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"Self-esteem, subjective well-being, and flourishing in adolescent learners in traditional and innovative learning systems"

ABSTRACT

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INTRODUCTION

This dissertation focuses on self-esteem, subjective well-being, and Flourishing in adolescents educated in traditional and innovative learning systems - the One Student One Device Model (1:1 Model).

According to¹ of the Ministry of Education and Science (MES) in August 2023 Bulgaria is the leading country in the Balkans in the use of technology solutions based on Google's platform for education. The conclusion is based on various indicators such as the number of certified teachers and trainers, the use of applications, etc. The data of the Ministry of Education shows that at that time, about 500 schools in the country were using the innovation and in total there were over 200 thousand users with accounts in the company's cloud technology. The 2023/2024 school year enables another 150 classes in Plovdiv schools to use personal computers for 1:1 model teaching, according to Plovdiv municipality data. The number of Google-reference schools in the country is also increasing. The technology is finding a place in kindergartens and universities.

The relevance of this dissertation lies in rethinking digitalization in education and considering its impact on adolescent mental health and development.

The most prevalent theories are presented, with particular emphasis on contemporary theoretical research and empirical inquiries in the areas of self-esteem, subjective well-being, and flourishing. Psychological instruments for their study in adolescence are thesis.

An empirical study was set up to diagnose mental structures in adolescents in Class VIII and Class X taught in traditional and innovative systems of education. **The purpose** of this dissertation is to examine and summarize the concepts and ideas of self-esteem, subjective well-being, and Flourishing in adolescence, exploring the possible existence of interrelationships among them in the context of learning systems. The tasks are related to diagnosing the constructs in adolescents, establishing differentiations in their level depending on the type of educational system by using reliable instruments.

This dissertation hypothesizes that self-esteem, subjective well-being, and flourishing may have different parameters for the two groups of adolescents, the control group (learning without technology) and the experimental group (learning with the 1:1 Model). The hypotheses are also explored theoretically through an analysis of a large number of literatures relevant to the topic. Literature review, comparison, classification, systematization, generalization are done. The data were collected in June 2023 by means of the instruments approved.

The analysis and processed data of the two groups, control and experimental, are presented in tabular and graphical form, and various types of statistical analyses were performed to determine the impact of the type of educational system. Relevant findings and conclusions are drawn. A list of the literature used in Bulgarian and English is attached.

Structure and content of the study:

The results of the present study are systematized in a dissertation consisting of an introduction, three chapters, conclusion, contributions, statement of authenticity of results and

¹ <https://www.bta.bg>

contributions, conclusions and a list of references used. It contains tables, charts, diagrams and appendices.

CHAPTER ONE. A theoretical formulation of the constructs "self-esteem", "subjective well-being" and "flourishing"

1. The construct of self-esteem

Self-assessment is perhaps the most researched construct in almost all fields related to mental health, in theoretical reviews, basic and clinical research, clinical reports and all forms of clinical practice.

"*Self-esteem is associated with affective self-concept change*" (Stamatov 2020, p. 267) and with whether the self perceives itself as significant, valuable, and important. It can be viewed as *self-worth* and *self-esteem*. It often implies perceptions of self-image and personality that are associated with *self-acceptance* or *self-rejection* (Zeigler-Hill, 2013). Acceptance is liking, satisfaction with physical attributes, qualities and skills, and rejection is with disapproval of the self, a desire for change that sometimes seems difficult to achieve. Self-esteem is an attitude towards the self as an object of knowledge (Campbell & Lovalle, 1993).

In 1971, with Victor Gecas (Gecas, 1971), he studied the factors that influence it during adolescence. The author defined the model he used as *two-factor* and viewed the construct as "*a sense of power and a sense of worth* (Gecas, 1971); '*internal*' and '*external*' *self-esteem* (Franks & Marolla, 1976); *evaluation and affection* (Wells & Marwell, 1976); a *sense of competence and self-worth* (Smith, 1978); *competence and morality*" (Mruk, 1995, 2006, p.20). Gecas defines self-esteem as "*self-esteem with a sense of self-efficacy, competence, experience, and self-evaluation through a sense of personal worth that are based on ideas of the good person and morality*" (Gecas, 1982, p. 5).

According to other attempts at definition, self-esteem is defined not as an intrapersonal characteristic, but as an outward-oriented process and is seen as based on what I think others think of me (Stamatov, 2000).

1.2. Approaches and theories for the study of self-esteem

1.2.1. Self-esteem as part of the self-concept

Wales and Maruel (1976) viewed self-esteem as part of the self-concept, along with motivation and self-regulation. According to the authors, these interact to influence how we perceive ourselves, others, and the world. They define the concept of self-esteem using two psychological aspects: appraisal (which they associate with cognition) and affect (which prioritizes the role of feelings). The authors highlight the discrepancy between the self one wants to be, the self one sees in dreams and in fantasies (the *ideal* self) and the self one is now (the *true* or *real* self). The more similar the two conceptions/perceptions of self and the more similarly contented they are, the more stable and satisfying the individual's self-concept. Smelser (1989) also points to 3 components of self-esteem. According to him, the cognitive component is particularly significant and involves the use of descriptive terms (qualities) in thoughts about the self or about particular components of the self - *strong, brave, confident, beautiful*, etc. The cognitive element seeks to answer the question "*What do I think I am like?*"

in terms of qualities or character traits, talents and competencies. The second main element according to the author is affect - whether the individual perceives him/herself positively or negatively, what emotions arise in him/her then when thinking about him/herself or about particular aspects of his/her self. The author relates emotional tone to feelings of high or low self-esteem. The third component is evaluative - is the individual worthy in their own eyes, do they feel significant, accepted, supported and understood?

Smelser (1989) notes that the construct can be viewed as a global or situational phenomenon. For example, an adolescent may accept his or her appearance positively and even uncritically in principle, but in the virtual environment, through social comparison, accept the self as not attractive enough. In the same way, an adolescent may think of himself as smart (global self-esteem), but feel himself to be incapable in math class when working with blueprints, for example.

1.2.2. Self-esteem as a product and process of development

A critical review of the literature notes the importance and popularity of the idea that self-esteem can be viewed as a "state" or as a "trait" (Trzesniewski, Robins, Roberts & Caspi, 2004). In general, most researchers support the impression that it is a stable construct, i.e., it is a product. In their view, the process of self-esteem development and formation is predictable and expected and can be confirmed not only by direct observations of respondents but also by research and empirical evidence.

Markus and Wurf's (1987) dynamic self-concept model postulates that there is a working self-concept that is activated depending on certain factors. Self-esteem can be viewed as a continuous process. The individual has a need to prioritize certain activities and areas of his or her life in which he or she seeks to gain success and achievement, to prove to him or herself that he or she is competent and significant. A change in these leads to a change in self-esteem. Hartur (1999) tracks the letter across ages, noting that each has priority areas that may be different from those in the preceding and subsequent developmental stages. It should also be noted that higher self-esteem is associated with attractiveness, competence, extroversion, etc. and is particularly desirable for individuals. For this reason, training and psychotherapy aimed at building stable high self-esteem have become particularly popular in the past decades.

1.2.4. Self-assessment and competence

In James' (1950) classical understanding, self-esteem is defined by the relationship between an individual's actual achievements and his or her claims and expectations. That is, self-esteem depends on what the individual wants to become, to be. According to the author, the individual constructs his claims and expectations in mental terms. If these are reached, it will increase self-esteem and the individual will feel significant and valuable.

For the first time in the history of the study of the construct, James (1890/1983) defined it as action, and more specifically as action that is successful or competent. According to him, self-esteem depends on two things:

1. *the hopes, desires or aspirations* of an individual. These are constructs situated in the future. They are usually charged with emotions - anxiety, excitement, fear, hope, etc.

2. *successes* - the actual achievements of the individual i.e. the extent to which they meet initial expectations.

Crocker and Park (2003) elaborate on James' ideas about competence and argue that people seek to maintain, protect, and enhance their self-esteem. Underlying these attempts is the drive to succeed in areas of significance to them, as well as avoiding failure (Mruk, 2006). Crocker and Park (2003/2004) were among the first authors to pose the discussion of the clinical picture of unhealthy self-esteem.

Coopersmith (1967) supports the idea that people can develop healthy levels of self-esteem when they feel successful, competent, and significant in only one or two areas of life, especially if these areas of life are endorsed by their primary reference group and assumed to be significant by themselves.

1.2.5 Self-esteem and sociality . Sociometric theory

Cooley and Mead (Cooley, 1909; Mead, 1934, as cited in Mruk, 1995) argued that in order to more fully understand the concept of *self-esteem*, it is important to account for interpersonal or social influences on the individual. In this perspective, the self enters an interpersonal field that is created in response to, and as a consequence of, the exchange between the individual and the social context. If the individual finds that others approve of and like him, this will be clear evidence that he is accepted and valued in his own right - his self-esteem will be stable and high.

Mead (1934/1967) expanded scholarship on the topic of self-esteem to include the role of social comparison. He argued that people do not strive for self-transformation and for the so-called *best version of themselves*, but rather for superiority over others.

One of the most influential contemporary models examining self-esteem is *sociometric* theory (Leary & Baumeister, 2004). It continues the idea of the importance of interpersonal relationships in understanding the above construct.

Leary and associates (Leary, Tambor, Terdal & Downs, 1995) developed a theoretical model of self-esteem that introduced the idea of the so-called 'interpersonal screen' - *the 'sociometer'*. According to the authors' idea, people who manage to form broader social relationships create positive and satisfying images of themselves on the interpersonal screen (Leary & Baumeister, 2000).

Sociometer theory predicts that if the evaluations of others are negative, the individual's level of self-esteem will decline and that he/she will need to be motivated to take corrective action to restore his/her sense of worth.

The level of self-esteem is strongly related to an individual's social status (Leary, 2004). The construct appears as a defense mechanism against social exclusion. In his studies M. Leary (Leary, 2005) proves that rejection has a stronger impact on the level of self-esteem of an individual than acceptance (Leary, 2004).

1.3. Changes in self-esteem in adolescence

Burke (2012) marked changes in self-concept in adolescence. Adolescents begin to combine individual personality traits and aggregate them (*smart, talented, successful, etc.*) into more abstract descriptions such as *intelligent*. Initially, however, their generalizations are not interrelated and often even contradict each other. According to the author, between the

ages of 12 and 14, adolescents begin to use less categorical judgments about themselves and their peers. Gradually, cognitive changes help teens combine their traits into a more organized and less contradictory system. The use of definitions reveals their awareness that mental qualities can change in different situations.

The formation of self-esteem during adolescence is influenced by the following factors: character and temperament; lifestyle; parent-child relationships; accumulated experience in the nursery, kindergarten, school and beyond - in life; the presence of diseases; external physical data; correct or distorted self-concepts; reactions to others and external circumstances and situations; religious beliefs; cultural and traditional values and customs, etc.

1.4. Types, levels of self-esteem and their meaning during adolescence

Broadly, the construct under study is viewed as dichotomous (Mruk, 2013). According to the correspondence between the importance that individuals attach to their characteristics and their actual state, we distinguish between *adequate* and *inadequate* self-evaluation.

The ability to maintain and preserve the level of self-esteem over time gives a reason to talk about *sustainable* and *unsustainable* self-esteem. Sustainable self-esteem remains so in difficult situations. Taking into account the level, *elevated* and *lowered* self-esteem emerge (Papazova, 2013).

The process of self-esteem is dynamic in nature and is influenced by changes in attitudes and actions over the life cycle. If we consider the aspects of self-esteem more expansively, we can highlight the following types: *adequate , high, stable; adequate, low, stable; adequate, low, unsustainable; inadequate, elevated, stable; and inadequate, lowered, unsustainable*" (Karastoyanov, 2021, p. 109). A large number of contemporary researchers are consistent with Kernis' ideas (Kernis,2003). According to him, self-esteem can be: "*defensive (defensive) or authentic (genuine); contingent (contingent) or true/ unconditional (true); stable (unstable) or unstable (stable); incongruent (discrepant) or congruent (congruent) with implicit feelings of self-worth*" (Kernis, 2003 cited in Karastoyanov, 2019, p.109).

In the early stages of self-esteem research, the authors derived three basic levels or types: *high, low*, and sometimes *medium*. Contemporary empirical evidence suggests that this classification is too simple and superficial, which also makes it difficult to use.

1.5. Significance of research in the field

Building on a theoretical multidimensional framework, Harter (1983, 1985, 1987) designed and validated instruments for assessing self-esteem at different ages, from early childhood to late adulthood. She created a special questionnaire to examine the construct in adolescents. The instrument examines perceived competence and measures self-esteem. This reflects the James principle. Harter (1983, 1985, 1987) also includes items that explore how children perceive their importance through the eyes of others - whether they feel respected, liked, approved of, etc. These questions cover Ch. Cooley. Harter's questionnaire includes eight specific domains: Academic Competence; Social Competence; Sports Competence; Physical Self - Appearance; Professional Competence; Romantic Appeal; Behavior; Close Friendship and Global Self-Evaluation

2. The construct of mental well-being. Subjective well-being

Mental well-being is often defined as "*a broad range of phenomena including people's emotional responses, their satisfaction with various domains, and global judgments about their satisfaction with life in general*" (Diener et al., 1999, p. 277 cited in Kalchev, 2014). The construct has a complex, complicated and multifaceted nature. It is often defined as subjective well-being.

Much of the research work on well-being is concerned with the factors that underlie "*people's emotional responses, their satisfaction with different domains, and their global judgments of their satisfaction with life in its entirety*" (Diener et al., 1999, p. 227, cited. by Kalchev, 2011).

According to Thomas (2009), well-being does not have a material image and therefore cannot be clearly defined and measured with a metric. According to Diener (1999), an individual's well-being reflects "*the extent to which people think and feel that their lives are going well*" (Lucas & Diener, 2008, p. 795). Ryan and Deci (2001) define well-being as a complex education directly related to optimal psychological functioning.

Mental well-being can be considered in different scientific perspectives - mental state, positive mental functioning and type/part of self-esteem.

2.1. Approaches and theories for studying well-being

The purpose of the brief overview presented below is not to provide a detailed overview of the nature, determinants and outcomes of the experience of (subjective) well-being, but to provide a brief description of two of the main and popular definitional approaches: *hedonic* and *eudaimonic* (Diener et al, 1999, Waterman, 19993, 2008).

2.1.1. Hedonistic perspective

According to the hedonistic approach, well-being is happiness, enjoyment, contentment and grace. Ancient Greek ethical teaching accepts pleasure and enjoyment as the highest goal of human life, which appear to be the antithesis of ascetic life. Well-being is not solely concerned with pleasures for the body and does not claim only physical dimensions. It is associated with the enjoyment of the pleasurable, with moral judgments of right and wrong, of right and wrong, with the achievement of goals and personal development - spiritual growth and enjoyment of the way I am.

Authors who study the psychological value of hedonistic ideas focus on pleasures, both bodily, mental, and spiritual (Kubovy, 1999). Therefore, happiness is not reduced to physical hedonism, but can be derived from the achievement of goals in different spheres and domains (Diener et. al. 1998).

In 1984, Ed Diener introduced the so-called three-component model of well-being (SBW) as a complement to the already popular hedonistic view such as the pursuit of maximum happiness in human life. The relationship between hedonism and well-being can be understood through (1) an individual's perception of a prevalence of positive emotions, (2) a prevalence of a lack of negative moods and emotions, and (3) a perception of life satisfaction (Deci, Ryan, 2008).

The term *subjective well-being* has become well-established and has a lasting place in empirical research and in the theoretical framework regarding its relationship to social *well-being*. People fill the construct of subjective well-being with different content - health, finances, family relationships, friendship and family relationships, etc. i.e. they give them different values and meaning using their own views and experiences, cultural context. The authors make an observation that the priorities and content of the said construct may change over time, no constancy and consistency are observed. In this sense, life satisfaction could be assessed through the relationship between experience - past, present, future.

2.1.2. Positive psychology and (subjective) well-being

Positive psychology functions on three levels - subjective, individual and social/institutional (Seligman & Csikszentmihalyi, 2000, p.5). At the subjective level, it focuses on valued experiences such as well-being, contentment, satisfaction, hope, optimism, flow, and happiness. Positive psychology views subjective well-being as a construct related to the optimal experience and functioning of the individual. Sonia Lyubomirsky (2001) argues that subjective well-being is strongly influenced by an individual's genetic predisposition and the combination of personality and genetics, which is always unique. According to the author, other external circumstances and activities can also influence an individual's well-being.

2.1.3. Eudemonic perspective

In scholarly sources, *eudaimonia* is translated from Greek as "*happiness*" and "well-being." Theoretical review also brings to the fore translations such as *human flourishing*, *prosperity* (Robinson, 1989) and even *blessing* (Critchley, 2019). The eudaemonic approach draws on the writings of ancient Greek philosophers, but its foundation is laid by Aristotle. According to him, eudemonia is the highest human good, and the realization of one's own potential can be taken as the primary and even ultimate human goal. As early as the fourth century B.C., Aristotle advanced the notion that the proper aim of everyone is to realize himself as an actualized adult. According to him, *eudaimonia should not* be translated as happiness, but as the realization of one's own potential or self-actualization.

Eudaimonism places happiness as the primary value, while hedonism is based primarily on pleasure. One does not fully cover the other, nor can a clear contradiction be found between them. If hedonism associatively implies that one enjoys pleasure and seeks it consciously, trying to protect oneself from suffering and dissatisfaction, then eudaemonism is true, global happiness contained in life. In most analyses, pleasure is associated with the satisfaction of bodily needs, with survival, while satisfaction is associated with intellectual stimulation, experience, self-actualization, creativity, and creation. Philosophers' reflections on the content of the concept of eudaimonia gave Carroll Ryff the idea to conceptualize his views of psychological well-being by linking them to self-actualization (Ryff, 1989, Ryff & Singer, 2008).

2.1.4. Carol Rieff's model of mental well-being

K. Ryff (1989) found similarities in ideas of psychological well-being and attempted to define the concept as multidimensional, not limited to the experience of positive emotions

and happiness. Her theory defines *the good life* as balanced and holistic, involving different aspects of well-being.

"The model is built on theories of personal development, clinical psychology and mental health. The concept of mental well-being, according to Rieff, is: 1) an integral indicator of the degree of a person's orientation towards the realization of the basic components of positive functioning; 2) the degree of realization of this orientation; 3) (subjectively) mental well-being is expressed in the feeling of happiness, satisfaction with oneself and one's own life" (Tagareva, 2016a).

In a systematic review of various psychological theories and perspectives, Carroll Ryff (1989) identifies six elements that are consistently present in ideas of optimal psychological functioning, namely: ***self-acceptance, autonomy, positive relationships with others, environmental mastery, personal growth and development, and purpose in life.***

2.1.5. Self-determination theory

Self-determination theory is related to the eudaimonic approach. It reflects its principles and was created by Ryan and Deci (Ryan & Deci, 2000; Deci & Ryan, 2008). It foregrounds the drive to *'be and become oneself'* as a fundamental and unchanging aspect of psychological well-being. Theorizing suggests three basic and universal needs - of autonomy, competence, and closeness with others. These are the basis of optimal functioning and of virtue.

2.1.6. The Csikszentmihalyi flow concept

Csikszentmihalyi's concept of flow (Csikszentmihalyi, 1990) can also be attributed to eudaimonic theories. He defines "flow" (literal translation of the English *flow* - stream, current) as an experience of an optimal nature that can be registered and observed when the individual is engaged in an activity that is interesting and engaging to him. The idea of the nature of flow was popularized in a book by Csikszentmihalyi: *"Flow is the state in which one is so immersed in one's occupation that nothing else seems to matter; the experience itself gives such pleasure that one is willing to go to great lengths just to experience it again"* (Csikszentmihalyi, 1990). People quickly go into a state of flow when they are playing or competing, busy with creativity and creative processes, with physical activity and sports, with rituals, etc. (Csikszentmihályi, 1975).

2.1.7. Martin Seligman's Positive Psychology

In his book, Seligman (2011) offers a synthesized schema-model of the basic components of a person's positive psyche. The model includes five core elements of psychological well-being and happiness. His idea is attractively presented as the P.E.R.M.A. concept:

P - positive emotion in live - positive emotions;

E - engagement with people we love;

R - relationships with people - relationships and social battery of contacts with adults and peers;

M - meaning in live - the search and finding of meaning and the creation of meaning;

A - accomplishment - achievements and successes;

As a representative of positive psychology, he believes that these five elements can help people achieve a life of fullness, happiness and meaning, to experience well-being.

2.3 Adolescence and subjective well-being

Subjective well-being in adolescents includes the following constructs: self-reported positive attitude toward life and absence of depressed mood), relationships with parents, relationships with peers (peer acceptance, peer relationship problems and adversities, and trusting communication), and suicidal ideation and behavior.

Well-being in adolescence involves the experience of subjective well-being.

For the purpose of the present study, the constructs that will be considered are part of one of the instruments used, the Scales of Subjective Well-Being and Relationships in Adolescence (SSBO).

2.4. Relationship of mental well-being with other constructs

A link can be made between psychological well-being and optimal human functioning, which are constructs from the field of positive psychology and feelings of *optimism and hope* (Schneider, 2001; Adams & Jackson, 2000; Lopez et al., 2000). Mental well-being can also be related to: *resilience* (Fredrickson, 2001), *happiness and satisfaction* (Andrews & McKennell, 1980), life flow (Massimini & Fave, 2000), the *pleasure-pain* model (Bradburn, 1969), *subjective well-being* (Diener, 2000), and the *meaning of life* (Jung as cited in Yalom, 2018). The suppression of the latter leads to a lack of fullness in life being taken as the equivalent of sickness.

Margarita Bakracheva (2023) confirms through a series of studies that certain personality traits and dispositions influence levels of psychological well-being. According to the findings, meaning in life is the most significant predictor, for which no mediated relationships with well-being were noted (Bakracheva, 2023).

2.5. Significance of research in the field

Regarding the period of adolescence, it can be assumed that the instability of processes related to identification, dynamics in social relationships, school activity and age play a role in well-being. But the goal remains the same as in adulthood - the search for meaning, happiness and optimal functioning. Mental well-being is considered to be a dynamic concept that is strongly influenced by the changes in life that occur with age, and especially by a person's ability to adapt to novelty. An empirical study conducted in 2015 in late adolescence revealed certain trends, confirming findings from previous research on adolescents' mental well-being. Some of the adolescents participating in the study had normal levels of mental well-being (Tagareva, 2016).

It is necessary to note that socio-economic factors during adolescence influence well-being.

3. The Flourishing Construct

Empirical research and theoretical reviews of the literature in recent decades have identified flourishing personality as the best on the mental health spectrum and is often taken to be the antithesis of mental distress. Individuals who thrive are often associated with happy

people. In this regard, Flourishing is an indicator of positive development (Bakracheva, 2020, 2023).

3.1. Approaches and theories for studying flourishing

Often the concepts of *flourishing* and *optimal well-being* are taken interchangeably, as synonyms. They can be as goals of human life (Messer, 2013) or a state of an individual in which they would define most or all aspects of their life as good and satisfying (Vander Weele, 2017). According to Bakracheva (2020) flourishing includes "*eudaemonic, hedonic, and appreciative well-being*" (Bakracheva, 2020, p. 28).

Keyes (2002) defines individuals as flourishing human beings free from mental afflictions and disorders, moderately mentally healthy, and alert/fatigued. Huppert (Huppert, 2009) speaks of flourishing as a global sense that *life is going well* and involves a combination of the individual feeling and functioning, adapting effectively. It thus becomes synonymous with a high level of psychological well-being. A number of theorists have also used the concept of psychological well-being (Ryan & Deci, 2001 ; Riff, 1989) as an alternative to the concept of flourishing.

People described as Flourishing have a combination of high levels in different areas of well-being - physical, social, subjective, global. Flourishing people are described as happy and fulfilled, tend to make sense of their lives, experience themselves as competent and capable, have stable positive self-esteem and self-acceptance, strive for self-actualization and growth, do not worry too much when they are out of their comfort zone, cope well with stress and with prioritization, can make decisions, and so on (Keyes, 2002).

3.2. Flourishing and adolescence

Kwong and Hayes' (2017) study used a tool that included items developed for positive health and Flourishing. Their scholarly work is related to the study of adverse family relationships and their impact on child and adolescent Flourishing. The conclusion that the authors draw is related to the fact that inappropriate and unacceptable family patterns and experiences in children between the ages of 6 and 17 significantly decrease Flourishing (Kwong & Hayes, 2017).

Lippman (2011) created an innovative project named Flourishing Children, whose field of implementation is focused on creating positive strategies to improve the parameters of flourishing. His focus is strengths and their development in adolescence (Lippman, Moore, Guzman, Ryberg, McIntosh & Ramos, 2011).

Orkibi (2018) examined whether self-control skills of 807 adolescents correlated with positivity, through the lens of relationships with parents and peers. The study confirmed that adolescents who have good self-control have higher Pareto measures of Flourishing (Orkibi, 2018). The results reinforce the importance of social belonging and link it to a Flourishing adolescent.

3.3. Relevance of research on well-being and flourishing

It is clear from the theoretical review that psychological well-being and flourishing are the result of a variety of interrelated and complementary factors - personal experience,

social relationships, values and resources, flexibility and adaptability, good social skills, emotional competence, positive relationships and sense of belonging, positive self-esteem, supportive and motivating environment, conflict resolution skills, prosocial behavior, and others.

4. Innovative learning systems. The 1:1 model - "One student - one device"

4.1. Learning anywhere, anytime - a brief historical overview

The phrase "Learning Anywhere, Anytime" has emerged in the last decade and is associated with the process of "lifelong learning". It is associated with easy access to the Internet and to a vast amount of information and conceptualizes the use of digital technologies in educational processes. According to Slavcheva, the use of digital technologies and Internet applications and services is "*a lasting trend in the lives of modern adolescents*" (Slavcheva, 2015, p. 243).

4.2. Innovative training system. Cloud technologies and the One Student One Device model

Within the last decade, the 1:1 model has gained popularity by contributing to the organization of activities in school administration and to the improvement of the learning process. It emphasizes the meaningful and purposeful use of information technology in education.

Integrating the 1:1 Model into classrooms promotes the development of 21st-century specific competencies (Bebell & Kay, 2010), leading to improved student engagement (Rockman, 2003). The purpose of implementing technology in many schools around the world is related to the creation and development of 21st-century skills and competencies, including critical and innovative thinking, collaboration and teamwork, and active communication (Penuel, 2006). All of these skills are essential in preparing young people to enter higher education and in choosing some of the professions of the future where technology and digitalization are a top priority.

The 1:1 model is also related to the construction of a specific educational environment through the teaching and learning support tools of Google Workspace for Education - such as Classroom, Google Meet, Google Docs, Google Forms, Google Calendar, Google Chat, etc. There are also add-ons to the respective tools that make their use optimal.

The One Student-One Device model focuses on constructivism in the classroom - the focus shifts from the teacher to the students.

4.3. Comparison of traditional and innovative training systems:

- In a traditional lesson, the teacher may present a small part of the material. Using Google Workspace allow students to get information at any time and in different forms - text files, videos and audio recordings, access links, etc.
- Learning in the innovative classes is personalized - students work at their own pace. The process is flexible and oriented to the individual.
- Innovative classes increase the opportunities for transferring theoretical learning content into a real context, which can give the learned material a different, more practical meaning.

- Different quality of communication (formal and informal) between teacher and students in the two learning systems;
- Lack of anonymity when working in groups - through the Google tools report, the teacher understands what each student's participation in the group work is;
- The learning process can happen anytime and anywhere with Internet access in the innovative classes.
- The 1:1 model continues until the end of the pupils' training phase, etc.

4.6. Critique of the 1:1 Model

Critics of the 1:1 model argue that schools emphasize working with technology over teaching. The explanation for this can be found in the inability of many teachers to use Google Workspace tools. Currently, teachers have varying levels of technology knowledge and skills (Warschauer, 2006).

There is also the concern that older teachers, as proponents of traditional classroom teaching, would have internal resistances to upgrading their qualifications and certification, and hence would not use technology in the best possible way for the educational process. Typically, younger teachers are comfortable using technology in the educational process, but they lack experience and skills in managing classroom processes (Loertscher & Koechlin, 2012).

CHAPTER TWO. Design of the empirical study

Objective of the empirical study

The aim of the empirical study in this dissertation is to diagnose the parameters of self-esteem, subjective well-being and Flourishing in adolescents of upper school age (8th and 10th grade) studying the 1:1 Model and possible interrelationships between these constructs (based on a sample of individuals in Bulgaria).

Objectives of the empirical study

- 1) to ascertain the general level of self-esteem in the persons studied.
- 2) to establish the general level of subjective well-being in the examined persons and to analyze the configurations of its forming components.
- 3) to establish the general level of Flourishing in the individuals studied.
- 4) to determine the significant differentiations in the level of the constructs studied depending on the type of educational system - traditional or innovative.
- 5) to highlight and analyze the significant interrelationships (correlations) between the constructs under study.
- 6) To examine the impact of the educational innovation (One Device - One Student model) on subjective well-being and its components, self-esteem and flourishing in the subjects.
- 7) To diagnose differentials in the level of the above constructs by comparing them with the level of the same constructs in students who are taught in classes without technology (Chromebooks)

The object of the empirical study is the mental health of upper school age students (VIIIth and Xth grade). The present study included a total of 486 adolescents divided into two groups: an experimental group comprising 238 (49.0%) and a control group with 248 (51.0%) adolescents.

The subject of this empirical study is self-esteem, subjective well-being and flourishing in adolescents by measuring and identifying them with relevant instruments.

Hypotheses of the empirical study

Hypothesis 1. It is hypothesized that there will be statistically significant differences in the level of self-esteem in adolescents (VIII and X grade) depending on the characteristics of the educational system - traditional, without Chromebook and innovative, with Model 1:1.

Hypothesis 2. It is hypothesized that there will be statistically significant differences in the level of subjective well-being in adolescents (VIIIth and Xth grade) depending on the characteristics of the educational system - traditional, without Chromebook and innovative with Model 1:1.

Hypothesis 3. It is hypothesized that there will be statistically significant differences in the level of Flourishing in adolescents (Class VIII and Class X) depending on the characteristics of the educational system - traditional, non-Chromebook and innovative with Model 1:1

Hypothesis 4. It is hypothesized that correlations will be found between some of the constructs (self-esteem, subjective well-being, and flourishing).

Sub Hypothesis 4.1. It is hypothesized that positive correlations will be found between the constructs in the experimental and control groups.

Sub Hypothesis 4.2. It is hypothesized that stronger correlations will be found between the constructs under study in the experimental group.

Hypothesis 5. It is hypothesized that each of the constructs will correlate with at least one of the subscales of the Adolescent Subjective Well-Being and Relationships Questionnaire in both the control and experimental groups.

Sub Hypothesis 5.1. It is hypothesized that there will be a correlation between self-esteem and at least one of the scales from the Questionnaire of Subjective Well-Being and Relationships in Adolescence in both the control and experimental groups.

Sub Hypothesis 5.2. It is hypothesized that there will be a correlation between subjective well-being and at least one of the scales from the Questionnaire of Subjective Well-Being and Relationships in Adolescence in both the control and experimental groups.

Sub Hypothesis 5.3. It is hypothesized that there will be a correlation between Flourishing and at least one of the scales from the Questionnaire of Subjective Well-Being and Relationships in Adolescence in both the control and experimental groups.

Design of the empirical study

Students of class VIII and X were studying. The empirical material was collected from three schools where students were simultaneously taught in the 1:1 Model (innovative system of teaching) and in mainstream classes without access to the innovation - i.e. in a traditional system of teaching. A total of 18 classes with students participated - 9 classes that

were the core experimental group and 9 classes that were the control group. The respondents were carefully selected to meet the same conditions:

- 1) Students of the experimental group (VIII and X grade) use Chromebook and Google cloud technology in the educational process, while students of the control group (VIII and X grade) are taught without this innovation;
- 2) Students from the experimental group and students from the control group are educated in the same school;
- 3) Students in the experimental group and students in the control group have the same (with minor differences) teachers teaching the subjects;
- 4) Students in the experimental group and students in the control group have the same learning material to be taught and mastered.

Participation in the survey is anonymous and voluntary, and respondents are informed in advance of the survey objectives. All respondents completed the questionnaires via the online Google Forms platform. The toolkit includes a short questionnaire (placed at the beginning of Google Forms) that aims to collect basic sociodemographic data about the respondents - gender, age and class.

Empirical research instruments . Presentation of the instruments

Maurice Rosenberg's self-esteem Scale - Bulgarian Standardization by Margarita Dilova, Eva Papazova and Metodi Koralov includes 10 items that track attitudes towards the self and the experience of the self. The individual can determine his/her own worth based on personal values and beliefs. The reliability coefficient is high $\alpha = 0.810$; the factor formed explains 53% of the variance. The self-esteem scale is suitable for individuals aged 14 to 64 years. It is a Likert-type self-esteem survey, asking respondents to rate each of the statements in a range from 1 ("do not agree at all") to 4 ("strongly agree"). Interpretation of the results takes place at the level of an overall self-assessment score.

The Adolescence Subjective Well-Being and Relationships Scale (ASBS) - a short Bulgarian version, validated for a Bulgarian sample and standardized by Plamen Kalchev (2014) is a short, economical and easy-to-use self-report questionnaire that is designed for students aged V-XI grade. It can be administered in groups or individually and takes about 10 min. The questionnaire can be used for screening, diagnostic, performance evaluation and research purposes. The Adolescent Mental Well-Being and Relationships Survey Scale is a multidimensional, Likert-type scale, with respondents asked to rate each statement on a scale from 1 ("completely false") to 4 ("completely true").

Interpretation of the results is done at the level of the total subjective well-being score and at the level of the mental well-being components and their configuration. The total *Subjective Well-being* score is formed from the sum of *Self-esteem* + *Positive attitude towards life* + *Depressed mood* (reversed signed, i.e. all the items are recoded before being included in the Subjective Well-being score).

The Deaner Flourishing Scale - Bulgarian Standardization by Plamen Kalchev, translated by Plamen Kalchev and Kamelia Hancheva is an 8-item scale that is designed to measure respondents' overall, global assessment of their satisfaction with life. The focus is on the cognitive evaluation of experience in significant domains of existence. In the original, the flourishing scale is a 7-point Likert scale ranging from 7 "completely true" to 1

"completely false." For the purposes of this dissertation and in relation to the specifics of adolescent research, the original 7-point scale was reduced to a 4-point scale.

CHAPTER THREE. Analysis and interpretation of the empirical research results

The analysis of the results of the empirical study was carried out in several stages - derivation of descriptive statistics; psychometric processing of the applied instruments and verification of their reliability; investigation of the influence of socio-demographic factors on the levels of the studied constructs through a series of univariate analyses of variance and T-test; and investigation of the interrelationships between the studied constructs by applying correlation and regression analysis.

2. Analysis of the results of the Morris Rosenberg's self-esteem Scale . Psychometric and reliability according to Cronbach's alpha coefficient

Cronbach's alpha for the whole questionnaire is equal to 0.720, which proves very good reliability of the scale. The result is close to the one published in the Bulgarian standardization of the Morris Rosenberg's self-esteem Scale. The authors report a Cronbach's alpha coefficient of $\alpha = 0.82$. The coefficient obtained in this dissertation is also close to the one reported in the international study of Schmitt and Allik (Schmitt & Allik, 2005) and to the one reported in other studies with Bulgarian sample (Dilova et al., 2017). In a study conducted by Bakracheva (2023) in the period January 2021 - December 2022 among 493 surveyed individuals, a reliability coefficient of $\alpha = 0.821$ was found.

Table 1.2. Cronbach's alpha coefficients for the meaningfulness (consistency) of the Rosenberg's self-esteem scale

Scale name	Number of Aytens	Cronbach's Alpha	Average value	Standard deviation	F	Level of significance Sig
Scale 8 "Rosenberg,s self-esteem "	10	0.720	30.66	4.607	268.989	$0.000 < \alpha = 0.05$

2.3. Descriptive statistics

The results of the Kolmogorov-Smirnov test show that the frequency distributions of the self-esteem scale have distributions that are similar to the normal Gaussian distribution. For these, the significance levels are Asymp. Sig. (2-tailed) $< \alpha = 0.05$. The *Rosenberg's self-esteem* Scale has values in the range [14 - 38], with a mean of 30.66 ± 4.61 . After processing the raw scores, higher values on this subscale indicate higher self-evaluation parameters.

3. Analysis of the Subjective Well-Being and Relationships Scale scores . Psychometric characteristics and reliability according to Cronbach's alpha coefficient

The Cronbach's Alpha reliability coefficients were found to be statistically significant for the *Global self-esteem* Scale, *Positive Attitude Toward Life* Scale, *Depressed Mood* Scale,

Closeness with Parents Scale, Peer Acceptance Scale, and Confidential Communication Scale. This conclusion is supported by their *F* characteristics, which have significance levels $Sig = 0.000 < \alpha = 0.05$. This means that the present study shows good internal consistency for the above subscales. Of the components of *Subjective Well-being, Depressed Mood* ($\alpha=0.865$) was the most consistent, and the lowest Alpha value was calculated for the *Peer Relations Problems* subscale ($\alpha=0.696$). In practice, the components of subjective well-being (excluding *Problems in Peer Relations*) were more homogeneous.

The internal consistency of *Confidential Communication* (3 aytms) is also relatively high. This can be explained by the specific content of the aitem, whose wording aims to clarify the features of close friendship.

Regarding the *Problems in Peer Relations* Scale, the calculated Cronbach's alpha coefficient = 0.696 is **not statistically significant**, as the characteristic $F = 1.448$ has a significance level $Sig. = 0.237 > \alpha = 0.05$. A possible explanation for this result is the combination of a small number of aitem (4 aitem) and that it assesses negative experiences in relations with classmates and difficulties in integration in the group. The subscale assessed can be considered in the broader context of bullying and victimisation at school. In comparison, the published studies by P. Kalchev's internal consistency for *Peer Relations Problems* is $\alpha=0.73$ in a gender-balanced sample.

Table 2.2. Cronbach's alpha coefficients for the meaningfulness (consistency) of scales defining student well-being:

Scale name	Number of Aytms	Cronbach's Alpha	Average value	Standard deviation	F	Level of significance Sig
Scale 1 "Global self-esteem"	5	0.824	15.86	3.090	12.940	$0.000 < \alpha = 0.05$
Scale 2 "Positive attitude"	5	0.812	14.89	2.960	89.489	$0.000 < \alpha = 0.05$
Scale 3 "Depressed mood"	8	0.865	14.26	5.061	59.715	$0.000 < \alpha = 0.05$
Scale 4 "Proximity with parents"	8	0.853	24.69	5.297	84.079	$0.000 < \alpha = 0.05$
Scale 5 "Peer acceptance"	7	0.826	19.37	4.341	130.818	$0.000 < \alpha = 0.05$
Scale 6 "Problems in relationships with peers"	4	0.696	6.88	2.374	1.448	$0.237 > \alpha = 0.05$
Scale 7 "Truthful communication"	3	0.794	9.38	2.548	39.875	$0.000 < \alpha = 0.05$

3.3. Descriptive statistics

The results of the Kolmogorov-Smirnov test show that the frequency distributions of the seven scales of subjective well-being have distributions that are similar to the normal Gaussian distribution. For these, the significance levels are $Asymp. Sig. (2-tailed) < \alpha = 0.05$. Higher scores indicate a more salient sense of subjective well-being.

The values of the *Subjective Well-Being* Scale are in the range 21 - 72. The mean value is equal to 56.50 ± 10.05 . It is also above the middle of the interval in which its values vary.

The conclusion that can be drawn is that the *mean values of all the scales except Scale 6 Peer Relations Problems are above the mean of the interval in which all their values vary.*

4. Analysis of the results of the Deaner Scale for Flourishing. Psychometric characteristics and reliability according to Cronbach's alpha coefficient

As can be seen from Table 3.2. Cronbach's alpha for the whole questionnaire is equal to 0.869, which proves very good reliability of the scale. The Cronbach's alpha coefficient to The **Flourishing Scale** (Diener, Wirtz, Tov, Kim-Prieto, Choi, Oishi & Biswas-Diener, 2009) is $\alpha = 0.820$. The results of the study are close to the reliability coefficient $\alpha = 0.908$ obtained by Bakracheva (2023).

Table 3.2. Cronbach's alpha coefficients for content (consistency) of the flourishing scale

Scale name	Number of Aytems	Cronbach 's Alpha	Average value	Standard deviation	F	Level of significance Sig
Scale 9 " Flourishing "	8	0.869	25.27	4.373	45.701	$0.000 < \alpha = 0.05$

4.3. Descriptive statistics .

The results of the Kolmogorov-Smirnov test show that the frequency distributions of the flourishing scale have distributions that are similar to the normal Gaussian distribution. For these, the significance levels are Asymp. Sig. (2-tailed) $< \alpha = 0.05$. The *Flourishing* scale has values in the range [8 - 32], and its mean is 25.27 ± 4.37 .

5. Correlation analysis by the multivariate scaling method

Investigation of the presence of correlations by the method of multidimensional scaling between the scales for the two groups of students - total for both groups studied

In order to establish the relationships between the scales of subjective well-being, self-esteem and flourishing for the two groups of students, a common correlation matrix of the scales was constructed. It contains the calculated Pearson Correlation coefficients (*Pearson Correlations*) between each pair of scales expressing the strength of their interrelationship.

A total of 45 statistically significant correlations were found, with significance levels *Sig. (2-tailed)* $< \alpha = 0.01$. Correlation analysis indicated weak to significant relationships between the constructs examined. According to the strength of the correlation, they are:

- 1 very strong correlation with correlation coefficient $r > 0.9$;
- 13 strong correlations with correlation coefficients in the range $[0.7 \leq r < 0.9)$;

- 12 significant relationships with correlation coefficients in the range $[0.5 \leq r < 0.7)$;
- 14 moderate correlations with correlation coefficients in the range $[0.3 \leq r < 0.5)$;
- 5 weak relationships with correlation coefficients in the range $[0 < r < 0.3)$.

Legend:

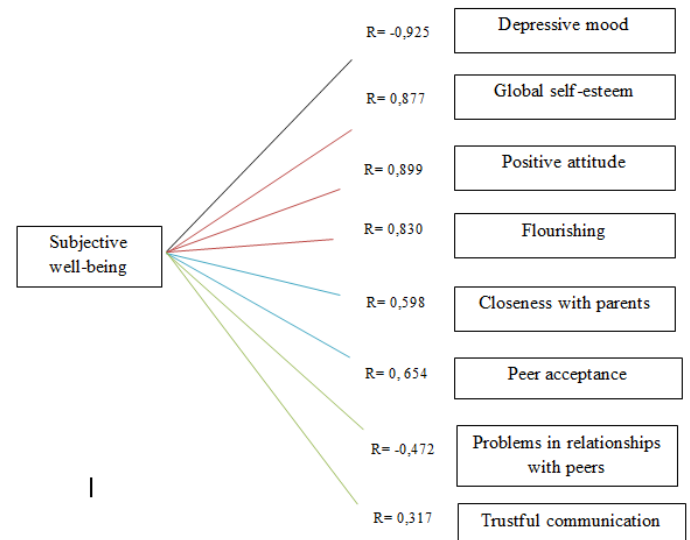
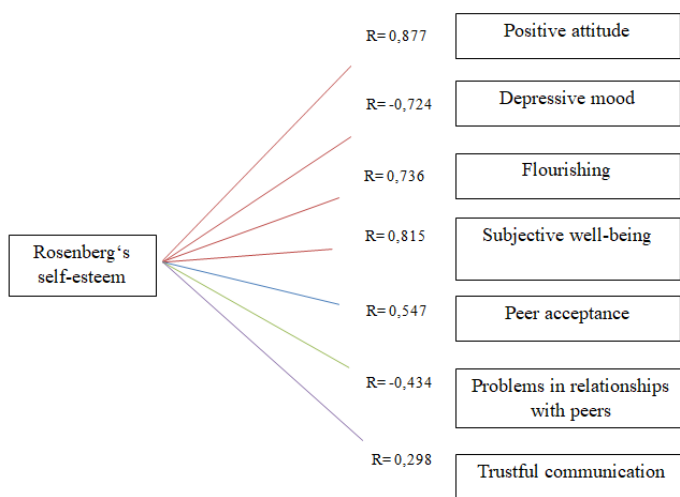
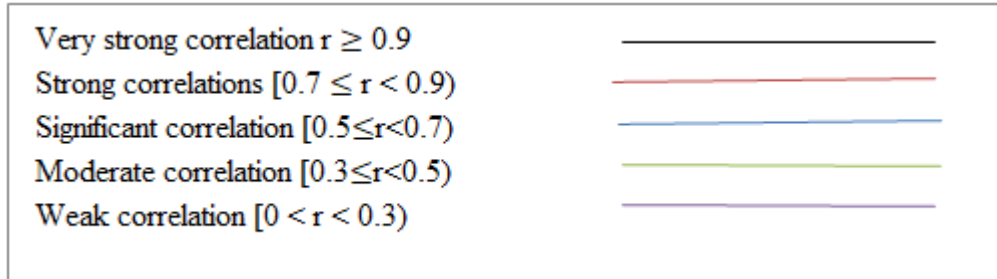


Figure 21. The correlation relationships of the Rosenberg's self-assessment for all students

Figure 22. Correlations of Subjective Well-being for All Students

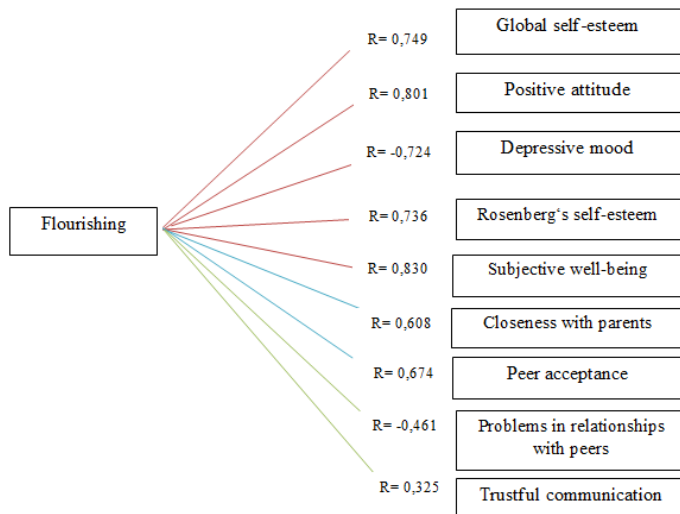


Figure 23. The correlation relationships of the Rosenberg's self-assessment for all students

Investigation of the presence of correlations by the multivariate scaling method between the scales for the experimental groups

A total of 44 statistically significant correlations were found between the **scales of subjective well-being, self-esteem, and flourishing for the experimental group** with significance levels $Sig. (2-tailed) < \alpha = 0.01$.

According to the strength of the relationship they are:

- 2 very strong correlations with correlation coefficients $r > 0.9$;
- 12 strong correlations with correlation coefficients in the range $[0.7 \leq r < 0.9)$;
- 13 significant relationships with correlation coefficients in the range $[0.5 \leq r < 0.7)$;
- 10 moderate correlations with correlation coefficients in the range $[0.3 \leq r < 0.5)$;
- 7 weak relationships with correlation coefficients in the range $[0 < r < 0.3)$.

A very strong correlation $r \geq 0.9$ was observed between the following subscales: a very strong positive correlation between the *Positive Attitude Scale* and the *Subjective Well-Being Scale* - $r = 0.901$ and the *Depressed Mood Scale* and the *Subjective Well-Being Scale* = - 0.915 - a very strong negative correlation.

Investigation of the presence of correlations by the multivariate scaling method between the scales for the control group

A total of 45 statistically significant correlations were found for **the subjective well-being, self-esteem, and flourishing scales for the control group**, with significance levels $Sig. (2-tailed) < \alpha = 0.01$.

According to the strength of the relationship they are:

- 1 very strong correlation with correlation coefficient $r > 0.9$;
- 12 strong correlations with correlation coefficients in the range $[0.7 \leq r < 0.9)$;
- 11 significant relationships with correlation coefficients in the range $[0.5 \leq r < 0.7)$;

- 21 moderate correlations with correlation coefficients in the range $[0.3 \leq r < 0.5)$.

Very strong negative correlation $r \geq 0.9$: Scale 3 *Depressed mood* and Scale *Subjective well-being* = - 0.938

5.2. One-factor correlation analysis

Correlations between the Rosenberg's Self-esteem Scale and the Subjective Well-Being Scale

Correlations between the constructs in the experimental and control groups were examined using univariate correlation analysis.

A comparative analysis of the obtained correlations was performed to establish the differences in the scores between the two groups studied. The results show that the established linear correlation relationships are applicable. The basis for this conclusion is provided by the respective significance levels of the F characteristic, which are $\text{Sig. } F=0.000 < \alpha=0.05$. Also, the estimated coefficients (constant b_0 and regression coefficient b_1) involved in the correlation equations are statistically significant with significance level $\text{Sig. } t = 0.000 < \alpha = 0.05$.

The comparative analysis to determine the better linear correlation for the experimental and control groups was performed according to the two criteria: a larger value of the coefficient of determination r^2 and a smaller standard error *St.Error*.

The coefficient of determination r^2 represents the explanatory power of the determined correlation. Measured as a percentage, it indicates how much of the change in the dependent variable (outcome) Y is determined by the factor X.

Table 5.1. Correlations obtained between the Rosenberg's self-esteem Scale and the Subjective Well-Being Scale

Group	Equation	F	Sig.	R	R^2	St.Error
Experimental	$Y=3.381+1.755X$	617.24 0	$0.000 < \alpha = 0.05$	0.851	0.723	5.388
Control	$Y=0.255+1.813X$	384.09 7	$0.000 < \alpha = 0.05$	0.781	0.610	6.185

For the **experimental group**, the correlation coefficient is $Y=3.381+1.755X$, where the constant is $b_0 = 3.381$ and the regression coefficient is $b_1 = 1.755 > 0$. There is a positive correlation between the variables considered. The correlation coefficient is $r = 0.851$, which means that there is a **strong positive correlation**. For the **control group**, a correlation relationship of the form $Y = 0.255 + 1.813X$ was found, where the constant is $b_0 = 0.255$ and the regression coefficient is $b_1 = 1.813 > 0$. Therefore, a positive correlation exists between the variables under consideration. The correlation coefficient $r = 0.781$ and indicates that there is also a **strong positive correlation**. The coefficient of determination is larger for the experimental group, $r^2 = 0.851 = 85.1\%$, and smaller for the control group, $r^2 = 0.781$

=789.1%. The standard error of the relationship for the experimental group was smaller, equal to 5.388, while for the control group it was larger, equal to 6.185.

Therefore, it is assumed that the relationship between Rosenberg's Scale 8 Self-esteem and Scale 8 Subjective well-being is more pronounced in the experimental group.

Interrelationships between the Global Self-esteem Scale (as a component of the SBSE) and the Subjective Well-Being Scale

A comparative analysis of the relationships obtained for the total self-esteem as a component of the SSBHE and the total subjective well-being indicator was performed to complement the results obtained above.

For the **experimental group**, a correlation relation of the form $Y=14.040+2.703X$ was obtained, where the constant is $b_0 = 14.040$ and the regression coefficient is $b_1 = 2.703 > 0$. Therefore, there is a positive correlation between the variables under consideration. The correlation coefficient $r = 0.899$ is greater than 0.7 and less than 0.9, which means that there is a **strong positive correlation**. For the **control group**, a correlation relationship of the form $Y=7.430+3.068X$ was found, where the constant was $b_0 = 7.430$ and the regression coefficient $b_1 = 3.068 > 0$. Therefore, a positive correlation exists between the variables under consideration. The correlation coefficient $r = 0.859$ is greater than 0.7 and less than 0.9, hence there is a **strong positive correlation**. With a larger coefficient of determination, the correlation relationship for the experimental group is $r^2 = 0.809 = 80.9\%$, while for the control group it is $r^2 = 0.737 = 73.9\%$. The standard error of the correlation for the experimental group of 4.478 is smaller than the standard error of 5.073 of the correlation for the control group.

Hence, for the experimental group, there is a more pronounced correlation between global self-esteem and subjective well-being.

Interdependencies between the Flourishing Scale and the Subjective Well-Being Scale

It is also examined whether there is a correlation between flourishing and subjective well-being in the respondents based on the type of education system. The nature of the correlations between the constructs is also specified.

For the **experimental group**, the correlation coefficient is $Y=9.303+1.844X$, where the constant is $b_0 = 9.303$ and the regression coefficient is $b_1 = 1.844 > 0$. There is a positive correlation between the variables considered. The correlation coefficient is $r = 0.841$, which means that there is a **strong positive correlation**. For the **control group**, a correlation relationship of the form $Y = 5.661 + 2.039X$ was found, where the constant is $b_0 = 5.661$ and the regression coefficient is $b_1 = 2.039 > 0$. Therefore, a positive correlation exists between the variables under consideration. The correlation coefficient $r = 0.825$ and indicates that there is also a **strong positive correlation**. The coefficient of determination is higher for the experimental group, $r^2 = 0.708 = 70.8\%$, while it is lower for the control group, $r^2 = 0.681 = 68.1\%$. The standard error of the relationship for the experimental group is smaller, equal to 5.538, while for the control group it is larger and amounts to 5.592.

Therefore, it is assumed that the relationship between Scale 9 Flourishing and subjective well-being is more pronounced in the experimental group.

Correlations between the Rosenberg's Self-esteem Scale and the Flourishing Scale

Table 7 presents the correlation between the *Rosenberg's self-esteem* Scale and the *Flourishing* Scale, and specifies the influence of the educational system on the nature of the relationships.

For the **experimental group**, the correlation coefficient is $Y = 9.306 + 0.822X$, where the constant is $b_0 = 9.306$ and the regression coefficient is $b_1 = 0.822 > 0$. There is a positive correlation between the variables considered. The correlation coefficient is $r = 0.773$, which means that there is a **strong positive correlation**. For the **control group**, a correlation relationship of the form $Y = 12.104 + 0.755X$ was found, where the constant is $b_0 = 12.104$ and the regression coefficient is $b_1 = 0.755 > 0$. Therefore, a positive correlation exists between the variables under consideration. The correlation coefficient $r = 0.710$ and indicates that there is also a **strong positive correlation**. The coefficient of determination is higher for the experimental group, $r^2 = 0.598 = 59.8\%$, while it is lower for the control group, $r^2 = 0.503 = 50.3\%$. However, the standard error of the relationship for the experimental group is larger at 3.148 and for the control group it is smaller at 3.004.

Analyzing the obtained results, it is assumed that the relationship between Prosperity and Subjective Well-being is more pronounced for the experimental group, as the regression coefficient for it is larger at 0.822, while the regression coefficient for the control group is smaller at 0.755.

Interrelationships between the subscales and the Subjective Well-Being Scale

The data allow us to establish correlations between Subjective well-being and the following subscales of the SSFHE:

- the relationship between *Scalar Positive Attitude* and *Subjective Well-being* was more pronounced in the experimental group.
- more pronounced relationship between *Depressed Mood Scale* and *Subjective Well-Being* in the control group.
- The Relationship between *Scalar Closeness with Parents* and *Subjective Well-Being* was stronger in the experimental group.
- more pronounced relationship between *Peer Acceptance Scale* and *Subjective Well-Being* in the control group.
- more pronounced correlation between *Scale Problems in Peer Relations* and *Subjective Well-Being* in the control group.
- the relationship between the *Confidential Communication Scale* and the *Subjective Well-being* Scale is stronger in the control group.

6. Regression analysis

Comparative analysis of the Rosenberg's Self-esteem Scale for the experimental and control groups

The mean self-reported score for the experimental group was 30.5714 with a standard deviation of 4.95562 and for the control group was 30.7419 with a standard deviation of 4.25383.

Table 8. Descriptive statistics of the scale

Group Statistics					
	Group	N	Mean	Std. Deviation	Std. Error Mean
Rosenberg's Self-esteem Scale	Experimental group	238	30.5714	4.95562	.32123
	Control group	248	30.7419	4.25383	.27012

A comparative analysis of the mean values of the self-assessment on the Rosenberg's scale for the two groups of students - the experimental and the control groups - was performed using the *Independent Samples T-Test*.

The comparative analysis of self-evaluation between the experimental and control groups showed that the difference amounted to -0.17051. However, **this difference is not statistically significant** as the characteristic $t = -0 = 408$ has a significance level of *Sig. (2-tailed)* = 0.684 > $\alpha = 0.05$. Therefore, the self-evaluations of the students in the two groups are not statistically different, i.e., it can be assumed that their self-evaluations are approximately the same.

Comparative analysis of subjective well-being and relationships with parents and peers for experimental and control groups

This paragraph focuses on establishing the impact of the education system (traditional and innovative) on subjective well-being and its subscales. The results of the descriptive statistics conducted show that the mean value is higher in the experimental group with respect to the following subscales: *Total self-esteem* is $\bar{x} = 15.89$. (SD = 3.40), *Positive Attitude* $\bar{x} = 15.05$. (SD = 3.08), *Depressed Mood* $\bar{x} = 26.06$. (SD = 4.79), *Closeness with Parents* $\bar{x} = 26.15$. (SD = 5.37), *Peer Acceptance* $\bar{x} = 20.56$. (SD = 4.58) and *Subjective Well-Being* $\bar{x} = 57.02$. (SD = 10.22) . Higher mean values were reported for the control group on the following subscales: *Peer Relations Problems* $\bar{x} = 7.44$. (SD = 2.26) and *Trusting Communication* $\bar{x} = 9.64$. (SD = 2.31), .

The results of the descriptive statistics indicate that the mean value of the total *Subjective Well-Being* score for the two groups of individuals studied was $\bar{x} = 57.02$ (SD = 10.22). The results show that the respondents in the **control group have lower levels of Subjective Well-being compared to those** who are taught through Model 1:1 in the so-called innovative classes. Since subjective well-being is a dynamic construct and is strongly influenced by changes in the environment and by the ability of individuals, adolescents have to adapt to the environment. The latter includes the school environment and the online environment.

In order to perform a comparative analysis of the mean values of the scales expressing subjective well-being and relationships with parents and peers for the two groups of students, a t-test (*Independent Samples T-Test*) was applied.

The results show that for Scale 4 *Proximity with parents*, Scale 5 *Peer acceptance*, Scale 6 *Peer relationship problems* and Scale 7 *Confident communication*, **the differences between the means of the two groups of students from the experimental and control groups are statistically significant.**

The difference in the mean scores on the Subjective Well-Being Scale for the two groups was not statistically significant. It is -1.02907, with the characteristic $t = 1.129$.

The comparative analysis showed that there were statistically significant differences between the experimental and control groups on Scale 4 *Proximity to parents*, Scale 5 *Peer acceptance*, Scale 6 *Peer relationship problems* and Scale 7 *Confidential communication*. For the other scales (including the **Subjective Well-Being Scale**), **there were no statistically significant differences.**

Comparative analysis of flourishing measured by the Diener scale for the experimental and control groups

The mean flourishing score for the experimental group was 25.8739 with a standard deviation of 4.66345 and for the control group was 24.6815 with a standard deviation of 3.99688. 1.19250. **This difference is statistically significant** as for it the characteristic $t = 3.031$ has significance level $Sig. (2-tailed) = 0.003 < \alpha = 0.05$. Therefore, the **attitude towards flourishing of the students of the two groups is statistically different.**

Table 12. Descriptive statistics

Group Statistics					
	Group	N	Mean	Std. Deviation	Std. Error Mean
Scale Flourishing	Experimental group	238	25.8739	4.66345	.30229
	Control group	248	24.6815	3.99688	.25380

A comparative analysis of flourishing, as measured by the Diener scale, between the experimental and control groups shows that the difference amounts to -1.19250. However, from Levene's Test, it is found that one of the necessary conditions for this conclusion to be definitive is not met, which states that there should be no statistical difference between the variances (variances) of the two groups of students in the experimental and control groups. And in this case, this condition is not met because the characteristic $F = 3.905$ has a significance level $Sig. = 0.049 < \alpha = 0.05$. Therefore, further verification of the conclusion is needed by using non-parametric Mann-Whitney Test. The latter confirms the conclusion originally drawn from the Independent Samples T-Test that **there is a difference in the attitude towards flourishing** of the students of the two groups statistically. This is supported by the Mann-Whitney $U = 23923.500$ characteristic, which has a significance level of $Asymp. Sig. (2-tailed) = 0.000 < \alpha = 0.05$. The data presented allow us

to highlight the important finding that the perception of flourishing is more pronounced in adolescents taught the 1:1 Model.

1. Testing hypotheses and generalizations from the dissertation research

Hypothesis 1

It suggests that statistically significant differences will be found in the level of self-assessment of adolescents (8th and 10th grade) depending on the characteristics of the educational system - traditional, without Chromebook and innovative with Model 1:1.

The starting assumption in this dissertation study is that significant differences in the self-esteem of the adolescents in the experimental and control groups will be found. The verification of the proposed Hypothesis 1 is carried out by a comparative analysis of the mean values of the Rosenberg's Self-esteem Scale for the two groups of students. The data obtained shows that the difference is in the amount of -0.17051 and **is not statistically significant**. Therefore, the self-evaluations of the students in the two groups are not statistically different, i.e. it can be assumed that their self-evaluations are approximately the same. This means that **hypothesis 1 is not confirmed**.

Hypothesis 2

It suggests that statistically significant differences will be found in the level of subjective well-being of adolescents (Class VIII and Class X) depending on the characteristics of the educational system - traditional, without Chromebook and innovative, with Model 1:1.

Hypothesis 2 is tested by means of a comparative analysis. The results of the descriptive statistics showed that the mean value of the total subjective well-being index in the two groups of individuals studied was $\bar{x} = 57.02$ (SD = 10.22). In order to make a comparative analysis of the mean values of the scales expressing subjective well-being and relationships with parents and peers for the two groups of students, T - test (*Independent Samples T-Test*) was applied. The results obtained are presented above in the thesis *it can be assumed that the differences between the means for the two groups of students (experimental and control) are not statistically significant*. This means that **Hypothesis 2 is not confirmed**.

Hypothesis 3

It suggests that statistically significant differences in the level of flourishing will be found for adolescents (Class VIII and Class X) depending on the characteristics of the education system - traditional, non-Chromebook and innovative with Model 1:1.

Hypothesis 3 is tested by means of a matching analysis. The mean flourishing score for the experimental group is 25.8739 with a standard deviation of 4.66345 and for the control group is 24.6815 with a standard deviation of 3.99688. 1.19250. **This difference is statistically significant** as the characteristic $t = 3.031$ for it has significance level *Sig. (2-tailed) = 0.003 < $\alpha = 0.05$* which **confirms Hypothesis 3**. The empirical data shows that the **attitude towards Flourishing of the students of the two groups differ statistically**. However, from Levene's Test, it is found that one of the necessary conditions for this

conclusion to be conclusive is not met. The non-parametric Mann-Whitney Test confirms the conclusion originally drawn from the Independent Samples T-Test that *there is a difference in the attitude towards Flourishing students* from the two groups that differ statistically. **This difference is statistically significant** and confirms Hypothesis 3.

Hypothesis 4

It is hypothesized that positive correlations will be found between some of the constructs (self-esteem, subjective well-being, and flourishing).

Subhypothesis 4.1. It is hypothesized that positive correlations will be found between the constructs in the experimental and control groups.

Correlations between constructs can be compared as the data can be rescaled using Figure 27:

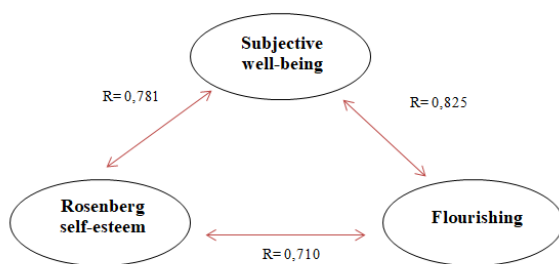


Figure 27a. Correlations in control group

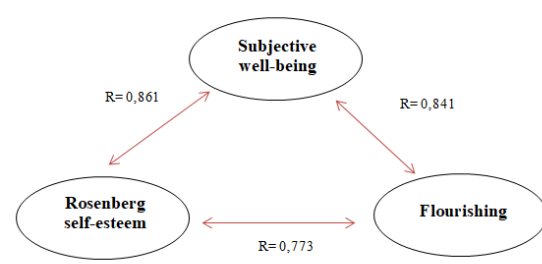


Figure 27b. Correlations at experimental group

Subhypothesis 4.2. It is hypothesized that stronger correlations will be found between the constructs under study in the experimental group.

For the **experimental group**, the correlation relationship shows that there is a positive relationship for the variables under consideration - Subjective Well-being and Rosenberg's Self-esteem. The correlation coefficient is $r = 0.851$, which means that there is a strong positive correlation. A positive correlation was also found for the **control group**. The correlation coefficient $r = 0.781$ and indicates that there is also a strong positive correlation. The correlation coefficient for the experimental group is larger, $r^2 = 0.851 = 85.1\%$, and for the control group it is smaller, $r^2 = 0.781 = 78.91\%$. The standard error of the relationship for the experimental group was smaller, equal to 5.388, while for the control group it was larger, equal to 6.185.

Therefore, it is assumed that a stronger relationship between Rosenberg's Self-esteem Scale and Subjective Well-being is found in the experimental group.

For the experimental group, the correlation relationship shows that there is a positive relationship for the variables under consideration - Rosenberg's self-esteem and Subjective well-being. For the **experimental group**, the correlation relationship has a constant ($b_0 = 9.303$) and regression coefficient ($b_1 = 1.844 > 0$) and shows a positive relationship. The correlation coefficient is $r = 0.841$, which means that there is a strong positive correlation. For the **control group**, a correlation relationship was found as the constant ($b_0 = 5.661$) and the regression coefficient ($b_1 = 2.039 > 0$) indicate that a positive relationship exists between the

variables under consideration. The correlation coefficient $r = 0.825$ and indicates that there is also a strong positive correlation. The coefficient of determination is higher for the experimental group, $r^2 = 0.708 = 70.8\%$, while it is lower for the control group, $r^2 = 0.681 = 68.1\%$. The standard error of the relationship for the experimental group is smaller, equal to 5.538, while for the control group it is larger and amounts to 5.592.

Therefore, it is assumed that the relationship between Scale Prosperity and Subjective Well-Being is more pronounced in the experimental group.

The test is conducted by correlation analysis between the two remaining constructs, the Rosenberg's Self-esteem and Flourishing. For the experimental group, the correlation coefficient with the constant is $b_0 = 9.306$ and the regression coefficient $b_1 = 0.822 > 0$ indicate that there is a strong positive relationship ($r = 0.773$) between the variables considered. For the control group, a correlational relationship was found with the constant being $b_0 = 12.104$ and the regression coefficient $b_1 = 0.755 > 0$. Therefore, there is a strong positive correlation ($r = 0.710$) between the variables considered. The coefficient of determination is greater for the experimental group ($r^2 = 0.598 = 59.8\%$) compared to the control group ($r^2 = 0.503 = 50.3\%$). However, the standard error of the dependence for the experimental group was larger at 3.148, while it was smaller at 3.004 for the control group.

Analyzing the obtained results, it is assumed that the relationship between Flourishing Scale and Subjective Well-being is more pronounced for the experimental group, as the regression coefficient for it is larger at 0.822, while the regression coefficient for the control group is smaller at 0.755.

Verification by correlation analysis and the obtained data **confirm Hypothesis 4.**






Hypothesis 5

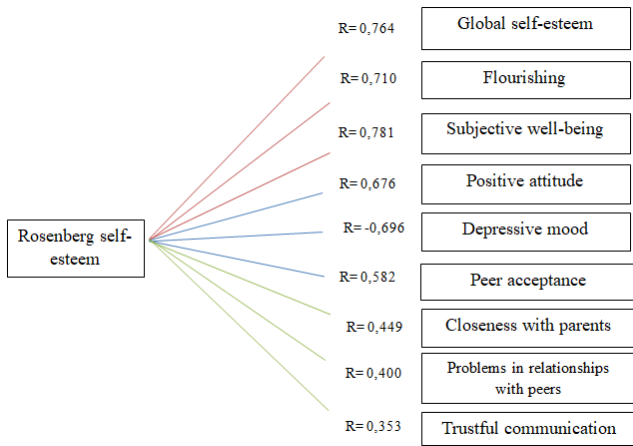
It was hypothesized that each of the constructs would correlate with at least one of the subscales from the Adolescent Subjective Well-Being and Relationships Questionnaire in both the control and experimental groups.

Subhypothesis 5.1. It is hypothesized that there will be a correlation between the Rosenberg's Self-esteem and at least one scale from the Adolescent Subjective Well-Being and Relationships Questionnaire in both the control and experimental groups.

Subhypothesis 5.1 was tested using correlational analysis. The empirical data obtained indicate that statistically significant correlations exist between the Rosenberg's Self-esteem and some of the subscales of the Subjective Well-Being and Relationships in Adolescence Questionnaire. This **supports Subhypothesis 5.1**. The following graphs visualise the correlational relationships and present the statistically significant coefficients.

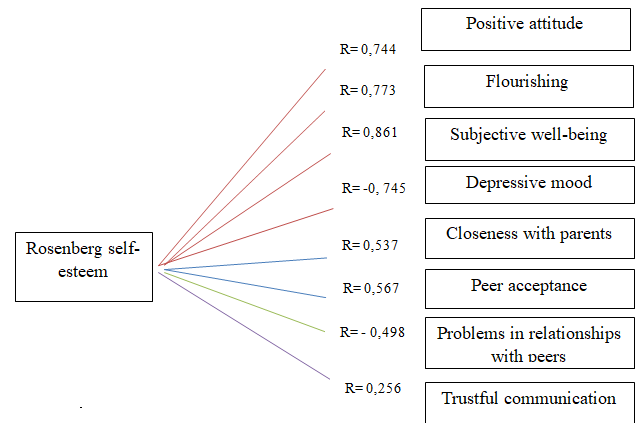
Legend:

Very strong correlation $r \geq 0.9$	
Strong correlations $[0.7 \leq r < 0.9)$	
Significant correlation $[0.5 \leq r < 0.7)$	
Moderate correlation $[0.3 \leq r < 0.5)$	
Weak correlation $[0 < r < 0.3)$	



Control group:

Figure 30. Correlations between the Rosenberg's self-assessment and the other constructs and components

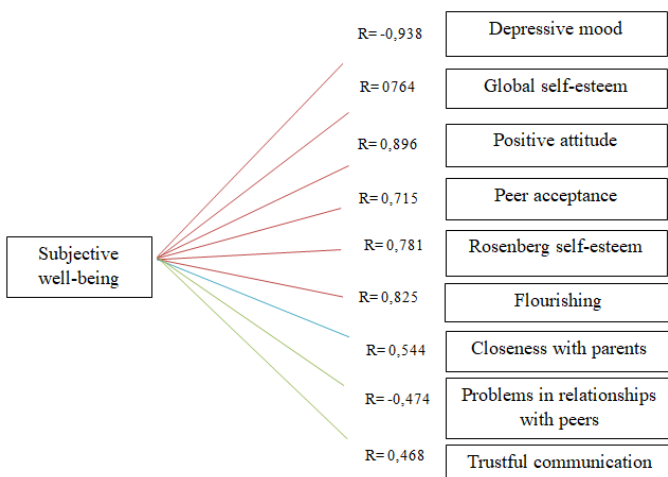


Experimental group:

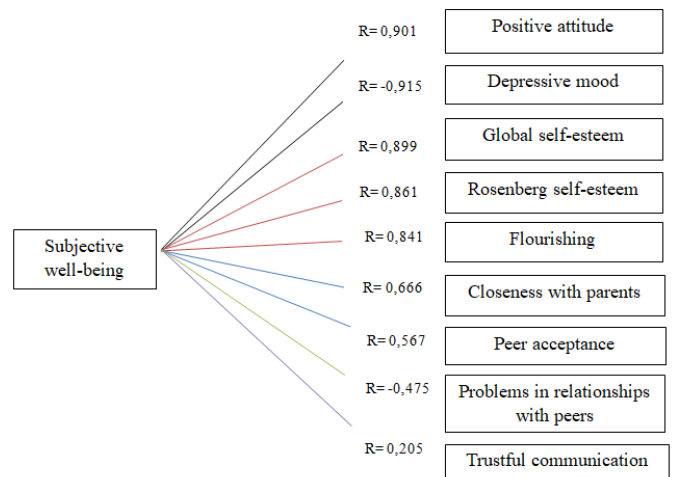
Figure 31. Correlations between Rosenberg's self-assessment and the other constructs and components

Subhypothesis 5.2. It is hypothesized that there will be a correlation between Subjective Well-Being and at least one of the scales from the Adolescent Subjective Well-Being and Relationships Questionnaire in both the control and experimental groups.

Subhypothesis 5.2 is tested by correlation analysis. The obtained empirical data confirm Subhypothesis 5.2. The following graphs visualize the correlations between Subjective Well-being and the subscales of the SWBHE, and the statistically significant coefficients are presented.



Control group



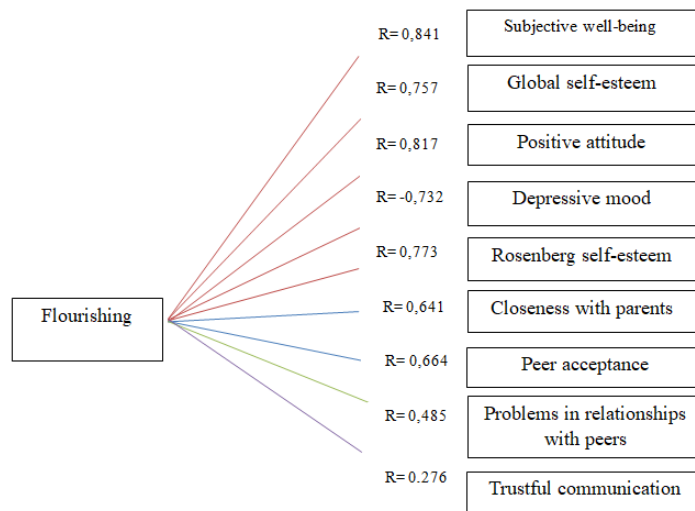
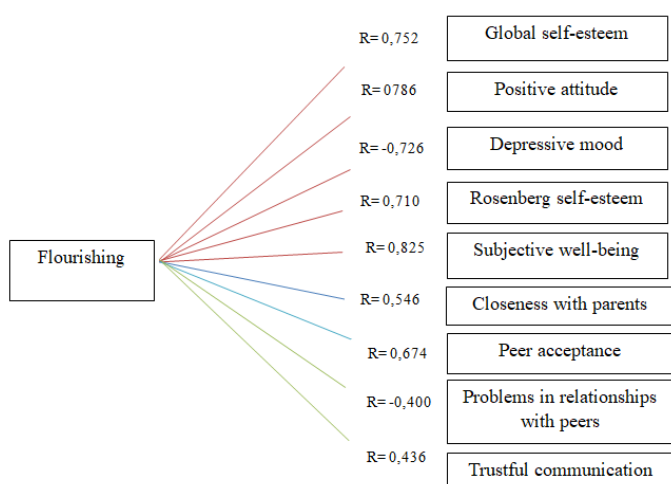
Experimental group

Figure 32. Correlations between subjective well-being and the other constructs and components

Figure 33. Correlations between subjective well-being and the other constructs and components

Subhypothesis 5.3. It is hypothesized that there will be a correlation between Flourishing and at least one of the scales from the Questionnaire of Subjective Well-Being and Relationships in Adolescence in both the control and experimental groups.

Sub-hypothesis 5.3 is tested using correlation analysis and the empirical data obtained **supports** it. The following graphs visualize the correlations between Prosperity and the SSBHE subscales, and present the statistically significant coefficients.



Control group

Experimental group

Figure 34. Correlations between Flourishing and other constructs and components

Figure 35. Correlations between Flourishing and other constructs and components

Discussion, summaries and conclusions. Scientific novelty, limitations and applicability of the study

Conclusions

- Contemporary scholarly discussions of self-esteem, psychological and subjective well-being, flourishing, and their essential characteristics are analyzed and systematized theoretically. Different conceptions of the specifics of childhood-adolescence (12-17) and the main developmental tasks at this stage of the life cycle are interpreted.
- Additionally, the reliability of the standardized Morris Rosenberg self-esteem Scale - Bulgarian standardization by Margarita Dilova, Eva Papazova and Metodi Koralov, the Scale for Subjective Well-being and Relationships in Adolescence - short Bulgarian version has been confirmed, adapted for a Bulgarian sample and standardized by Plamen Kalchev (2014)

and the Deaner Flourishing Scale - Bulgarian standardization by Plamen Kalchev, translated by Plamen Kalchev and Kamelia Hancheva. The contingent of the present study was 486 adolescents divided into two groups: an experimental group including 238 (49.0%) and a control group with 248 (51.0%) adolescents. The scales used to examine the three constructs during adolescence had good construct validity and reliability.

- The main input assumption of the dissertation, that there are significant differences in the constructs studied depending on the characteristics of the educational system (with the exception of flourishing), is not confirmed.
- The interdependencies between the constructs of self-esteem, subjective well-being, and flourishing, as well as the significant positive correlations between their components, have been empirically demonstrated.
- Subsequent research on socio-demographic factors may complement and enrich the data on the constructs under study.
- The component-wise analysis of the three constructs under study presents a differentiated picture of the specificity of the interrelationships among them. They correlated with each other to varying degrees in the control and experimental groups, and the correlations were very strong.
- The results of this empirical study enrich the available research on the constructs analyzed in adolescence by presenting and exploring new relationships with the type of educational system based on the presence or absence of digital innovations.

Scientific novelty, limitations and applicability of the study

The scientific novelty in solving the research problem consists in conducting an original for the Bulgarian socio-cultural and educational context study of the interrelationships between basic constructs of mental health in adolescents. In an empirical way, it was shown that the innovative training in GoogleWorks on the "One Student - One Device" model does influence the values of flourishing. Differences in self-esteem and subjective well-being parameters for the two groups studied were insignificant. In practical terms, the results can be used in the planning of the educational process, to improve the mental health of students who are taught in the innovative classes, and to create appropriate materials for positive training for adolescents. The results can be useful for educational counselors and school psychologists, school administrators, teacher psychologists, pediatricians and others.

The levels of novelty in this dissertation are: the exploration of a currently little explored area, innovation in education, and the combination of three psychological constructs.

Study limitations and future directions

Some limitations should be kept in mind when interpreting the results and drawing conclusions from this study. The findings cannot be generalized to the entire population, therefore future research with a larger and more diverse sample could enrich them and help to build a more comprehensive and correct picture regarding the constructs under study and their relationship with the type of educational system.

CONCLUSION

The implementation of innovative technologies and applications in Bulgarian education continues to gain wide scale, meeting the support of the Ministry of Education and the municipalities. The biggest application is the Google Workspace cloud platform. However, it is important to consider its impact on the well-being of the students using it.

In conclusion, it can be affirmed that there is a growing need to advance empirical research in the areas of education and technology in education, and student mental health and well-being in order to improve quality of life and in the best interest of children. There is a need to build an education integrated into a meaningful framework that could address the pragmatic issues related to children's mental health.

CONTRIBUTIONS

- 1) An original empirical study has been conducted in the scientific field of the investigated issue in Bulgaria on the interrelations between mental health constructs and the type of educational system. The obtained results initiate empirical searches for the relationship between technological solutions in education and adolescent mental health.
- 2) A thorough, rigorous, and focused theoretical review of theories of self-esteem, subjective well-being, and flourishing is developed. Major classical and contemporary models and approaches related to innovative learning systems are conceptualized and scientifically coherently interpreted.
- 3) At the empirical level, specific features in the development of the studied constructs in adolescents depending on the type of the educational system - general and innovative - are studied and established.
- 4) The results can be useful for psychologists, pediatricians, educators, social workers and administrators working in the field of education, psychology and child and adolescent development.