood tends to occur more often.
- Emotional Experience: Sometimes experience joy, love, fear, anger, and sadness, but rarely experience guilt.
- Demographics: A predominance of girls in this profile (approximately 67%).

4. Discussion

The cluster analysis identified four distinct groups of individuals who share similar characteristics across the examined variables. Based on these results, four distinct adolescent profiles were distinguished, each showing significant statistical differences. These profiles are ordered according to their prevalence:

Profile 1 (52%): This group comprises individuals with the lowest levels of depressive symptoms (developmental level). They are characterized by high self-efficacy, a predominant use of dispositional active coping, and a situational coping style that is difficult to define. They experience moderate levels of loneliness–among the lowest in the studied population–with average emotional loneliness and low social loneliness. They generally have a positive mood, with minimal general negative mood, frequently experiencing joy, occasional love, and very rarely (fear, guilt, sadness) or rarely (anger) negative emotions. This profile is predominantly composed of boys, making up 60% of the group.

Profile 4 (25%): This group includes individuals with elevated levels of depressive symptoms. They are characterized by a high sense of self-efficacy and utilize all studied dispositional coping styles. They predominantly use situational active coping, along with emotion-focused coping and seeking social support. They experience moderate levels of loneliness, with average levels of both emotional and social loneliness. Their mood is mixed, with occasional joy, love, fear, anger, and sadness, and rare experiences of guilt. This profile is predominantly composed of girls, making up approximately 67% of the group.

Profile 2 (18%): Individuals in this profile exhibit very high levels of depressive symptoms and low self-efficacy. They rely heavily on emotion-focused coping and seeking social support, both dispositionally and situationally. They experience significant loneliness, with high levels of emotional loneliness and average levels of social loneliness. Their mood is generally negative, with occasional joy and love, but they frequently experience negative emotions such as fear, anger, guilt, and sadness. This group is overwhelmingly composed of girls, accounting for about 94% of the profile.

Profile 3 (5%): This profile consists of individuals with elevated depressive symptoms, characterized by low self-efficacy and a lack of effective coping styles, both dispositional and situational. They experience

moderate levels of loneliness, including average emotional loneliness and high social loneliness. Their overall mood tends to be positive, though they rarely experience joy and anger, and very rarely experience love, fear, sadness, or guilt. This group is predominantly made up of boys, approximately 72%. The characteristics suggest potential masked depression; however, due to the study's limitations in assessing other features of this disorder, a definitive conclusion cannot be drawn.

The literature identifies various degrees or levels of depression, each with distinct characteristics. The study results reveal two distinct profiles (Clusters 3 and 4) that both exhibit elevated levels of depressive symptoms. Despite some similarities in psychosocial variables such as loneliness, general positive mood, and general negative mood, there are statistically significant differences between these profiles.

Differences include:

- Psychosocial Characteristics: Self-Efficacy: Low in Cluster 3 and high in Cluster 4.
- Dispositional Active Coping: Very rare in Cluster 3 and sometimes occurring in Cluster 4.
- Dispositional Focus on Emotions: Very rare in Cluster 3 and sometimes occurring in Cluster 4.
- Dispositional Seeking of Social Support: Never in Cluster 3 and sometimes occurring in Cluster 4.
- Situational Active Coping: Never in Cluster 3 and occurring in Cluster 4.
- Gender.

In our study, there was no statistically significant relationship between depressive symptoms and the psychosocial characteristics studied and the age of the respondents. The results obtained may suggest the occurrence of different profiles characterised by a moderate level of depression, but without the lowered mood typical of depression and the dominance of experiencing negative emotions such as fear, anger, sadness, guilt, which confirms the position stating the heterogeneity of depression and the need to take this knowledge into account in the process of diagnosis, support and therapy. These findings may be of particular relevance in enhancing public awareness of the diversity of depressive images in children and adolescents and earlier treatment coverage for those with such symptoms (Loades, St Clair, Orchard, Goodyer, Reynolds, 2022).

Summary

The global mental health crisis among adolescents, marked notably by depressive symptoms, is a pressing concern that has garnered significant attention from researchers and social commentators alike. The findings from this study align with existing literature, confirming high levels of depression, notable associations between psychosocial factors and depression, and a greater prevalence of depressive symptoms in girls compared to boys.

The research highlights that adolescent well-being is closely linked to experiencing positive moods, joy, high self-efficacy, and effective stress coping strategies. These results underscore the need for intensified and gender-sensitive school-based interventions aimed at bolstering personal resources among youth (Adedeji, Otto, Kaman, Reiss, Devine et al., 2022; Essau, Torre-Luque, Lewinsoh, Rohde, 2020; Jull, Hjemdal, Anna, 2021). Such interventions should focus on enhancing intrinsic motivation, fostering a sense of agency, promoting active coping, evoking joy, and strengthening social connections (Cao, Zhu, Li, Zhang, Ding et al., 2022).

Moreover, literature suggests that multicomponent interventions grounded in positive psychology can significantly improve students' well-being and reduce depressive symptoms. These interventions contribute to flexible thinking, positive emotions, self-compassion, awareness of strengths, and satisfying relationships (Hongell-Ekholm, Londen, Fagerlund, 2024).

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