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Scoping Review of Positive Mental Health Research for Students in Vocational Education and Training

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Abstract

Context: In this scoping review, we examine the knowledge base concerning positive mental health studies for students in vocational education and training (VET). The VET student population embraces approximately 30-52% of secondary school students in the Nordic countries, and 40% of the global student population. The risk of early school leaving (ESL) is substantially higher in VET than in general education and mental health may be a relevant factor in this matter. Yet, an overview of mental health studies in VET is lacking and therefore, this article aims to map empirical research studies that have explored positive mental health in VET students. The positive mental health framework, with its origin in Antonovsky's (2002) salutogenesis and positive psychology, focuses on factors that promote mental health and wellbeing rather than taking on a pathological perspective.

Methods: For our scoping review, we searched four databases, and 19 articles were found eligible for inclusion. These articles were systematically screened by means of a coding scheme to identify the following information: Country of origin of the study, its aim, research design, measures, conceptualization of mental health, and main findings.

Results: The evidence suggests that positive mental health is understood as a multifaceted concept, and wellbeing is the dimension that is explored most often, followed by resilience and quality of life. The majority of the included studies used a validated questionnaire to

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assess various aspects of positive mental health, and most of them sought to explore correlations between different dimensions of positive mental health. Main findings of the studies suggest that a supportive school environment, physical activity, and a strong vocational identity may contribute to positive mental health for students in VET. Furthermore, correlations have also been identified between environmental factors and positive mental health. Finally, findings from the review illustrate how even small-scale interventions may have far-reaching effects, due to the interrelatedness of the different dimensions within the positive mental health construct.

Conclusion: Findings from this review illustrate that numerous factors may affect the well-being of students in VET. In particular, a strong vocational identity, a supportive school environment, and physical activity may contribute to positive mental health. These findings suggest that VET teachers may promote the wellbeing of their students by providing a supportive psychosocial learning environment at school.

Keywords: VET in Schools, VET, Vocational Education and Training, Wellbeing, School Leavers, Positive Mental Health

1 Introduction

Positive mental health in adolescence is a foundation for learning and development, and for coping with life stressors. Adolescent mental and subjective health has become a public health concern worldwide, as it affects both the individual and the productivity of students and the workforce (Allison et al., 2019). Mental health challenges are also associated with early school leaving (ESL) (Esch et al., 2014; Gubbels et al., 2019). Though there exists research on mental health as a factor associated with ESL in secondary school in general, less is known about mental health amongst youth in VET specifically. Approximately 40% of students in upper secondary school are enrolled in a VET program across the Organisation for Economic Co-operation and Development (OECD) countries (OECD, 2023). Considering that ESL is greater in VET than in general studies programs (Statistics Norway, 2022), it may be particularly useful to consider the research on mental health in VET.

Mental health is a multidimensional construct, and this review has examined mental health from a salutogenetic perspective, i.e., a perspective that focuses on factors that promote wellbeing rather than taking a pathological perspective. One important reason for taking this stance is the preventive focus that lies inherently in the positive mental health tradition, which focuses explicitly on salutary factors (Antonovsky, 2002). Additionally, salutary factors seem generally less addressed in research compared to risk factors, and this indicates the need for researchers to address these factors to a greater extent.

An overview of the existing knowledge base may inform schools and support systems about the potential for prevention and intervention work within the context of VET. This argument is also substantiated by the paucity of support to teachers who encounter students that deal with mental health challenges. For example, a Norwegian small-scale study indicated a lack of systemic support for teachers who work with students with mental health issues (Refsnes & Danielsen, 2018).

In this scoping review, we therefore investigate the research conducted on positive mental health for students in VET. We explore the characteristics of research that has been conducted on positive mental health for students in VET, and we highlight potential implications for further research and practice.

2 Theoretical Background: Conceptualizing Positive Mental Health

Mental health is a complex, multidimensional construct. Cambridge Dictionary (n.d., para. 1) defines mental health as "the condition of someone's mind and whether or not they are suffering from any mental illness". Yet, the absence of mental illness does not automatically result in positive mental health, and there is accumulating evidence for a dual-factor model of mental health, which implies that mental illness and positive mental health function along two different continua that are only moderately interrelated (Trompetter et al., 2017). On the one hand, there is the continuum of positive mental health, which refers to the presence of optimal wellbeing, i.e., feeling well and functioning well. On the other hand, there is the continuum of psychopathology and mental ill-health. For instance, an adolescent may not meet the diagnostic criteria for depression (i.e., a low score on the psychopathological continuum), but she may nonetheless lack positive feelings of joy, happiness and a sense of resilience (i.e., a low score on the continuum of positive mental health). Despite the absence of mental illness, the adolescent's mental health could be described as poor. Hence, positive mental health is not merely the absence of disease or infirmity, but instead, it requires a surplus of positive feelings. The salutogenic approach to health, which aims to explain why people remain healthy rather than develop health problems (Antonovsky, 2002), is relevant in this regard. The salutogenic model was developed by Antonovsky in the 1970s, with an aim to focus on the origins of health, as opposed to the origins of disease (Mittelmark & Bauer, 2022). According to Antonovsky's (2002) theory of salutogenesis, improved health can be obtained by enhancing salutory factors (resources) rather than by decreasing risk factors (stressors), thereby challenging the dominant pathogenic paradigm. Antonovsky (2002) believed that stressors are always present in the human environment, whether microbiological, social, personal, or other, and he preoccupied himself with the question of how individuals cope with these stressors and how they use available resources to successfully balance the impact of stressors. Thus, salutogenesis is a stress and coping model, which focuses on processes that engage

available resources within the individual and the community in order to promote individual and collective health. Despite its potential to enhance human functioning, the salutogenic model has not yet been thoroughly embedded in the social sciences.

While Antonovsky developed his concept of salutogenesis primarily as a reaction to the pathogenic dominance within the field of medicine, a similar movement developed some decennia later within the field of psychology, with psychologists Martin Seligman, Christopher Peterson, and Mihaly Csikszentmihalyi in the forefront. Within the positive psychology movement, psychology's sole focus on pathogenic functioning was challenged, and character strengths, talents, abilities and what makes for a happy and healthy life became the center of attention. This does not imply a disregard for the facts of mental ill-health, but instead, positive psychology aims to identify and promote what works well, so as to enhance quality of life and joy (Seligman & Csikszentmihalyi, 2000). Positive psychology suggests that a one-sided focus on solving mental health challenges is insufficient to result in positive mental health (Peterson, 2009). Instead, this discipline encourages us to seek out and identify the positive sides of human experience and strengthen what gives joy in life. Thus, a focus on positive mental health may provide more information about the way in which people's lives may be improved, than a pathological approach that focuses on mental ill-health alone.

Considering our emphasis on positive mental health and salutogenic factors, we find the following definition of mental health provided by the World Health Organization (WHO, 2022, para. 5) useful: "A state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community". This definition describes mental health as a state, suggesting that it is a temporary condition that is context-dependent, rather than a dispositional trait or personal characteristic. Hence, WHO's (2022) definition emphasizes the relational aspect of positive mental health; it is not something that exists independently in a vacuum, but instead, it is the result of a successful interaction between the individual and its environment. Furthermore, this definition highlights the importance of self-realization for positive mental health, and this is again seen in relation to the opportunities that are available in society.

Mental health is an evolving concept and positive mental health may be understood in various ways (see e.g., Fusar-Poli et al., 2020; Peterson & Seligman, 2004; Vaillant, 2012). The understanding of positive mental health as more than the absence of mental disorder is anchored in the hedonic and eudemonic dimensions of the concept, where the hedonic dimension refers to feeling good, i.e., experiencing positive emotions and life satisfaction, and the eudemonic dimension refers to functioning well, i.e., managing everyday challenges, sensing meaning in life, and having close personal relationships (Stewart-Brown, 2013). Within positive psychology, various related concepts are used when discussing positive mental health, such as well-being, resilience, self-esteem, and quality of life (Peterson & Seligman, 2004). In

research studies, the term well-being is often used synonymously or interchangeably when describing positive mental health. Subjective well-being (SWB) reflects an overall evaluation of the quality of a person's life from the person's own perspective (Diener et al., 2018). There is no gold standard to assess subjective well-being, but several researchers measure well-being simply as overall life-satisfaction (Vaillant, 2012).

Another way of understanding positive mental health is resilience or the presence of various coping mechanisms to deal with adversity and the challenges of everyday life. Mature coping mechanisms such as altruism and humor are important for positive mental health (Vaillant, 2012). Thus, positive mental health encompasses a person's resilience to handle the stresses of everyday life and to experience positive emotions while doing so. Mental health is also closely associated with quality of life, which is both a means to an end and a product of mental health in general. Quality of life usually refers to a person's experience of overall life circumstances, including environmental, social, societal, and material aspects of life that affect how desirable and positive the person's life is (Diener et al., 2018).

Self-esteem is another aspect that is frequently highlighted within research on positive mental health (see e.g., Mruk, 2008). The term self-esteem refers to people's overall feelings of acceptance and respect, and it includes the dimensions of self-worth, self-efficacy, and authenticity (Stets & Burke, 2014). High self-esteem makes people feel worthwhile and accepted, and it creates a sense of meaning and coherence in one's life. People who experience self-esteem and self-worth feel good about themselves; they experience a positive self-view and show self-respect (Stets & Burke, 2014).

Considering positive mental health within a school context, Exner-Cortens et al. (2022, p. 3) offer a more practical understanding of mental health, as they define school mental health as "the comprehensive continuum of mental health promotion and intervention programs, policies, and services offered in school settings that are designed to promote emotional, social, and/or behavioral well-being". Hence, mental health is here linked explicitly to an environmental aspect, namely the school's attention to students' well-being and school's efforts to promote mental health. As such, this definition is in line with the relational understanding of positive mental health as suggested by WHO (2022), as it defines students' mental health not merely as an individual matter, but as deeply rooted in and dependent on contextual factors. Within such a contextual or relational understanding, what happens in school may play a pivotal role for students' wellbeing, opening for the implementation of interventions in this area.

2.1 Mental Health and Vocational Education and Training

It has been argued that achieving above average mental or physical health is not the province of medicine, but of education (Vaillant, 2012). This is especially valid, given that health and resilience develop in a manner closely linked to the social context such as family, peers, and school (Wiklund et al., 2012). Positive psychologists have tried to apply their way of thinking about mental health to the field of education, and Seligman and Csikszentmihalyi (2000) identified schools as institutions that may enable positive experiences and support positive characteristics. However, Hart and Sasso (2011) suggest in their literature review that the research interest in schools as positive institutions has been sparse. Mental health programs and interventions in a school context are often associated with measures to prevent mental health problems and to identify students at risk, rather than with targeting positive mental health, strengthening students' quality of life or enhancing students' experience of mastery.

As previously argued, mental health may be associated with ESL. Though there are many explanations as to why ESL occurs, such as a lack of basic skills in subjects, gradual lack of school engagement, socio-economic factors, as well as the social and pedagogical environment within school (Frostad & Mjaavatn, 2018; Gubbels et al., 2019; Haugan et al., 2019; Magen-Nagar & Shachar, 2017; von Simson et al., 2022), the decision to leave school or education early may also be associated with mental health related factors (Brekke, 2015; Hjorth et al., 2016). For example, Esch et al. (2014) found that mood and anxiety disorders, substance use, and disruptive behavior disorders are associated with ESL, particularly when these disorders originate early in life, substantiating the preventive focus of the present paper. With a dearth of research studies that explore positive mental health and schools as positive institutions, the need for further investigation of what is known about positive mental health for VET students emerges.

In sum, this brief overview of the literature substantiates the need for a review of the research on mental health in VET, particularly from a positive mental health perspective.

3 Aim of the Study

Our scoping review was guided by an overarching aim to systematically map positive mental health research related to students in VET. The following research questions guided our review:

1. How is positive mental health conceptualized in the studies?
2. How is positive mental health assessed in the studies?
3. What is the aim of the included studies?
4. What are the main findings of the studies?

4 Method

This study uses a scoping review to describe the knowledge base on positive mental health for students in VET. Scoping reviews form an ideal tool to explore the coverage of a given research topic, and they provide a clear overview of the size and scope of studies that have been conducted in the field (Gessler & Siemer, 2020; Tricco et al., 2016). Scoping reviews are generally broader in scope than systematic reviews (Munn et al., 2018), as reflected in our relatively generic research questions. Especially in emerging research areas, scoping reviews are useful to map existing evidence and to identify new research questions for further study. Moreover, a scoping review may also be used to clarify key concepts in the research literature (Munn et al., 2018). In order to secure a transparent research process, we used the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) Checklist (Tricco et al., 2018). See appendix 1 for the complete checklist.

4.1 Search Strategy

For our search of the existing knowledge base, we consulted the following four databases that are known for making available multidisciplinary research studies: ERIC, PsycInfo, Web of Science, and PubMed. The search was conducted in September 2022, and we narrowed our search to articles that were published during the past ten years, i.e., from 2013 to 2022. Table 1 lists the search terms that we used in our search of titles and abstracts. Table 2 provides an example of the full electronic search strategy in PsycInfo. The search terms were determined based on the overarching aim of this review, as well as by consulting research literature on the conceptualization of positive mental health.

Table 1: Search Terms

Setting terms	Age-related terms	Topic terms
Vocational education	Student*	Mental health
Vocational training	Pupil*	Quality of life
Vocational school	Learner*	Self-esteem or self-concept
	Apprentice	or self-worth
	Adolescen*	Resilience
	Youth	Wellbeing or well-being
	Teen*	Coping
	Young adult*	

Table 2: Search String From PsychInfo

Search string 1	Vocational education OR vocational training OR vocational school
Search string 2	Student* OR pupil* OR learner* OR adolescen* OR youth* OR teen* OR young adult*
Search string 3	Mental health OR quality of life OR self-esteem OR self-concept OR self-worth OR resilience OR well-being OR wellbeing OR well being OR coping
Search string 4	1 AND 2 AND 3

This search produced a total of 516 articles, which were then transported to Endnote X9, in order to remove duplicates. This left us with a total of 479 articles (see figure 1), which were then exported to Rayyan QCRI, a free software application for literature reviews (Ouzzani et al., 2016), for further screening. The title and abstract of each of the articles were screened by two authors, based on the following inclusion criteria:

- Research article published in English in peer-reviewed journals;
- Study includes adolescents aged 16-21 in upper secondary VET;
- Focus on one or more aspects of positive mental health;
- Empirical research design.

Exclusion criteria were the following:

- Policy articles, conceptual articles, validation studies, reviews, brief reports;
- Focus on mental ill-health;
- Higher vocational education (i.e., post-secondary education);
- Student age group < 16 years old or > 21 years old;
- Data on VET students cannot be retrieved from a larger sample;
- Articles directly related to Covid-19;
- Articles written in other languages than English.

Inter-rater reliability for inclusion/exclusion was calculated to be 92.5%. All three authors discussed the articles that presented a conflict, until 100% agreement was reached. After the initial title and abstract screening, a total of 35 articles was deemed relevant for further investigation. After this initial study selection process, the articles' full texts were screened, and 16 were removed because they either did not meet the inclusion criteria for the scoping review (N = 13), or because the same study was represented in more than one article (N = 3). Multiple reports from the same study may introduce bias in review studies due to double reporting (Higgins et al., 2020), and we therefore retained only the original article from those studies and excluded later publications. This left us with 19 articles that were found eligible for inclusion in our scoping review. These articles are marked with asterisk in the reference list.

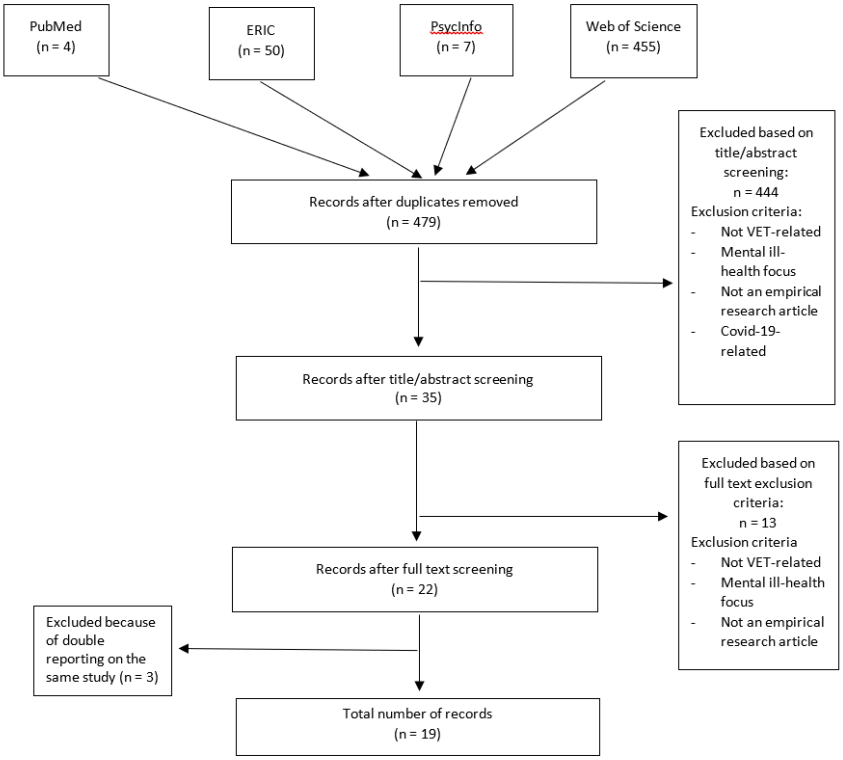

Figure 1: Flow Chart

4.2 Coding Procedure

The 19 articles that met the inclusion criteria for our scoping review were systematically analyzed, based on a coding scheme developed especially for this study (see table 3). The coding scheme mapped country of origin of the included studies, their aims, sample, research design and measures used to assess mental health, conceptualization of mental health, and main findings. First, all three authors coded the first five articles independently, and then we compared our analyses in order to check for reliability and to calibrate our coding. Next, each of the remaining articles was coded by two authors.

Table 3: Coding Scheme

Author + country	*Purpose of the study*	*Participants*	*Research design and mental health measures*	*Conceptualization of mental health*	*Main findings*
Andersen et al., 2016 Denmark	To assess the effectiveness of an intervention ("Shaping the Social") that targets the socio-environmental setting at vocational schools on student wellbeing and smoking.	5794 students in VET (mean age 21; 81% male).	Non-randomized controlled trial. *Measures*: - 0 – 10 Cantril Ladder Scale for life satisfaction. - A 13-item questionnaire for student wellbeing, based on the Health Behavior in School-Aged Children (HBSC) survey.	*Wellbeing*: Not specifically defined, but related to positive student-to-student and student-to-teacher relationships, the development of a professional identity, and structure in school life.	There were no statistically significant differences between the intervention and control groups on student support, teacher relatedness and valuing the profession. Students in the intervention group showed increased school connectedness compared to the control group.
Ataei & Chorami, 2021 Iran	To predict academic emotions based on spiritual well-being and life satisfaction in students of a technical and vocational school.	210 students.	Cross-sectional study with quantitative survey. *Measures*: - Pakran Academic Emotions Questionnaire. - Spiritual well-being questionnaire. - Satisfaction With Life Scale.	*Positive academic emotions* such as enjoyment, hope, pride. *Spiritual well-being*: "A state of health reflecting the positive feelings, behaviors, and cognitions of relationships with oneself, others, the transcendent and nature, which in turn provide a person with a sense of identity,	Spiritual well-being could predict academic emotions (pride). Life satisfaction could predict feelings of enjoyment but not pride.

				wholeness, satisfaction, enjoyment, contentment, beauty, love, respect, positive attitudes, inner peace, harmony, purpose and direction of life". *Life satisfaction*: "A person's feeling about performance and living conditions. It is a cognitive process of judgment based on a comparison of one's perceived life circumstance with a self-imposed standard or set of standards. Life satisfaction involves the positive attitude toward one's life and is in fact the feeling of happiness."	
Chen et al., 2021 China	To assess the association between disadvantaged characteristics and resilience and the role of mindfulness among Chinese vocational school students.	875 senior students from a vocational school.	Cross-sectional study with quantitative survey *Measures*: - 14–item Resilience Scale instrument (RS-14). - 14-item Mindful Attention Awareness Scale for Adolescents.	*Resilience*: "The ability to successfully adapt to internal and external stress". *Mindfulness*: "A state of consciousness that incorporates purposeful awareness and attention and non-judgmental reaction to the present moment."	Disadvantaged characteristics were negatively associated with mindfulness, and the lowered mindfulness was related to low resilience.

Gashi & Mojsoska-Blazevski, 2016 Kosovo and Macedonia	To investigate factors that affect the well-being of pupils in secondary vocational schools in Kosovo and Macedonia.	608 students in VET (mean age 16.3; 50% females).	Comparative cross-sectional study with quantitative survey. *Measure*: - Researcher-designed questionnaire.	*Well-being* as an outcome of quality of life; well-being in school as related to the quality of the school and experience in the school; "happiness at school" was used as the dependent variable and as a proxy for the underlying variable "well-being".	Findings suggest that the well-being of students is influenced more by environmental and socialization factors and variables measuring the satisfaction of students in school than by socio-demographic factors. Students' age has a statistically significant influence on happiness at school, with older students being less happy than younger students. The school environment and quality of learning were key factors that impacted students' well-being. Welcoming teachers, friendly peers and learning that improves future job opportunities all support students' well-being.
Gavala-Gonzalez et al., 2022 Spain	To examine the relationship between physical activity levels and perceived quality of life.	86 students in VET (mean age = 18.5).	Cross-sectional study with quantitative survey. *Measures*: - International Physical Activity Questionnaire – short version (IPAQ-SF). - The SF-36 questionnaire on perceived health status.	Self-perceived *quality of life* (not further specified).	A direct relationship was shown between participation in physical activity and perceived health. Students who are more physically active experience fewer emotional problems in daily activities.

Gerber et al., 2013 Switzerland	To examine whether mental toughness operates as a resilience resource using general perceived stress as an indicator of risk, and depressive symptoms and life satisfaction as indicators of adaptation.	865 students from two VET schools (369 females, 496 males).	Longitudinal study with two waves with quantitative surveys. *Measures*: - 18-item short form of the MTQ48 (a measurement of total mental toughness). - Satisfaction with Life Scale (SWLS).	*Mental toughness* as associated with stress resilience in young populations; the ability to cope successfully with the pressures and demands of life. Four dimensions of mental toughness: Control; feeling influential in daily life experiences. Commitment; involving oneself rather than experiencing alienation from daily encounters. Challenge; believing that change is normal and that coping with change offers opportunities for individual growth. Confidence; feeling competent in overcoming general and interpersonal problems.	Mental toughness operates as a stress resilience resource. Four clusters emerged characterizing students with well-adjusted, maladjusted, deteriorated, and resilient profiles. The latter two clusters reported similar levels of mental toughness at baseline, but resilient adolescents scored significantly higher on mental toughness at follow-up.
Güngör & Perdu, 2017 Belgium	To test the hypothesis that communal (e.g., school) and individual resources (e.g., autonomy) that highlight mainstream culture and values of independence are also conducive to the well-being of immigrant youth, especially when these youths are high on mainstream culture adoption.	296 students in upper-secondary vocational schools (64% male; 166 native Belgians, 130 of non-Western origin; mean age 19.7).	Cross-sectional study with quantitative survey *Measures*: - Positive emotions measure (1-item 5-point frequency measure). - Adapted version of The Child and Youth Resilience Measure (CYRM).	*Resilience*: "Positive adaptation in the context of significant risk or adversity"; "the ability to 'bounce back' from stressful experiences quickly by using positive emotions, such as optimism and gratefulness, and finding positive meaning in these experiences". *Well-being*: Low levels of stress and high levels of positive emotions are considered as proxies of well-being.	Resilience resources that are beneficial for monocultural youths seem to work for immigrant youths who have acculturated to the mainstream culture.

Jensen et al., 2022 Denmark	To examine the association between mental health and physical activity among Danish students in VET.	5277 VET students (mean age 24.3).	Cross-sectional study with an electronic quantitative survey. *Measures*: - A 1-item 5-point self-esteem measure. - A simplified version of the 0 – 10 Cantril Ladder for life satisfaction. - A 1-item 5-point self-efficacy measure. - A short version of the Warwick-Edinburgh mental well-being scale.	*Mental health* as a multidimensional construct as defined by WHO: "A state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community". Mental health is more than the absence of mental disorders, and it consists of both hedonic and eudaimonic dimensions.	Higher levels of positive mental health were associated with better odds of achieving WHO physical activity guidelines.
Keijzer et al., 2021 The Netherlands	To explore whether differences in at-risk students' individual characteristics moderate the relationship between their resilience and vocational identity.	996 students in senior secondary vocational education (mean age 21.7; 44% female).	Cross-sectional study with quantitative survey *Measure*: - A paper-and-pencil questionnaire for personal and social resilience. This measure was developed especially for the study in collaboration with practitioners and based on validated questionnaires.	*Resilience*: "The dynamic process of positive adaptation, despite experiencing adversity"; being able to function in adversity. *Personal resilience* includes internal qualities and refers to independence and self-sufficient decision-making in main domains of life, such as education, friends, and work, presuming a sense of self-efficacy, perceived control, and the capacity to regulate one's own life. *Social resilience* is externally oriented and refers to having supportive social networks, and the ability and willingness to utilize them.	Resilient students often have strong vocational identities compared to less resilient students. Yet, the strength of the relationships varied depending on individual characteristics., such as gender, age and motivation.

Kirschner et al., 2021 The Netherlands	To explore the association between physical activity and student mental wellbeing in VET.	85 VET students (mean age 18.8; 70.6% female).	Cross-sectional observational study with quantitative questionnaire *Measures*: Rosenberg self-esteem scale (RSE).	*Student mental wellbeing* (SMW): The absence of depressive symptoms and the presence of self-esteem.	Data analysis shows a significant positive association between physical activity and self-esteem. High levels of sedentary behavior were significantly associated with low self-esteem. Increasing light physical behavior could contribute to improve student mental wellbeing.
Krawczynska & Zawierucha, 2018 Poland	To assess health-related quality of life in adolescents to determine the existence of relationships between subjective assessments of health and selected environmental factors, such as place of residence and type of school.	155 students in basic trade schools (offering the following courses: automotive technician, iron-worker/ locksmith, waiter, and barber/ hairdresser) (age range 16.6 – 18) (part of a larger sample).	Cross-sectional study with quantitative survey. *Measure:* - Polish version of the KIDSCREEN 52, HR-QOL Screening Instrument.	*Quality of life*: The objective assessment of functional performance and a subjective sense of well-being in correlation with physical and psychological health. A holistic view of health that requires a three-dimensional perspective, from biological, psychological, and social standpoints.	Students who attended a basic trade school reported significantly better mental well-being compared to general-education students.
Lang et al., 2016 Switzerland	To develop, implement and evaluate a physical education based coping training (EPHECT) for VET students.	131 VET students (mean age =16.22, 35% females).	Cluster randomized controlled trial. *Measure*: - Coping Questionnaire for Children and Adolescents (SVF. KJ).	*Mental health*: No clear definition provided, but the authors mention resilience, coping, and "the ability to calmly process a situation or maintain a positive outlook".	A complete and accurate implementation of a PE-based coping training can make a positive contribution to the development of adaptive coping skills among adolescents attending vocational schools.

Ouyang et al., 2021 China	To examine the mediating role of depression and the moderating role of perceived social support in the association between female adolescents' stressful life events and subjective well-being.	1,096 female VET students (mean age = 15.5).	Cross-sectional study with quantitative survey. *Measures*: - General Well-Being Schedule (GWB). - Multidimensional Scale of Perceived Social Support.	*Subjective well-being* (SWB) is defined as individuals' cognitive and affective evaluations of their life.	Female adolescents high in perceived social support displayed higher levels of subjective well-being and lower levels of depression when facing stressful life events than those low in perceived social support.
Sakiz & Aftab, 2019 Turkey	To investigate the relationships among achievement, psychological resilience, and sociodemographic factors.	341 students in VET (part of a larger sample).	Cross-sectional study with quantitative survey and collection of school records. *Measures*: - Child and Youth Resilience Measure (CYRM)-12.	*Psychological resilience*: The capacity to recover from or adapt to difficult and challenging life circumstances; the ability to succeed despite multiple risk factors.	The psychological resilience levels of students going to vocational schools and those with low income levels was lower than those going to nonvocational schools and those with higher income levels.
Siembab & Stawarz, 2019 Germany	To analyze how life satisfaction changes when adolescents enter the German vocational and educational training (VET) system (i.e., enter an apprenticeship or a vocational preparation).	13.717 VET students.	Longitudinal study with six waves. *Measures*: - A single-item 11-point scale for general life satisfaction; - A ten-item 5-point scale for self-esteem.	*Life satisfaction*: The cognitive-evaluative component of subjective well-being. *Self-esteem*: A positive or negative attitude towards oneself; self-esteem is considered as one of the strongest predictors of life satisfaction.	Leaving school and entering the VET system is associated with increased life satisfaction for the vast majority of adolescents.
Stheneur et al., 2019 France	To assess the association between sleep duration, quality of life and depression in adolescents.	167 VET students (14-19 years); part of a larger sample.	Cross-sectional study with quantitative survey. *Measures*: - A 32-item self-questionnaire (OK-ados) for quality of life, assessing four areas (recreation and relationships with others; school; family and adult life; and esteem and self-image).	*Quality of life*: No definition provided.	Students studying vocational subjects reported significantly more sleep than students studying technological subjects. QoL did not appear to be affected by sleep duration, but adolescent sleep duration is on average lower than recommended.

van den Bogerd et al., 2020 The Netherlands	To examine whether indoor nature (e.g., potted plants, green walls) has beneficial effects on attention, health, and well-being, when students attend a single lecture in a classroom with indoor nature.	161 VET students (part of a larger sample).	Experimental design study. *Measures*: - Assessment of four emotions (joy, happiness, fatigue, relaxed) on a 5-point Likert scale.	*Well-being*: No definition provided.	Attending only one lecture in a classroom with indoor nature does not seem to provide immediate effects on health and well-being. There were no straightforward intervention effects on well-being and health complaints.
van den Toren et al., 2019 The Netherlands	To examine the association between school absenteeism, health-related quality of life (HRQOL) and happiness among young adults attending vocational education.	676 VET students (age range 16–26; mean age 18.5; 26.1% males).	Cross-sectional study with quantitative survey. *Measures*: - General happiness assessed on a 1-item 11-point scale. - 12-item Short Form Health Survey.	*Health-related quality of life* is a subjective and multidimensional measure of physical functioning and well-being related to health, incorporating satisfaction with physical, social and occupational functioning, as well as vitality and psychological state of mind. Happiness is conceptualized as both pleasure and satisfaction and the avoidance of suffering, as well as having purpose in life.	Young adults with ≥ 5 sick days or ≥ 6 days of truancy reported lower mental HRQOL. No associations were observed between school absence and happiness.
Warne et al., 2013 Sweden	To explore factors that promote health and learning from the perspective of vocational and low-achieving high school students in Sweden.	23 VET students (age range 16 - 20).	Qualitative study with interviews and photovoice.	*Well-being* (not further defined). Antonovsky's theory of *salutogenesis*: Movement on the continuum toward total health can be influenced by enhancing salutary factors rather than by decreasing risk factors.	Students identified factors that promoted their own sense of health and well-being: i) Longing to be seen by teachers; ii) longing for support; and iii) longing for recuperation. They wanted to be treated fairly and with positive expectations, and they needed more social, environmental, and educational support.

4.3 Description of the Included Articles

The articles in this scoping review represent research from the following 13 countries: The Netherlands (4 studies), Switzerland (2), Denmark (2), China (2), Iran (1), Kosovo and Macedonia (1), Spain (1), Belgium (1), Poland (1), Turkey (1), Germany (1), France (1), and Sweden (1). Thirteen of the articles were published between 2018 and 2022, and six articles were published between 2013 and 2017. Eighteen studies used a quantitative method, and one study used a qualitative method. None of the studies used a mixed method design. Thirteen studies used a cross-sectional survey design, two studies used a longitudinal survey design, three studies used an experimental design, and one study used qualitative interviews and photovoice.

5 Results

In the following, we present the results according to the research questions; 1) How is mental health conceptualized in the studies? 2) How is mental health assessed in the studies? 3) What is the aim of the included studies? and 4) What are the main findings of the studies?

5.1 RQ 1) How is Positive Mental Health Conceptualized in the Studies?

The multifaceted nature of positive mental health was clearly visible in the articles that were included in this scoping review. Five articles combined several aspects of positive mental health in their studies (e.g., Ataei & Chorami [2021] explored positive academic emotions, spiritual well-being, and life satisfaction), and 14 articles investigated one dimension only. Wellbeing (including student, mental, spiritual, and subjective wellbeing) was the dimension that was explored most often (eight articles), followed by resilience (five articles), quality of life (four articles), and life satisfaction (two articles). Other dimensions that were explored in some of the studies included mindfulness, mental toughness, and happiness.

Most articles (13) provided a definition of the dimension of positive mental health that they investigated. One of these articles referred to the World Health Organization's holistic definitions of health and quality of life, while most studies gave definitions that could be traced back to positive psychology i.e., they conceptualized mental health as the presence of multiple strengths, such as having positive emotions and attitudes, and experiencing positive feelings such as satisfaction, enjoyment, wholeness, contentment, and happiness. In six of the articles, the researchers did not provide a specific definition of the dimensions that they explored. Figure 2 illustrates the different dimensions of positive mental health that were present in the included studies.

Figure 2: Dimensions of Positive Mental Health Included in the Studies

5.2 RQ 2) How is Positive Mental Health Assessed in the Studies?

Across the quantitative studies in our scoping review, 27 different questionnaires were used to assess various aspects of positive mental health. Fifteen of the included studies used validated questionnaires, such as the Child and Youth Resilience Measure (CYRM)-12 (Güngör & Perdu, 2017; Sakiz & Aftab, 2019), the Mindful Attention Awareness Scale (Chen et al., 2021), or the Cantril Ladder for general life satisfaction (Andersen et al., 2016; Jensen et al., 2022). Several studies also used single-item measures with Likert scales to assess positive emotions, self-esteem, and general life satisfaction. Three studies (Gashi & Mojsoska-Blazevski, 2016; Keijzer et al., 2021; van den Bogerd et al., 2020) used researcher-designed questionnaires to assess emotions (joy, happiness, fatigue, relaxed), social resilience, and well-being. An overview of the different measures that were used in each of the studies can be found in Table 3.

5.3 RQ 3) What is the Aim of the Studies?

Fifteen of the included studies aimed to explore correlations between different dimensions of positive mental health, or between dimensions of positive mental health and other factors in students' lives. Four of these studies explored the relationship between aspects of positive mental health and sociodemographic variables (Chen et al., 2021; Gashi & Mojsoska-Blazevski,

2016; Güngör & Perdu, 2017; Sakiz & Aftab, 2019). Three of the studies investigated the relationship between aspects of positive mental health and school environment (Gashi & Mojsoska-Blazevski, 2016; Krawczynska & Zawierucha, 2018; Warne et al., 2013). Three studies explored the relationship between aspects of positive mental health and physical activity (Gavala-Gonzalez et al., 2022; Jensen et al., 2022; Kirschner et al., 2021). One study explored the relationship between quality of life and sleep duration (Stheneur et al., 2019).

The three experimental studies aimed to assess the effect of the use of indoor nature on students' wellbeing (van den Bogerd et al., 2020), the effect of a physical education-based coping training on students' resilience (Lang et al., 2016), and the effect of a social intervention on students' wellbeing (Andersen et al., 2016). The qualitative study in this scoping review aimed to explore school-related factors that promote students' well-being (Warne et al., 2013). More detailed descriptions of the aims of the studies can be found in Table 3.

5.4 RQ 4) What are the Main Findings of the Studies?

The main findings of the studies included in this scoping review may be categorized into four themes: i) Vocational identity tends to correlate positively with different domains of positive mental health; ii) Positive correlations exist between different dimensions of positive mental health; iii) Physical activity is associated with positive mental health; and iv) A supportive school environment may predict student wellbeing.

5.4.1 Vocational Identity Tends to Correlate Positively With Different Domains of Positive Health

Four of the studies in this scoping review investigated the correlation between positive mental health and vocational identity or attending a vocational school. Three of these studies found a positive association between having a strong vocational identity or attending a vocational school and positive mental health (Keijzer et al., 2021; Krawczynskav & Zawierucha, 2018; Siembab & Stawarz, 2019). Positive mental health in these studies was conceptualized as resilience, "better mental health", and life satisfaction. One study (Sakiz & Aftab, 2019) found that students in vocational schools reported lower psychological resilience than students in nonvocational schools.

5.4.2 Positive Correlations Exist Between Different Dimensions of Positive Mental Health

Three of the included studies explored associations between several domains of positive mental health in VET students. Ataei and Chorami (2021) found that life satisfaction could

predict feelings of enjoyment, and that spiritual wellbeing could predict positive academic emotions. Findings from the study by Chen et al. (2021) suggest a positive correlation between students' mindfulness and their resilience. Furthermore, Gerber et al. (2013) found that mental toughness operates as a stress resilience resource.

5.4.3 Physical Activity is Positively Associated With Positive Mental Health

Four studies looked into the relationship between physical activity and positive mental health in VET students. Kirschner et al. (2021) found a significant positive association between physical activity and self-esteem. Similarly, the study by Gavala-Gonzalez et al. (2022) suggests an inverse relationship between participation in physical activity and emotional problems. Jensen et al. (2022) also highlighted the positive relationship between positive mental health and the likelihood of meeting the recommended standard for physical activity. In their intervention study, Lang et al. (2016) discovered a positive effect of a physical education training program on students' coping skills.

5.4.4 A Supportive School Environment May Predict Student Wellbeing

Three studies in this scoping review explored the relationship between school environment and student wellbeing. The qualitative study by Warne et al. (2018) illustrates how VET students consider support and acknowledgement from teachers as important factors for their own wellbeing. Ouyang et al. (2021) found that female VET students cope better with adversity when they perceive high levels of social support, and that they report higher subjective wellbeing. Furthermore, findings from Gashi and Mojsoska-Blazevski's (2016) study highlight the importance of a positive school environment, welcoming teachers, and friendly peers for students' wellbeing.

6 Discussion

This overview of the past decade's research on positive mental health amongst young people in VET indicates that a number of factors may affect students' positive mental health. In our scoping review, we found evidence to suggest that a supportive school environment, physical activity, and a strong vocational identity may contribute to positive mental health for students in VET. Moreover, doing well within one domain of positive mental health may lead to more positive outcomes in other domains. A particularly interesting finding is that having a strong vocational identity and attending a vocational school seems to be associated with positive mental health (Keijzer et al., 2021; Krawczynskav & Zawierucha, 2018; Siembab & Stawarz, 2019). Vocational or occupational identity refers to how students define themselves

in a career context (Skorikov & Vondracek, 2012). According to Keijzer et al. (2020) vocational identity consists of three components, namely i) vocational self-image, i.e., self-perceived interests and capabilities, ii) vocational future image, i.e., ambitions for future outcomes, and iii) vocational self-efficacy, i.e., expectations for success in working life. As such, the development of vocational identity may be associated with positive feelings, quality of life, and positive mental health. Due to the nature of the included studies (cross-sectional studies), findings from this scoping review do not allow us to draw inferences about causality or the direction of the correlation between vocational identity and positive mental health. Hence, it is not possible to determine whether having a strong vocational identity, functions as a protective factor for mental health, or whether positive mental health may lead to a stronger vocational identity. Yet, findings from Krawczynskav and Zawierucha (2018) do indicate that VET students have better mental health than those attending general education, and Siembab and Stawarz (2019) suggest that entering VET may lead to increased life satisfaction. Thus, it is plausible to assume that choosing VET may be beneficial to students' positive mental health.

One possible explanation for this correlation between a strong vocational identity and positive mental health is that students who function well mentally, experience a sense of control in their life (cf. Antonovsky, 2002); they act purposefully and believe in themselves and what they can become (Stets & Burke, 2014). Positive mental health also suggests optimism and faith in finding one's way in life, so that a "future self" can be imagined (Uribe et al., 2022). Thus, students who experience positive mental health may more readily picture themselves in a particular job and have a sense of occupational calling and vocational identity. Another explanation for the correlation between positive mental health and a strong vocational identity may be that VET provides students with the prerequisites to do well, possibly more so than general studies programs. VET offers a wide variety of choices in subjects related to a broad range of careers, which may increase the likelihood that the education matches students' interests and talents. Moreover, VET is characterized by creativity, with a focus on practical skills, and this may positively affect student motivation, especially for students who struggle with theoretical learning. Students can also learn while they are at work as an apprentice, which may provide an immediate sense of relevance for future employment (Directorate-General for Employment, Social Affairs and Inclusion, 2018). Hence, VET may be a more effective way of stimulating students' vocational self-efficacy than a general studies program, and this may have a positive impact on their mental health.

Another important finding concerns the identified correlations between environmental factors and positive mental health. Several studies in this scoping review suggest that supportive relationships between teachers and students play a crucial role in the wellbeing of VET students. These findings are not exclusive to students in VET, and research has previously indicated that student perceptions of teacher support and school connectedness are associated

with better emotional health (see e.g., Kidger et al., 2012; Oberle et al., 2018). However, what makes these findings of interest for students in VET, is the fact that VET-teachers report that they often feel uncertain of their role and responsibilities in matters that concern students' mental health (Refsnes & Danielsen, 2018). In the study by Refsnes and Danielsen (2018), VET-teachers express the need for more systematic support and collaboration with mental health institutions within and outside of the school. While such systematic support and collaboration may indeed be necessary for some students, findings from this scoping review indicate that taking preventive action for students' mental health is well within teachers' mandate. Teachers can take specific measures to support students, strengthen their relationships with them, and acknowledge students as individuals. These relatively simple actions may be beneficial to students' mental health and do not require collaboration with mental health institutions. This is in line with findings from a study by Schmid et al. (2021), that highlights the importance of the school's social organization and teachers' active support and positive expectations on students' sense of belonging and thriving at school. Students in VET are at a greater risk of ESL, and this has also been associated with mental health (Brekke, 2015; Esch et al., 2014; Hjorth et al., 2016). Since the decision to leave school early may be related to school environmental factors (Gubbels et al., 2019; Haugan et al., 2019; Magen-Nagar & Shachar, 2017; von Simson et al., 2022), it may be particularly important for VET teachers to focus on school conditions that may affect students' positive mental health and to identify salutogenic factors within the school environment. Thus, a practical implication from this review is the need for VET teacher education to focus more extensively on the importance of the psychosocial learning climate at school, and on VET teachers' role in developing a learning environment that promotes students' mental health through building positive and supportive relationships with them. When VET teachers understand how their everyday actions can contribute to students' positive mental health, this may lead to improved school quality of life, school mental health, and lower dropout rates for students in VET.

Finally, findings from this scoping review illustrate how even small-scale interventions may have far-reaching effects, due to the interrelatedness of the different dimensions within the positive mental health construct (see e.g., Ataei & Chorami, 2021; Chen et al., 2021; Gerber et al., 2013). For educators in school as well as for researchers, implementing interventions to promote positive mental health may seem daunting and overwhelming because of the complex nature of the mental health construct. Yet, several studies in this scoping review illustrate how interventions that limit themselves to a single dimension of positive mental health may positively affect other dimensions, thereby generating positive side effects. Hence, "thinking small" in school interventions may still lead to improvements in students' overall positive mental health, and potentially contribute to reducing ESL rates in VET.

6.1 Implications for Future Research

Based on the findings in this scoping review, some implications for future research are worthwhile discussing. Firstly, this scoping review confirms that positive mental health is understood by researchers as a multifaceted concept that can be assessed in a variety of ways. In order to enhance the quality of future research studies, consensus about a common language and terminology for positive mental health is recommended, as this may allow for an improved common understanding (cf. Mei et al., 2020). Next, previous research has shown that a large number of assessment tools are available to assess positive mental health, and this makes it pivotal for researchers to be cautious about their choice of measure (Parkinson, 2008). Studies in this scoping review have used a diversity of assessment tools, ranging from single-item scales to short forms to lengthier scales, and each of these tools comes with benefits and disadvantages. While there are few general recommendations about which assessment tool to choose, it is important for researchers to consider the psychometric properties of the scales that they use, particularly the face and content validity of the instruments (Parkinson, 2008). Furthermore, researchers need to ensure that the scale is appropriate for the chosen population and that it does not cause undue stress to vulnerable respondents (Parkinson, 2008). The development of an internationally standardized toolkit of assessment and outcome measures for youth mental health is recommended (Mei et al., 2020).

Finally, most of the studies included in this review are cross-sectional studies, and there is a paucity of studies that explore the positive mental health of VET students through longitudinal, qualitative and/or intervention studies. Longitudinal studies have previously been identified as a prioritized area for future research on youth mental health (Mei et al., 2020). Moreover, it is important for researchers to actively involve research participants throughout the research process. In the studies included in this scoping review, VET students functioned generally as "informants" rather than as "participants" in the research that concerned their own mental health. Thus, there is room for an increased focus on inclusive and participatory research in the field of positive mental health for VET students. Given the subjective nature of positive mental health and wellbeing, qualitative studies may be particularly useful to explore VET students' personal experiences of what enhances their mental health. In this way, future research studies are likely to remain relevant for those concerned.

6.2 Limitations of the Study and Conclusions

While the authors of this study tried to conduct the literature search for this study with as much rigor and transparency as possible, it is possible that certain relevant studies were left out. We limited ourselves to a literature search of four databases only, which means that some studies may have gone under the radar for our search. Moreover, given the somewhat vague nature of the concept of positive mental health, it was not always straightforward to decide

which studies to include or exclude. However, by following the PRISMA guidelines for scoping reviews, we tried to provide as much clarity as possible about how we conducted the literature search. Moreover, we made sure that all hits in our literature search were screened by at least two researchers, in order to guarantee the reliability of our results.

This scoping review has mapped the available research on positive mental health for students in VET that has been conducted over the past decade. Now that the prevalence of mental health issues amongst youth is increasing, the salutogenetic focus that characterizes this review may be especially useful from a preventive perspective. Findings from this review illustrate that a number of factors may affect the wellbeing of students in VET. In particular, a strong vocational identity, a supportive school environment, and physical activity may contribute to positive mental health. These findings suggest that VET teachers may promote the wellbeing of their students by providing a supportive psychosocial learning environment at school. Moreover, VET may enhance students' positive mental health by providing ample opportunity for developing a strong vocational identity. Future research may explore how these findings can be used to prevent early school leaving and how policy makers and VET teachers may contribute to students' thriving at school.

Ethics Statement

While ethical considerations are not typically discussed explicitly in a scoping review, we would nonetheless like to mention our efforts to safeguard research ethics in this study. Firstly, we applied a rigid sampling plan for the sources that we used in this scoping review, so that all relevant literature could be identified, regardless of the viewpoints and perspectives of the authors. Secondly, we aimed for audience-appropriate transparency in the reporting of our review, so that the entire research process is available to the reader. The PRISMA guidelines supported us in our efforts to conduct an ethically sound scoping review.

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