AALBORG UNIVERSITY
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DELIVERY in Erasmus+-project Solution By Inclusion

# Systematic research literature review (W.P.3.4): How dimensions of mental well-being and social inclusion affect dropout from Vocational Education and Training Schools

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Solution By Inclusion

DEPARTMENT OF CULTURE AND LEARNING

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Hanne Kathrine Krogstrup, Nanna Møller Mortensen, Julie Mathilde Würtz Jensen & Kathrine Bendixen

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# 1. INTRODUCTION

In preparation for developing a statistical tool to monitor and assess progression in mental well-being and social inclusion among students in Vocational Education and Training (VET) as a steppingstone to prevent school dropout, a systematic literature review is needed. Thus, it would be useful *first* to uncover, which dimensions of mental ill-being and scholastic social exclusion increase the risk of dropout from VET, and *second* to examine, how to measure these dimensions statistically. There is ample evidence that mental ill-being (e.g. Breslau, 2010; The Danish Psychiatry Fund, 2011; Hjorth et. al, 2016; Krane et. Al, 2016; Danish Health Agency, 2012) and social exclusion in school (e.g. Jørgensen, 2011; Andersen et. al, 2018) is associated with a higher risk of dropout from school. In turn, leaving VET without any qualifications may implicate social exclusion in society due to limited educational and vocational opportunities, thus involving an increased vulnerability for developing a mental disorder (Esch et. al, 2014; Coombs et. al, 2013; Hargreaves, 2011). Accordingly, early interventions with dual benefit of improving mental well-being and social inclusion in school while reducing dropout from VET could be an important tool for schools, but also society.

In terms of providing early interventions, continuous monitoring of VET-students' mental well-being and social inclusion is considered an essential tool for schools (and policymakers) (Coombs et. al, 2013; OECD, 2017; Bentley et. al, 2019; Danish Health Agency, 2020; WHO, 2020). However, the precise definition and measurement of these concepts are subjects of some debate (Galderisi et. al, 2015; Coombs et. al, 2013). As a result, research shows a discrepancy in terms of which dimensions of mental ill-being and social exclusion seem to be the most impeding for educational attainment. In addition to previous collective work (e.g. Breslau 2010; Coombs et. al, 2013; Esch et. al, 2014; Hayes et. al, 2008), this systematic literature review aims to fill the knowledge gap in several ways. First, in an attempt to complement the work focusing on dropout from higher education (e.g. Tinto, 1975), this systematic literature review concentrates on dropout from VET, as it involves the end of compulsory schooling but also the period of life, where up to 50 pct. of chronic mental disorders have their onset (Jané-Llopis & Braddick, 2008). Second, this systematic literature review focuses on empirical evidence from European dropout research, as the findings must regard the countries participating in the EU's Erasmus+ program, for example, Denmark, Italy and Malta (European Commission/EACEA/Eurydice, 2018). Third, this systematic literature review considers the interplay of multiple factors, as prior literature reviews have emphasized the heterogeneous process of dropout and early school leaving (Esch et. al, 2014; Melkevik et. al, 2016). To provide preferably unbiased results that may guide the development of a statistical monitoring tool, the systematic literature review considers the confounding or mediating effect of other factors related to dimensions of mental well-being and social inclusion which increase the risk of dropout. Accordingly, this leads to the following research questions:

| Research questions |
| --- |
| 1) Which dimensions of mental well-being and social inclusion, respectively, increase the risk of dropout from VET, and how can these dimensions be measured and assessed?<br><br>2) What are the important confounding factors of the association between mental health, social inclusion and dropout? |

## Clarification of concepts

This brings us to the demarcation of mental well-being and social inclusion. In terms of the definition of **mental well-being** most research uses the definition provided by World Health Organization (WHO):

*"... a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community"* (WHO, 2001). This definition contains an experienced dimension and a functional dimension. The former refers to the experience of feeling good about oneself and one's life, and the latter refers to how the individual function in everyday life (Christensen et. al, 2017). Furthermore, studies emphasize the importance of students' psychological, cognitive, social and physical functioning and capabilities as well as their quality of life and productivity outcomes in order to thrive and flourish (WHO, 2004; Galderisi et. al, 2015; OECD, 2017; Aldridge & McChesney, 2018).

In terms of **social inclusion**, the concept can refer to a person's right, resources and capabilities to participate, engage and learn as an equal citizen in all the opportunities available (e.g. employment, education and other social activities) (Coombs et. al, 2013; Hargreaves, 2011). VET is seen as one way to facilitate inclusion, as it seeks to provide individuals with skills that are directly applicable to the workplace. An important mean by which VETs facilitate social inclusion is through socialization, which can range from gaining confidence, self-respect, life skills and interpersonal skills, to engagement and participation in the community (Hargreaves, 2011). In turn, participation, such as in work, training or connecting with friends, can help to build people's resources such as work experience, qualifications or support networks, which assists further participation and opportunities. For this reason, we want to delimit the systematic literature review to research related to inclusion through interaction with and integration to the community at school. We acknowledge that the concept 'social exclusion' relates to other dimensions such as exclusion from consumption, or exclusion from the political, labour market (Hayes et. al, 2008; Burchardt et. al, 2002). However, to enhance the feasibility of this study, we decided to focus on means by which VETs directly facilitate inclusion.

## Reading guide

This brings us to the outline of this study. In the section 'Methodology and research strategy', we will describe the methodology used to conduct the systematic literature review. The section 'Results of the systematic literature review' will present the results of our review. This section is divided into two subsections presenting six identified dimensions of mental well-being and how to measure these statistically, followed by a sub-section presenting two dimensions of social inclusion and how to measure these statistically. We conclude our analysis in the section 'Limitations and conclusion', with a discussion of our result and a conclusion of the findings.

# 2. METHODOLOGY AND RESEARCH STRATEGY

In order to answer the research questions, we carried out a literature review that focused on dropout from VET. The process of conducting a systematic literature review is based on replicable and transparent steps (Liberati et. al, 2009). In this review, this process took the following basic steps: (1) finding relevant documents, (2) selecting and filtering through the documents using clearly defined criteria, and (3) summarizing and analyzing the documents. The steps are based on the PRISMA checklist (Liberati et. al, 2009).

## Stage 1: Finding relevant documents

As a steppingstone to decrease the VET dropout rate, the key purpose of this review was to identify dimensions to measure and assess progression in VET-students' mental well-being and social inclusion, in order to inform schools and facilitate institutional comparison. The review focused on measures used to assess mental well-being and/or social inclusion in the VET-student population, which mainly consist of youngsters age 15 to 25. Most measures are developed and validated within a child or an adult population only (Deighton et. al, 2014); hence, most measures are not reflective of all the dimensions constituting mental well-being among VET-students. Consequently, this may have an impact on the young person's engagement with the treatment and intervention provided based on the measured outcome (Bentley et. al, 2019).

### *Developing search terms*

For this review, measures of dimensions of mental well-being and/or social inclusion were included if they sought to examine the impact of students' social inclusion and/or mental well-being on dropout. Since some European school systems do not differentiate between general secondary education and vocational secondary education (e.g. Ireland), adding the concept of secondary education seemed relevant. Hence, the studies must regard dropout from either VETs or secondary education. To capture this, search terms were developed based on four aspects: (1) mental well-being, (2) social inclusion, (3) vocational education & training and (4) dropout. A list of words and phrases reflecting each aspect was generated, and we determined, that mental well-being and/or social inclusion must be in the title to prevent mix-up with other concepts (see Table 1). As shown, we only searched for English written documents to avoid translation issues. The aspects were combined by using the "AND" statement, and the related words and phrases were combined by using the "OR" statement.

**Table 1. Search terms**

| Aspects | Related words and phrases |
|---|---|
| Aspect 1: Mental well-being (title) | Mental well-being<br>Mental health |
| Aspect 2: Social inclusion (title) | Social inclusion<br>Social exclusion<br>Social integration |
| Aspect 3: Vocational education & training | Vocational education & training<br>Vocational education<br>Secondary education |
| Aspect 4: Dropout | Dropout<br>Non-completion |

### *The snowballing procedure*

To find academic works that focused on mental well-being and social inclusion, respectively, and their impact on dropout from VET, a systematic search was performed using the snowballing method known from software engineering studies (Wohlin, 2014). The *first step* in the snowballing procedure was to perform a database search to create the start set. For this purpose, we used the *ERIC, Google Scholar* and *Aalborg University Library* databases by combining the aspects using the 'AND' statement, and the related word and phrases were combined using the 'OR' statement. Based on the report eligibility criteria of the review, search limits were applied to the databases allowing these features. The report eligibility criteria were: 1) Only English written records were selected, which is common for systematic reviews, given the practical difficulties of translation and the replicability of the review (Liberati et. al, 2009). 2) We only included peer-reviewed articles, conference papers and book chapters, respectively; as we could not ensure other sources such as reports met the established criteria (Cerda-Navarro et. al, 2017). Six documents were included in the start set (marked with bold in Table 2) based on this procedure.

Once the start set was decided, the *second step* was to start the first iteration of backward and forward snowballing. The backward snowballing involved an exhaustive survey of the references section of the articles we have included in the start set. Furthermore, we supplemented the start set of documents by going through the references sections in previous literature reviews by Esch et. al (2014) and Breslau (2010). However, we did not include existing literature reviews in the empirical material of documents, as we only wanted to include empirical studies. After identifying the relevant documents to include in the review, the third step was to perform the forward snowballing by using tracking databases like Google Scholar to identify articles that had subsequently cited papers that we had already included in the review. This process of iteration of backward and forward snowballing proceeded until we reached the concept saturation, which is the point where we were seeing the same analytical findings repeated on regular basis and when we did not receive any new information (Kvale & Brinkmann, 2015). Table 2 presents the included documents deduced from the snowballing procedure, which took place in the period from August 2020 to October 2020. In total, 1786 references were reviewed according to references and citations, and 18 documents met the established inclusion criteria and were included in the review.

**Table 2. Documents reviewed according to references and citations**

| Source | No. of references | No. of citations |
|---|---|---|
| Bask & Salmela-Aro (2013) | 30 | 188 |
| **Andersen et. al, (2018)** | **52** | **5** |
| Brännlund et. al (2017) | 63 | 23 |
| Cornaglia et. al (2015) | 55 | 68 |
| **De Ridder et. al (2013)** | **47** | **69** |
| Eicher et. al (2014) | 44 | 51 |
| Hetlevik et. al (2018) | 67 | 6 |
| **Hjorth et. al (2016)** | **40** | **54** |
| Holen et. al (2018) | 65 | 22 |
| Ingholt et. al (2015) | 62 | 21 |
| Lee et. al (2009) | 77 | 155 |

| | | |
|---|---|---|
| Mikonnen et. al (2018) | 33 | 17 |
| Nairz-Wirht & Feldmann (2017) | 73 | 18 |
| Parvianen et. al (2020) | 105 | - |
| **Sagatun et. al (2014)** | **85** | **61** |
| Svansdottir et. al (2015) | 33 | 11 |
| **Jørgensen (2011)** | **44** | **-** |
| **Bania et. al (2016)** | **63** | **9** |
| *Total (N=1786)* | *1008* | *778* |

## Stage 2: Filtering and selecting documents

To determine which documents were not relevant to an in-depth review, inclusion and exclusion were established.

### *Inclusion criteria*

A study was included if it:

- Is an empirical study
- Provides measurement of mental well-being and/or health in the VET-student population (youngsters age 15 to 25)
- Focuses on students in VET/secondary education in European countries.
- Is English written
- Is a peer-reviewed article, conference paper or book chapter

### *Exclusion criteria*

Studies were excluded if it:

- Is a study of only adult or child participants
- Is a literature review
- Does not originate from a European country
- Does not include the terms "mental well-being" or "social inclusion" in the title
- Dropout is not the dependent variable
- Is mental disorder-specific (e.g. depression)

## Stage 3: Analysis and summary of documents

The *first* phase of the analysis consisted of a round of in-depth readings of the included documents in which each member of the team carried out. This was done to identify the measures and dimensions of mental well-being and social inclusion as well as their impact on dropout, and furthermore, to identify the included confounding factors. The *second* phase of the analysis involved creating an initial outline of the categories that would be useful to classify and group the dimensions of mental well-being and social inclusion as well as the confounding factors that were found. For this classification, inductive criteria and open coding were used: the classification of the categories was not the result of a restrictive *a priori* theoretical framework but rather several readings of the data. Table 3 presents the identified confounding

factors and the dimensions of mental well-being and social inclusion with a documented effect on drop-out.

**Table 3. Categories used for organizing the confounding factors and the dimensions of mental well-being and social inclusion, respectively, with an impact on dropout from VET**

| Categories used for analyzing the dimensions of mental well-being | Prevalence |
|---|---|
| 1) General mental well-being | 4 (22%) |
| 2) Internalizing dimension | 7 (38%) |
| 3) Externalizing dimension | 8 (44%) |
| 4) Health dimension | 7 (38%) |
| 5) Social dimension | 3 (17%) |
| 6) School burnout dimension | 3 (17%) |
| **Categories used for analyzing the dimensions of social inclusion** | **Prevalence** |
| 1) Social inclusion into the learning community | 6 (33%) |
| 2) Social inclusion into the social community | 2 (11%) |
| **Categorization of the confounding variables** | **Prevalence** |
| Socio-demographic factors | 17(94%) |
| Family factors | 6(33%) |
| School-related factors | 10(56%) |
| Individual factors | 9(50%) |

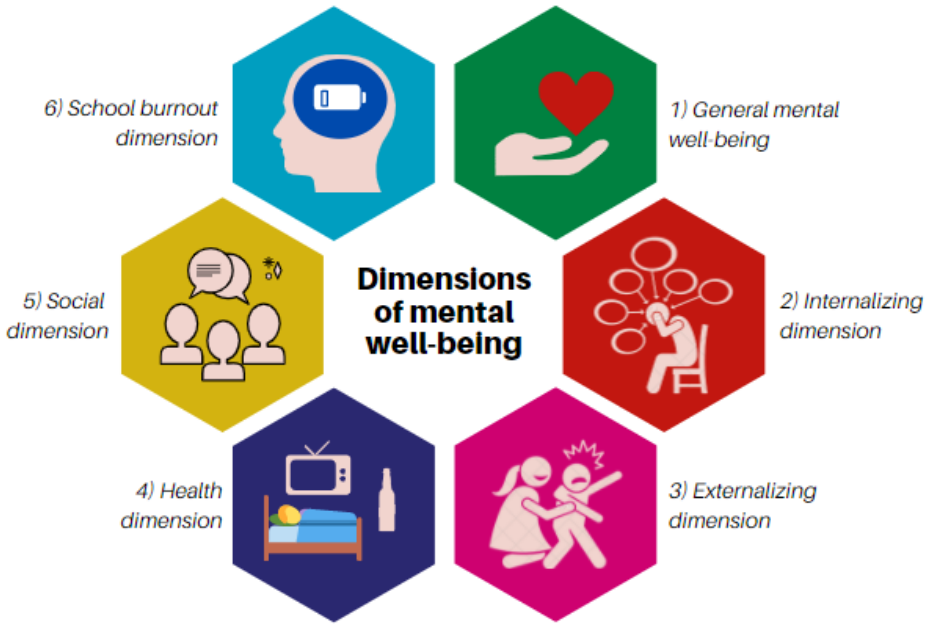
# 3. RESULTS OF THE SYSTEMATIC LITERATURE REVIEW

Based on a literature review of 18 peer-reviewed articles, we have identified six dimensions of mental well-being and two dimensions of social inclusion among VET-students, which have a documented effect on school dropout (Table 3). See Appendix for an overview of characteristics of the identified studies.

## Dimensions of mental well-being

The following presents the six identified dimensions of mental well-being, which have a documented effect on dropout from VET or secondary education. The dimensions are: 1) General mental well-being, 2) Internalizing dimension, 3) Externalizing dimension, 4) Health dimension, 5) Social dimension, and 6) School burnout dimension (Summarized in Figure 1). To answer the propounded research questions, the definition of each dimension and its documented impact on dropout is presented, followed by a proposition of how to measure the respective dimension statistically according to the used measurements in the reviewed documents. Subsequently, the effects from dimensions of social inclusion on VET-dropout are presented.

**Figure 1. Dimensions of mental well-being which influence the risk of dropout from VET**




### *1) General mental well-being*

*Meaning:* A general measure of mental well-being refers to the student's assessment of how they are doing (Hjorth et. al, 2016), and how they function in everyday life (Bania et. al, 2016). I.e. if the student is happy and satisfied with his or her life, can handle the daily activities, such as attend school, participate in social relations and handle the challenges of everyday life. The literature review shows, that general mental well-being is assessed in various ways. For example, one study used prescriptions of psycholeptic and psychoanaleptic drugs as a measure of mental health problems (Brännlund et. al, 2017). Based on Finnish register data of visits to inpatient hospital care and outpatient specialized services, another study used diagnostic codes corresponding *International Statistical Classification of Diseases and Related Health Problems, 10th edition*

(Mikkonen et. al, 2018). However, most common for studies measuring general mental well-being is that they use simple survey questions (Hjorth et. al, 2016; Bania et. al, 2016).

*Impact on dropout*: Based on students' assessment of his or her (1) energy, (2) social functioning, (3) feelings of accomplishments, (4) carefulness, and (5) feeling peaceful, blue/sad, one study found, that poor mental health was associated to dropout from VET (Hjorth et. al, 2016). Odds ratio expressing the magnitude of the association between mental well-being and risk of dropout from VET was higher for female students than for male students. Another study found that male students troubling to function in everyday life due to mental health problems have a higher risk of dropout from upper secondary education in Norway (Bania et. al, 2016). Functional impairment due to mental health problems is based on the students' assessment of, whether he or she experiences difficulties regarding emotions, behaviour, concentration, and being able to get along with other people (Niclasen et. al, 2012). If the student answers 'yes' to the question, further items inquire about the severity of these difficulties and indicate an estimate of the burden of the problems. Maintaining everyday life with friends, family and school and reducing stress seems to be crucial for males' mental well-being and coping while reducing symptoms of mental health problems are more crucial for females according to the study of Bania and colleagues (2016). Only one study used prescriptions of psycholeptic and psycho-analeptic drugs as a measure of general mental ill-being, and their results reveal that the risk of dropout increases with the number of years of drug treatment for mental disorders (Brännlund et. al, 2017). A Finnish study found that the relative risk of dropout related to general mental ill-being was higher at age 17 years than at age 21 years (Mikkonen et. al, 2018). Furthermore, the relative risk of dropout was higher for male students at age 17 years, and the relative risk of dropout was higher for female students at age 21 years.

Based on the measurements used by the reviewed documents, we included a short form version of the Mental Health Continuum questionnaire (MHC-SF). It consists of 14 items derived from a total of 40 in the long form version. The items are chosen as the best indicators for the construct definition for each facet of well-being represented in the long form version: Emotional, psychological and social well-being. As for both the long and the short form, two versions exist in regarding the age of the target group: One for adolescents (age 12-18) and one for adults (age 18+). All versions (age, short/long form) are highly validated (Keyes, 2009). As this review assess VET students as target group, earlier delineated as youngsters aged 15-25, we find the adult version the most accurate to be presented in Table 4 below.

**Table 4. Proposed survey questions to measure general mental well-being**

| **Mental Health Continuum Short Form (MCH-SF)** (Keyes, 2009) | |
|---|---|
| **Item** | **Response category** |
| Please answer the following questions are about how you have been feeling during the past month. Place a check mark in the box that best represents how often you have experienced or felt the following: *During the past month, how often did you feel…* | |
| Happy | 'Every day',<br>'Almost every day',<br>'About 2 or 3 times a week',<br>'About once a week',<br>'Once or twice'<br>'Never' |
| Interested in life | |
| Satisfied with life | |
| That you had something important to contribute to society | |
| That you belonged to a community (like a social group, or your neighborhood) | |
| That our society is a good place, or is becoming a better place, for all people | |
| That people are basically good | |

| | |
|---|---|
| That the way our society works makes sense to you | |
| That you liked most parts of your personality | |
| Good at managing the responsibilities of your daily life | |
| That you had warm and trusting relationships **with** others | |
| That you had experiences that challenged you to grow and become a better person | |
| Confident to think or express your own ideas and opinions | |
| That your life has a sense of direction or meaning to it | |

### *2) Internalizing dimension*

*Meaning:* The internalizing dimension refers to students, who cope with negative scholastic events by redirecting negative emotions against him or herself, i.e. it refers to symptoms of depression, anxiety, withdrawal or interpersonal sensitivity (De Ridder et. al, 2013; Sagatun et. al, 2014; Holen et. al, 2018; Hetlevik et. al, 2018; Parviainen et. al, 2020). It can be evaluated based on students' assessment of feeling e.g. headache, stomachache or sickness, unhappy, downhearted or tearful, worrying or nervous in new situations or easily lose confidence, and many fears and easily scared (Bania et. al, 2016; Goodman et. al, 2003). Two studies defined internalizing problems according to specific diagnostic codes in the psychological chapter of the *International Classification of Primary Health Care* (ICPC-2) (Hetlevik et. al, 2018) and *International Statistical Classification of Diseases and Related Health Problems, 10th edition* (Mikkonen et. al, 2018), respectively.

*Impact on dropout*: There is some discrepancy in the findings related to the association between dropout and this dimension of mental well-being. For example, several studies argue, that internalizing mental health problems are mainly a female predictor of dropout from VET (Sagatun et. al, 2014; Cornaglia et. al, 2015; Hetlevik et. al, 2018; Parviainen et. al, 2020). Thereby, these studies disconfirm the work of several other Scandinavian studies, who found an increased risk of dropout for students with internalizing mental health problems independent of gender (De Ridder et. al, 2013; Holen et. al, 2018; Mikkonen et. al, 2018). The studies have different contextual settings and used different measures to assess this dimension, thus the different findings are partly due to that. The impact from internalizing mental health problems on dropout from VET emphasize the need for more awareness to those students who silently initiate a process of alienation, as they are often underdiagnosed and thus ignored by intervention programs (Esch et. al, 2014; Holen et. al, 2018). An unexpected result was reported by Bania and colleagues (2016), as they argue that internalizing mental health problems in lower secondary education is a significant predictor for *completion* of upper secondary education among females in a Norwegian Arctic context. Similar results were found in a cross-national study examining the association between early-onset mental disorder and subsequent termination of education in high-income and low- and middle-income (LAMI) countries (Lee et. al, 2009). However, the study did not find gender differences in the results. The findings show, that students with anxiety and/or depression, are troubled mentally and still manage to stay in school and complete upper secondary education. Some studies argue, that students with anxiety tend to over-prepare due to excessive anticipatory worries of failure, and thus it can be a positive educational outcome (Bania et. al, 2016; Lee et. al, 2009).

Based on the measurements used by the reviewed documents, we have included two subscales from the highly validated Strength and Difficulties Questionnaire (SDQ), made by the child psychiatrist Robert Goodman. The scale was originally developed for measuring strengths and difficulties among children and youngsters in the age of 2-17 years, but in order to meet the needs of researchers, clinicians and educationalists, several additional or alternative versions has been made (Youthinmind, 2020). As mentioned before, our research target is youngsters aged 15-25, why we here present the adult (s18+) self-

report version. One sub-scale captures emotional symptoms and on that captures peer problems. Profitably, these two subscales can be merged into one scale capturing the internalizing dimension (Goodman et. al, 2010). The proposed survey questions to monitor and assess the internalizing dimension of mental well-being are presented in Table 5.

**Table 5. Proposed survey questions to measure the internalizing dimension of mental well-being**

| **Emotional Symptoms Scale from the Strength and Difficulties Questionnaire (Goodman et. al, 2003)** | |
|---|---|
| **Item** | **Response category** |
| 'I get a lot of headaches, stomach-aches or sickness'; | 'Not True', 'Somewhat True', 'Certainly True' |
| 'I worry a lot'; | |
| 'I am often unhappy, down-hearted or tearful'; | |
| 'I am nervous in new situations. I easily lose confidence'; | |
| 'I have many fears. I am easily scared'. | |
| **Peer Problems Scale from the Strength and Difficulties Questionnaire (Goodman et. al, 2003)** | |
| **Item** | **Response category** |
| 'I would rather be alone than with other people' | 'Not True', 'Somewhat True', 'Certainly True' |
| 'I have one good friend or more' | |
| 'Other people generally like me' | |
| 'Other people pick on me or bully me' | |
| 'I get along better with older people than with people of my own age' | |

### *3) Externalizing dimension*

*Meaning*: This dimension refers to students, who cope with negative scholastic events by redirecting negative emotions of anger or frustration against others, i.e. it refers to conduct problems, hyperactivity-inattention and concentration (De Ridder et. al, 2013; Sagatun et. al, 2014; Bania et.al, 2016; Lee et. al, 2009; Hetlevik et. al, 2018; Holen et. al, 2018). Conduct problems are evaluated based on students experience with e.g., losing his or her temper when getting angry, accusations of lying or cheating, or taking things that are not his or hers from school, home or elsewhere (Sagatun et. al, 2014; Goodman et. al, 2003; Holen et. al, 2018; Parviainen et. al, 2020). Hyperactivity-inattention is evaluated based on students' experience with, e.g. feeling restless and constantly fidgeting, easily distracted (Bania et.al, 2016; Sagatun et. al, 2014; Goodman et. al, 2003; Holen et. al, 2018) and having problems concentrating (De Ridder et. al, 2013). Two studies defined externalizing problems according to specific diagnostic codes in the psychological chapter of the *International Classification of Primary Health Care* (ICPC-2) (Hetlevik et. al, 2018) and *International Statistical Classification of Diseases and Related Health Problems, 10th edition* (Mikkonen et. al, 2018), respectively.

*Impact on dropout*: The literature review found that the identified studies differ in the results when assessing the effect from an externalizing dimension of mental well-being on dropout from VET. Several studies find that externalizing mental health problems in terms of conduct problems and hyperactivity-inattention impair completion of upper secondary education independent of gender (Sagatun et. al, 2014; Holen et. al, 2018; Mikkonen et. al, 2018). Heltevik and colleagues (2018) found similar results, however, the relative risk of dropout for males with externalizing problems are 16.7 percentage points higher than for

females. This result is in line with a Finnish study, which revealed that male VET-students with conduct problems and cynicism have higher dropout *intentions* than females with similar symptoms (Parviainen et. al, 2020). This disconfirms the findings of Bania et. al (2016), which did not find a significant effect from conduct problems and hyperactivity-inattention, respectively, on non-completion from upper secondary education. However, another study found concentration as a single measure to be a significant predictor for dropout from VET (De Ridder et. al, 2013). Thus, the combination of conduct problems and hyperactivity-inattention into one measure of an externalizing dimension of mental well-being captures the impact on dropout differently than assessing them separately. In most cases, the students who drop out due to externalizing mental health problem represent the stereotypical "troublemaker" in class, mainly male students, who accumulate academic or professional failure, behavioural problems and subsequent disciplinary measures before eventually dropping out of school (Brännlund et. al, 2017; Holen et. al, 2018; ). Based on the Strength and Difficulties Questionnaire and Norwegian registers, Holen and colleagues (2018) discovered, that teacher-students relationship served as a significant mediator in the path from externalizing mental health problems via poor school grades in high school, which predicted dropout from upper-secondary education. Based on their results, teachers seemed to interact less supportively with students who suffered from externalizing problems and poor grades compared with students without such problems.

Based on the measurements used by the reviewed documents, we have included two subscales. One that captures problems with hyperactivity and one that captures conduct problems. Profitably, these two subscales can be merged into one scale capturing the externalizing dimension (Goodman et. al, 2010). The proposed survey questions to monitor and assess the externalizing dimension of mental well-being are presented in Table 6.

**Table 6. Proposed questions to measure the externalizing dimension of mental well-being**

| **Hyperactivity Scale from the Strength and Difficulties Questionnaire (Goodman et. al, 2003)** | |
|---|---|
| **Item** | **Response category** |
| 'I am restless, I find it hard to sit down for long' | 'Not True',<br>'Somewhat True',<br>'Certainly True' |
| 'I am constantly fidgeting or squirming'; | |
| 'I am easily distracted, I find it difficult to concentrate'; | |
| 'I think before I do things'; | |
| 'I finish the work I'm doing. My attention is good'. | |
| **Conduct Problems Scale from the Strength and Difficulties Questionnaire (Goodman et. al, 2003)** | |
| **Item** | **Response category** |
| 'I get very angry and often lose my temper' | 'Not True',<br>'Somewhat True',<br>'Certainly True' |
| 'I am generally willing to do what other people want' | |
| 'I fight a lot. I can make other people do what I want' | |
| 'I am often accused of lying or cheating' | |
| 'I take things that are not mine from home, work or elsewhere' | |

### *4) Health dimension*

*Meaning*: This dimension refers to students' assessment of their health behaviour and orientation towards maximizing the potential of which they are capable by maintaining or enhancing their health and preventing health problems. I.e. it refers to factors such as insomnia, smoke habits, alcohol consumption, physical activity, hours watching television etc. (De Ridder et. al, 2013; Svansdottir et. al, 2015; Sagatun et. al, 2014; Andersen et. al, 2018; Ingholt et. al, 2015). One study evaluates this dimension based on excessive or dysfunctional substance use or physiological symptoms of substance dependence (Lee et. al, 2009).

*Impact*: Studies revealed that students with insomnia are more likely to drop out of VET, as increased sleep fragmentation, late bedtimes and early awakenings seriously affect learning capacity, school performance, and neurobehavioral functioning (De Ridder et. al, 2013; Svansdottir et. al, 2015). In terms of substance use, several studies show, that smoking predicted a higher risk of non-completion or dropout of VET (Sagatun et. al, 2014; Svansdottir et. al, 2015; Andersen et. al, 2018). The association can be a result of decreasing focus on the accomplishment of professional skills, in turn leading to problems in passing the final exam (Ingholt et. al, 2015; De Ridder et. al, 2013). An Icelandic study found students' alcohol consumption increased the risk of dropout from secondary education; however, the association became insignificant when the parents' educational level was taken into account (Svansdottir et. al, 2015). The result indicates, that students' socio-economic background have a higher impact on the association. A Danish study concludes, that the teachers at VET do not have the capacity to deal with the problems related to substance use (Ingholt et. al, 2015). Sometimes, substance use is used as a coping mechanism if they feel socially excluded and thus it can be a response to poor mental health or symptoms of the same underlying problems influencing students' well-being (Cornaglia et. al, 2015; Ingholt et. al, 2015). However, it is important to distinguish between *substance use* and *substance use disorder*, as substance use of cigarettes, for example, is common among VET-students, and does not itself constitute a mental health problem (Breslau, 2010). A study showed that dependence on alcohol and drug abuse was significantly associated with termination prior to completion of secondary education in high-income countries (Lee et. al, 2009). Hence, the literature review revealed that both substance use and substance use disorder can be influential factors on non-completion of VET.

Based on the measurements used by the reviewed documents, we have included six survey questions to monitor and assess the health dimension of mental well-being, which are presented in Table 7.

**Table 7. Proposed questions to measure the health dimension of mental well-being**

| **Health related behavior** (Sagatun et. al, 2014) | |
|---|---|
| **Item** | **Response category** |
| Do you smoke or have you smoked earlier? | 'No, never',<br>'Yes, but I have stopped',<br>'Yes, once in a while'<br>'Yes, daily'. |
| How often have you been consuming alcohol over the past year? | 'not at all',<br>'a few times',<br>'once per month',<br>'2–3 times per month',<br>'once per week'<br>'2–3 times per week or more'. |
| **Physical activity and sleep** (Svansdottir et. al, 2015) | |
| **Item** | **Response category** |

| | |
|---|---|
| How many hours do you watch television each weekday? | 'Almost never',<br>'30–60 min',<br>'≈1 h',<br>'≈2 h',<br>'≈3 h',<br>'≈4 h',<br>'≈5 h',<br>'≥6 h' |
| How many hours per week do you spend on physical activity 'to an extent that makes you sweat and/or out of breath' outside of school? | 0,<br>1–2,<br>3–4,<br>5–7,<br>8–10,<br>11 hours or more |
| How many hours do you spend sleeping on weekdays? | '≤7 h per night'<br>'≥8 h' |
| How often do you get enough sleep? | 'very seldom',<br>'about half of the time',<br>'most nights'<br>'sleep too much'. |

### *5) Social dimension*

*Meaning*: The social dimension refers to students' assessment of positive functioning and having something to contribute to society, feeling part of a community, and that the way the society works makes sense to them. The dimension captures anhedonia and social dysfunction. The dimension is related to reduced interest or pleasure in usual activities (Cornaglia et. al, 2015), students' assessment of the quality of their social life in school and their attitudes towards others (Goodman et. al, 2003; Bania et. al, 2016), as well as students' assessment of student support and teacher relatedness (Andersen et. al, 2018).

*Impact:* One study revealed that social dysfunctional in lower secondary education is a significant predictor of female non-completion (dropout) of upper secondary education in a Norwegian context. Similar results were found in a British context (Cornaglia et. al, 2015). Social problems and social engagement can reduce females' potential to complete school and later pursue employment opportunities, personal well-being and better health. In line with these findings, a Danish study found a perceived lack of student support and teacher relatedness as significant predictors for dropout from VET (Andersen et. al, 2018). I.e. the school environment and the student's relationship are essential factors in terms of preventing low social mental well-being and thereby dropout.

Based on the measurements used by the reviewed documents, we have included one scale to monitor and assess the social dimension of mental well-being. This scale is proposed by Goodman & Lamping (2010), and the proposed survey questions are presented in Table 6.

**Table 8. Proposed survey questions to measure the social dimension of mental well-being**

| **Pro-social Scale from the Strength and Difficulties Questionnaire (Goodman et. al, 2003)** | |
|---|---|
| **Item** | **Response category** |
| 'I try to be nice to other people. I care about their feelings' | 'Not True',<br>'Somewhat True', |
| 'I usually share with others (food, games, pens, etc.)' | |

| | |
|---|---|
| 'I am helpful if someone is hurt, upset or feeling ill' | 'Certainly True' |
| 'I am kind to children' | |
| 'I often volunteer to help others (parents, teachers, children)' | |

### *6) School burnout dimension*

*Meaning:* The school burnout dimension refers to exhaustion/educational stress (i.e. strain and chronic fatigue caused by school demands), cynicism (i.e. loss of interest in schoolwork and detached attitude towards studies), inadequacy (i.e. school-related feelings of incompetence) (Bask & Salmela-Aro, 2013; Parviainen et. al, 2020), and pessimism (i.e. expecting a negative outcome, when things are difficult) (Eicher et. al, 2014). By that means, this dimension is evaluated based on students' experience of possessing the necessary resources to cope with difficulties and negative scholastic events (Eicher et. al, 2014).

*Impact:* One study revealed, that females in VET were prone to symptoms of depression and school burnout, which is associated with higher dropout *intentions* than students in the 'normative' group (non-symptoms of mental health problems) (Parviainen et. al, 2020). Furthermore, the study revealed that the combination of conduct problems and cynicism was especially a problem among male VET-students, which were linked to a higher risk of dropout intentions. These findings are in line with a Finnish study, which revealed that cynicism is the single significant school burnout predictor of dropout when controlling for other variables (Bask & Salmela-Aro, 2013). However, this study did not find gender differences in the result. Surprisingly, exhaustion turned out to be the burnout component with the highest level in general, but it did not significantly differ among those who dropped out and those who did not (Bask & Salmela-Aro, 2013). Another study revealed that educational stress led to higher dropout intentions, both on the personal level (stressed persons thought more about dropping out than non-stressed persons) and on the annual level (more stress than usual led to higher dropout intentions) (Eicher et. al, 2014). However, the impact from perceived annual stress was buffered by optimism, such that stress affected in particular those respondents with low levels of optimism. Studies have shown that symptoms of school burnout coincide with internalizing and externalizing symptoms (Parviainen et. al, 2020). In the section "Limitations and conclusion", we will discuss the risk of multicollinearity.

Based on the included documents we have identified four measures of the school burnout dimension of mental well-being, which consists of two subscales - exhaustion at school and cynicism towards school – and two individual survey questions, which captures feelings of inadequacy in schoolwork and perceived educational stress. The proposed survey questions are presented in Table 9.

**Table 9. Proposed survey questions to measure the school burnout dimension of mental well-being**

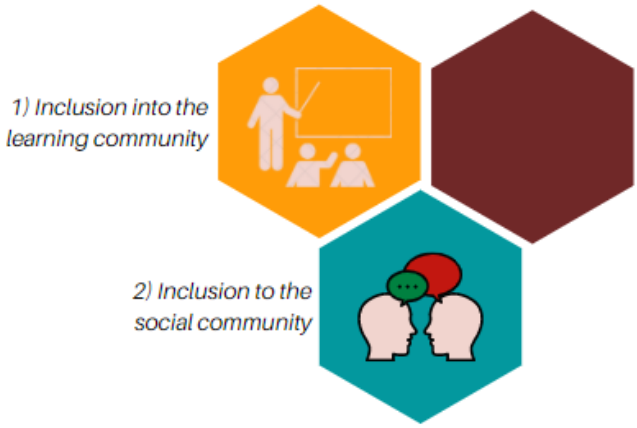
| **Exhaustion at school (Bask & Salmela-Aro, 2013; Parviainen et. al, 2020)** | |
|---|---|
| **Item** | **Response category** |
| 'I feel overwhelmed by my schoolwork' | 1 = completely disagree<br>2<br>3<br>4<br>5 = completely agree. |
| 'I often sleep badly because of matters related to my schoolwork' | |
| 'At school I often feel out of my depth and I hardly manage the amount of homework' | |
| **Cynicism towards school** (Bask & Salmela-Aro, 2013; Parviainen et. al, 2020; Eicher et. al, 2014) | |
| **Item** | **Response category** |

| | |
|---|---|
| 'I feel lack of motivation in my schoolwork and often think of giving up' | 1 = completely disagree<br>2<br>3<br>4<br>5 = completely agree. |
| 'I feel that I am losing interest in my schoolwork' | |
| 'Whatever happens, I can see the positive side of it' | |
| 'My future looks bright' | |
| **Feelings of inadequacy in my schoolwork** (Bask & Salmela-Aro, 2013) | |
| **Item** | **Response category** |
| 'I often have feelings of inadequacy in my schoolwork' | 1 = completely disagree<br>2<br>3<br>4<br>5 = completely agree. |

## Dimensions of social inclusion

Based on the literature review, the effect from social exclusion on dropout from VET or secondary education can be divided into two dimensions, which constist of 1) inclusion into the learning community and 2) inclusion into the social community (see Figure 2). Corresponding to the presentation of the dimensions of mental well-being, the definition of each dimension and its documented impact on drop-out is presented, followed by a proposition of how to measure the respective dimension statistically according to the used measurements in the reviewed documents.

**Figure 2. Dimensions of social exclusion which increase the risk of dropout from VET**




### *1) Social inclusion into the learning community*

*Meaning:* The dimension refers to factors such as students' perceived interaction with school staff, school connectedness, commitment, valuing the profession, knowledge of apprenticeship, prior learning, level of qualifications, ambitions and attitude (Jørgensen, 2011; Andersen et. al, 2018), as well as teacher-student relationship (Nairz-Wirth & Feldmann, 2017; Holen et. al, 2018).

*Impact*: Studies found the students' degree of commitment to the course as a determining factor of social inclusion, i.e. students categorized as uncommitted by teachers and peers could be self-perpetuating marginalized (Jørgensen, 2011) due to the experienced stigmatization (Nairz-Wirth & Feldmann, 2017), which could lead to dropout. A qualitative study revealed, that many VET-teachers prone to dismissing

the teacher-student relationship problems as subjective or family matters that are ultimately not influenced by their real work of teaching (Nairz-Wirth & Feldmann, 2017). For example, the study illustrates, that teachers tend to support an informal exclusion of so-called 'weak learner' or 'troublemakers' instead of applying measures (e.g. creating a collaborative environment and open communication) to build and foster their social capital, as they do not perceive it as an equal footing with the task of teaching (Nairz-Wirth & Feldmann, 2017). A Norwegian study confirms this result, as their study proves, that students with externalizing problems and mental distress were associated with poorer teacher-student relationship, which eventually could lead to non-completion of VET (Holen et. al, 2018). According to Ingholt and colleagues (2015), some VET-teachers appear to disagree on the importance of social relations for learning, and most vocational schools are not organized to ensure the development of students' social relations due to the individualized learning education plan, who thereby find similar results as the before mentioned study. However, the degree of social exclusion of the learning community are based on contextual setting at the schools and teachers' engagement and competencies, which underscores the importance of school environment for vocational students (Jørgensen, 2011; Andersen et. al, 2018; Ingholt et. al, 2015).

Based on the reviewed documents we have identified two subscales, which measures social inclusion into the learning community. These subscales consist of the teacher-student relationship and school connectedness. The proposed survey questions are presented in Table 10.

**Table 10. Proposed survey questions to measure social inclusion into the learning community**

| **Teacher-student relationship (Holen et. al, 2018)** | |
|---|---|
| **Item** | **Response category** |
| 'My teachers appreciate my opinions' | 1 = strongly agree<br>2<br>3<br>4 = strongly disagree |
| 'My teachers appreciate me' | |
| 'My teachers help me with my subjects when I need it' | |
| 'My teachers help me with my personal problems if needed' | |
| **School connectedness from HBSC (Andersen et. al, 2018; Thomson et. al, 2006)** | |
| **Item** | **Response category** |
| 'I feel close to people at this school' | 1 = strongly disagree<br>2<br>3<br>4<br>5 = strongly agree |
| 'I feel like I am part of this school' | |
| 'I am happy to be at this school' | |
| 'The teachers at this school treat students fairly' | |
| 'I feel safe at my school' | |

### *2) Social inclusion into the social community*

*Meaning:* This dimension refers to factors such as students' interaction with school staff, being in a social group, acceptance and having (a) friend(s) they can trust, talk to and have fun with (Jørgensen, 2011). Indicators of exclusion of the social community can be confused with the social dimension of mental well-being, yet the concepts differentiate by the fact, that social exclusion can occur due to social and personal difficulties fitting into the social setting at the school, whereas social dysfunction relates to symptoms of mental health problems (Ingholt et. al, 2015).

*Impact*: The literature found examples of studies, which found students' participating in cigarette smoking as a close link to social inclusion, and nonsmoking students can be excluded from the relationships developed between smokers (Ingholt et. al, 2015). Similar results are found by Jørgensen (2011) and Andersen et. al. (2018), who revealed that the likelihood of completing came to depend on the informal

processes of in- and exclusion in the social community and group of students. I.e. the informal groupings and social relations that develop in classes often are based on gender, ethnicity, age and earlier friendships (Jørgensen, 2011). Several factors can influence social inclusion into the social community, and most often it differs based on the school culture.

Based on the reviewed documents we have identified two subscales and three individual survey questions, which measures social inclusion into the social community. The subscales consist of Sense of community in the school and Perceived friends' support, whereas the individual survey questions capture the number of friends and number of days(evening spend out with friends. The proposed survey questions are presented in Table 11.

**Table 11. Proposed survey questions to measure social inclusion into the social community**

| **Sense of community in the school from HBSC (Andersen et. al, 2018; Thomson et. al, 2006)** | |
|---|---|
| **Item** | **Response category** |
| 'I feel I belong at this school' | 1 = strongly disagree<br>2<br>3<br>4<br>5 = strongly agree |
| 'Other students accept me as I am' | |
| 'Our school is a nice place to be' | |
| 'The students in my class enjoy being together' | |
| 'Most of the students in my class are kind and helpful' | |
| 'When I need extra help, I can get it from my teacher' | |
| **Perceived friends' support from HBSC** (Andersen et. al, 2018; Vieno et. al, 2007) | |
| **Item** | **Response category** |
| How easy is it to talk to the following persons about things that really bother you: | |
| (1) best friend | 1 = very easy<br>2<br>3<br>4 = very difficult |
| (2) friend(s) of the same sex | |
| (3) friend(s) of the opposite sex | |
| At present, how many close male/female friends do you have? | none<br>1<br>2<br>three or more |
| How many days a week do you usually spend time with friends right after school? | Rated on a seven-point scale (from 0 to 6 days) |
| How many evenings per week do you usually spend out with your friends? | Rated on an eight-point scale (from 0 to 7) |

## Mediating or confounding factors of the association

Previous research stressed the importance of evaluating the association between students' mental well-being and dropout from secondary education in the context of other important factors, in terms of both their interrelationship as well as their cumulative impact on dropout in order to capture the complexity of the association (Esch et. al, 2014). By omitting potentially mediating or confounding factors, the findings may be biased, as the results may overestimate the impact of mental ill-being or social exclusion on subsequent school dropout as other potentially attributing confounding factors had been omitted (de Vaus, 2013). Hence, this literature review should also consider the confounding or mediating variables

of the included documents when identifying or developing the relevant survey questions to avoid omitted variable bias.

Corresponding to a previous literature review (Esch et. al, 2014), the mediating or confounding factors explored by the included studies can be divided into three major categories including socio-demographic, family and school-related factors. As shown in Figure 3, we have furthermore included a fourth category, namely individual factors such as gender, age, physical health or BMI (Brännlund et. al, 2017; Bania et. al, 2016; Hjorth et. al, 2016; Svansdottir et. al, 2015; Mikkonen et. al, 2018 Eicher et. al, 2014; Parviainen et. al, 2020; Hetlevik et. al, 2018; Bask & Salmela-Aro, 2013). Several of the included documents reported that the association between mental well-being and the risk of dropout varied with gender. For example, Parviainen and colleagues (2020) reported that females are overrepresented in the internalizing-symptoms (e.g. symptoms of depression) group, whereas males are overrepresented in the externalizing-symptoms (e.g. conduct problems) group.

**Figure 3. Categorization of confounding variables**


As detected in previous dropout research, socio-demographic characteristics still interfered with educational attainment. Examples of socio-demographic factors in the included documents can be parents' educational level, occupation or economics, or the ethnicity, religion or residence of the students. In particular, socio-economic status was confirmed as a confounding factor in the relationship between mental ill-being and subsequent school dropout (Bania et. al, 2016; Brännlund et. al, 2017; Hjorth et. al, 2016; De Ridder et. al, 2013; Sagatun et. al, 2014; Cornaglia et. al, 2015; Svansdottir et. al, 2015; Mikkonen et. al, 2018; Bask & Salmela-Aro, 2013; Eicher et. al, 2014; Parvianen et. al, 2020; Hetlevik et. al, 2018). Socio-demographic factors are also an attributing factor in the association between social exclusion and subsequent dropout (Jørgensen, 2011; Andersen et. al, 2018; Holen et. al, 2018; Nairz-Wirth & Feldmann, 2017). In total, 17 out of 18 of the included documents include confounding socio-demographic variables.

Another set of factors observed to impact the magnitude of the mental well-being – dropout association were factors related to family structure and functioning. Family factors refer to family composition, family functioning, attachment and parental adjustments, and were considered by 33 pct. of the references (6 out of 18) (De Ridder et. al, 2013; Sagatun et. al, 2014; Cornaglia et. al, 2015; Lee et. al, 2009; Mikkonen et. al, 2018; Bask & Salmela-Aro, 2013). For example, De Ridder et. al (2013) find that in the cases where there was high symptom load, insomnia, concentration difficulties, poor self-rated health and obesity, the impact of poor student well-being remained even when controlling for stable family structure.

Finally, school-related factors are considered by 56 pct. of the reviewed documents as confounding the associations. School-related factors refer to e.g. grades, reading and writing difficulties, educational aspirations, apprenticeship agreement (Bania et. al, 2016; Jørgensen, 2011; Andersen et. al, 2018; Cornaglia et. al, 2015; Ingholt et. al, 2015; Bask & Salmela-Aro, 2013; Eicher et. al, 2014; Parvianen et. al, 2020; Holen et. al, 2018; Nairz-Wirth & Feldmann, 2017). For example, Holen et. al (2018) observed that grades significantly mediated the association between mental well-being or behavioural problems and later school dropout.

# 4. LIMITATIONS AND CONCLUSION

According to the present systematic literature review, students with internalizing- and externalizing-symptoms have a higher risk of dropout compared to students without symptoms of mental ill-being; however, the risk of dropout seems to be higher for students with externalizing-symptoms than internalizing symptoms (e.g. Bania et. al, 2016). An explanatory hypothesis is that students with reduced conceptual and procedural competencies would experience more difficulties and frustrations regarding educational success and thus engage in externalizing problem behavior, whereas students with reduced social skills may develop an internalizing coping style that seems to be less impeding for educational attainment (Esch et. al, 2014).

VETs are seen as a possible facilitator for social inclusion, as the vocational schools are expected to socialize and retain a large group of students with poor resources, and at the same time supply a qualified workforce, which in some cases leads to an internal selection process. Jørgensen (2011) showed that students divide themselves into three groups based on their resources and commitment to their educational track, their prior learning and knowledge of education. If the students with few resources group together as uncommitted and at the same time are categorized as uncommitted by teachers and peers, it can become self-perpetuating socially excluding, which ends up with them dropping out.

A striking observation concerned the nature of confounding factors that were included in the models. We detected a clear focus on individual, family- and school-related variables that could be considered immutable because inherent to the student or his/her environment. Characteristics including cognitive ability, family composition, socio-economic situation or school location provide valuable epidemiological input to early detection strategies of students at risk of dropout, but they are difficult to target with intervention programs aimed to reduce early school leaving. Future research should consider these observations and focus on alterable mediating factors such as school climate, family functioning or individual coping styles in order to support the development and implementation of effective policies covering all three levels of action: prevention, intervention and compensation.

The present review provides an insight into research in mental well-being and social inclusion and their associations with dropout from VET or secondary education. However, some limitations have been considered. *First*, our inclusion criteria meant that other, potentially relevant literature might not have been considered. One main selection criterion was that the document should contain the words 'mental well-being' or 'social inclusion' in the title. It is possible that studies were dedicated to the topic of mental well-being/social inclusion but did not mention the words in their title and we may have overlooked relevant studies. However, we acknowledge that (as in any systematic review) our inclusion criteria may have led to the exclusion of relevant literature.

*Second*, the definition of dropout differs in the included literature. Since several documents used a proxy to capture dropout, e.g. dropout intentions, non-completion within five years after ending lower secondary school, or educational attainment at a given time in life, there is potential for a degree of incongruence between the term that was reportedly measured in a particular study and the actual items or measures that were used. Articles with a severe lack of conceptual clarity were not included in the review, and we examined the reviewed articles carefully and coded the term according to the information provided. Ultimately, however, we were limited by the varying precision and availability of data in the published articles.

*Third*, the literature review included both a broad general measure and specific measures of mental well-being, which may bring some limitations. The strength of a broad and general mental health measure such as MCS-SF is the reliability and validity of the measure and the fact that the measure covers a broad range of mental health difficulties and can be applied across a variety of settings (Bentley et. al, 2019).

However, mental well-being is a complex, multi-dimensional construct that cannot be properly monitored by an aggregated measure. Thus, in order to monitor mental well-being accurate, measurement tools must take into consideration its multi-dimensional nature, as it is crucial to provide effective interventions (OECD, 2017).

*Finally*, when using the results of the literature review to guide the development of the statistical monitoring tool, it is crucial to be aware of the risk of multicollinearity, as symptoms of school burnout coincide with internalizing and externalizing symptoms. Multicollinearity is a statistical concept where independent variables in a model are correlated, which will result in less reliable statistical inferences (Stubager & Sønderskov, 2011). As the absence of multicollinearity is only a precondition for using linear regression models, it may not bring limitations for the development of the statistical monitoring tool.

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