Aalborg Universitet

Unraveling the patterns of marginalization

Four quantitative studies on students' experience of social marginalization in Danish public schools

Andersen, Martin Brygger

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FOUR QUANTITATIVE STUDIES ON STUDENTS' EXPERIENCE
OF SOCIAL MARGINALIZATION IN DANISH PUBLIC SCHOOLS

BY
MARTIN BRYGGER ANDERSEN

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English summary

In this PhD dissertation, marginalization among students in Danish public schools is examined. The dissertation comprises four original papers, which address the main research question:

> *Which factors are associated with students' experience of social marginalization (in the classroom and/or the school in general) and where should attention be directed in schools to prevent/reduce social marginalization most effectively?*

The research question was targeted in the following manner: First, the concept of marginalization was narrowed by being broken down into two subdimensions: (1) social marginalization and (2) academic marginalization. Based on self-report data of students ($N = 122{,}756$, Grades 4–10) from Program for Learning Management (PLM; 2015–2019), the Social Marginalization Scale (SMS) was formed to measure *experienced* social marginalization, whereby it became possible to estimate the percentage of marginalized students and thus evaluate the scope of the problem (see Paper 1).

The SMS was subsequently included in various SEM models to examine key associations among factors and observed background variables (see Papers 2 and 3). SEM was utilized as this method is ideal for analyzing factor patterns. Moreover, the patterns of social marginalization were examined among the youngest students (Grades 0–3) using a pre-existing scale (CI; Classroom Inclusion) from PLM.

The analyses suggest that roughly 3–4% of the older students (Grades 4–10) experience a high or very high degree of social marginalization. Social marginalization was more widespread at lower grade levels and girls reported more social marginalization on average (see Paper 1). Social marginalization was associated with weak teacher support and a negative classroom environment, and, in addition, the parental community (of the classroom) had a positive, yet small, buffering effect (see Papers 2 and 3). For younger students (Grades 0–3), adaption to school norms was a strong predictor of academic performance. Girls were better at adapting to school norms, partly explaining the gender gap in performance. Students who felt more included in the classroom also reported greater school liking (see Paper 4).

The results indicate that schools can build organizational capacity to effectively reduce social marginalization since social background variables apparently only play a minor role: The strongest statistical correlations were identified between factors *within* schools. In particular, schools could focus on strengthening student–teacher relationships and the classroom environment to effectively tackle social marginalization. Moreover, schools could focus on strengthening the parental community (of the classroom) to buffer exclusionary social processes. Schools could also target their efforts at lower grade levels (Grades 4–6) where social marginalization is more prevalent. In relation to preventing social marginalization among the youngest students (Grades 0–3), the findings suggest that educators should pay attention to children's social skills since adaption ability is a strong predictor of academic performance, classroom inclusion, and school liking.

Dansk resumé

I denne ph.d.-afhandling undersøges social marginalisering blandt elever på danske folkeskoler. Afhandlingen indeholder fire originale artikler, der belyser det overordnede forskningsspørgsmål:

> *Hvilke faktorer er forbundet med elevers oplevelse af social marginalisering (i klasseværelset og/eller skolen generelt), og hvad burde skolerne fokusere på for at forebygge/reducere social marginalisering mest effektivt?*

Forskningsspørgsmålet blev belyst på den følgende måde: Først blev marginaliseringsbegrebet afgrænset og opdelt i to underdimensioner: (1) social marginalisering og (2) faglig marginalisering. Baseret på selvrapporteringsdata fra elever ($N = 122.756$, 4.–10. kl.) fra Program for Læringsledelse (PFL; 2015–2019) blev den Sociale Marginaliseringsskala (SMS) dannet for at måle *selvoplevet* social marginalisering, hvorved det blev muligt at estimere procentdelen af marginaliserede elever og dermed evaluere problemets omfang (jf. Papir 1).

SMS blev efterfølgende inkluderet i forskellige SEM-modeller for at undersøge nøglesammenhænge mellem faktorer og observérbare baggrundsvariable (jf. Papir 2 og 3). SEM blev benyttet, da denne metode er ideel til analyse af mønstre mellem faktorer. Desuden blev marginaliseringsmønstre undersøgt iblandt de yngste elever (0.–3. kl.) med en præeksisterende skala (inklusion i klassen) fra PFL.

Analyserne antyder, at omtrent 3–4% af de ældre elever (4.–10. kl.) oplever en høj eller meget høj grad af social marginalisering. Social marginalisering var mest udbredt på lavere klassetrin, og piger rapporterede i gennemsnit mere social marginalisering (jf. Papir 1). Social marginalisering var forbundet med mindre lærerstøtte og et negativt klasserumsmiljø. Derudover havde klassens forældrefællesskab en positiv, men svag, beskyttende effekt (jf. Papirerne 2 og 3). For yngre elever (0.–3. kl.) var tilpasning til skolens normer en stærk forklarende faktor bag faglige præstationer. Piger havde lettere ved at tilpasse sig skolens normer, hvilket delvist kunne forklare kønsforskelle i faglige præstationer. Elever, der følte sig mere inkluderet i klasseværelset, kunne også bedre lide at gå i skole (jf. Papir 4).

Resultaterne indikerer, at skolerne kan opbygge organisatorisk kapacitet til effektivt at reducere social marginalisering, idet sociale baggrundsvariable kun spiller en mindre rolle: De stærkeste statistiske korrelationer blev fundet imellem faktorer *i* skolerne. Skolerne burde især fokusere på at forbedre lærer-elev-relationer og klasserumsmiljøet for at forebygge social marginalisering effektivt. Desuden burde skolerne fokusere på at styrke forældrenes engagement i klassens forældrefællesskab for at beskytte eleverne imod ekskluderende sociale processer. Skolerne kunne målrette deres indsats til de lavere klassetrin (4.–6. kl.), hvor social marginalisering er mest udbredt. I forhold til at forebygge social marginalisering blandt de mindste elever (0.–3. kl.) tyder resultaterne på, at skolerne bør være opmærksomme på børns sociale færdigheder, da tilpasningsevne er en stærk indikator for faglig præstation, inklusion i klassen og glæden ved at gå i skole.

Acknowledgements

I want to thank the following persons for making this dissertation possible. First, I want to thank my main supervisor, Professor Jacob Brix, for his continuous and relentless support throughout the entire research process. Thank you for trusting in my abilities and for providing me with the opportunity and freedom to conduct research following my own ideas (with some necessary boundaries!).

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Moreover, I want to thank Professor Annette Lorentsen and Associate Professor Lars Bang Jensen for their committed work on Program for Learning Management (PLM). It was exciting and instructive to work alongside fellow PhD students. Without this collaboration, my dissertation would not have been the same.

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I also wish to thank all students, parents, and teachers who made this research possible by participating in PLM's surveys. Without your responses, I would have had nothing to analyze, no findings to report, and no conclusions to draw.

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Hopefully, this dissertation will aid educators, researchers, and practitioners in reducing social marginalization in public schools and thereby aid lonely and marginalized children. Hopefully, the acquired knowledge can aid schools in preventing social marginalization more effectively and thus enhance students' general well-being.

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List of statistical abbreviations

AVE: Average variance extracted

CB-SEM: Covariance-based structural equation modeling

CFA: Confirmatory factor analysis

CI: Classroom Inclusion (scale)

DSWQ: The Danish Student Well-Being Questionnaire

EFA: Exploratory factor analysis

FA: Factor analysis

FIML: Full information maximum likelihood

PLM: Program for Learning Management

SEM: Structural equation modeling

SES: Socioeconomic Status

SMS: Social Marginalization Scale

Note. The above list contains the most common statistical abbreviations (incl. abbreviations of specific surveys and the applied scales) in the dissertation's linking text. All abbreviations are explained throughout the dissertation and its papers.

1 Introducing and framing the problem

This dissertation concerns social marginalization in Danish public schools. From a basic understanding, social marginalization can be defined as the (often painful) experience triggered by rejection and exclusion in school settings (Messiou, 2003, 2012). Still, defining marginalization is a challenging issue (UNESCO, 2010). Due to the concept's elusiveness, this introduction comprises different sections and subsections where the concept of marginalization is narrowed and initially defined in the context of education to clarify the dissertation's scope and focus (the main concept is further discussed in Chapter 3).

The introduction is structured as follows: In Section 1.1, the link between social marginalization and reduced well-being is clarified. Section 1.2 explains the connection between social background and broader forms of marginalization in education. Section 1.3 explains the challenges of defining and operationalizing the term 'marginalization' and unfolds some of its core complexities and highlights certain research areas where more knowledge is needed. In Section 1.4, the main research question is presented, and the research process is outlined in five steps. Subsequently, the key concepts of the main research question are clarified. In addition, a working definition of social marginalization is presented to provide a preliminary understanding of the core concept. In Section 1.5, the empirical data is described, and the main method is explained. Finally, Section 1.6 presents an overview of the structure of the dissertation and the individual papers.

1.1 Social marginalization and reduced well-being

The aim of this section is to clarify the core dimensions of the main concept and to underpin the relevance of the research problem in relation to the three national goals of the Danish public schools.

In modern research, the term 'marginalization' is considered multifaceted and multidimensional (Benjaminsen et al., 2015; Messiou, 2003, 2012, 2019; Qvortrup & Qvortrup, 2018; UNESCO, 2010). Fundamentally, researchers in education often distinguish between academic and social outcomes (Jeynes, 2010; Nordahl, 2018). In relation to marginalization and inclusion, specifically, it is common to distinguish between at least two dimensions: the academic and the social (Angelides & Michaelidou, 2009; Frederiksen, 2015; Messiou, 2003, 2012; Nordahl, 2018; Qvortrup & Qvortrup, 2018). Basically, the academic dimension involves access to the curriculum, participation in the teaching sessions, whether the students' academic abilities are valued, etc., whereas the social dimension concerns the experience of social exclusion and the quality of social relationships in school – from the viewpoint of both students and adults (Messiou, 2003, 2012; Mowat, 2015): for example, teachers, pedagogues, and parents.

Conducting research on social marginalization in Danish public schools is relevant, first of all, because the Danish Ministry of Children and Education (MCE, 2020) states that public schools must strengthen all students' well-being, which is evident from one of the national goals:

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- Public trust and student well-being must be strengthened through respect for professional knowledge and practice.

  Source: MCE (2020); author's translation.

Education research suggests that social marginalization among students in primary and lower secondary education is associated with reduced well-being and psychological pain (Arslan, 2018a; Knoop et al., 2017; Messiou, 2003, 2012; Rasmussen & Due, 2007, 2011, 2019; Søndergaard & Hansen, 2018). Research has found that students who experience victimization, bullying (i.e., extreme marginalization), and/or exclusion in school, nearly always perceive it as emotionally devastating (Rasmussen & Due, 2019; Søndergaard & Hansen, 2018).

This also seems to be the case for youth outside of school. The National Research Center of Welfare in Denmark (SFI[1]) found that marginalized youth typically experience lower well-being (Thomsen, 2016). In addition, a large meta-analysis concluded that loneliness among youth – theoretically connected to the experience of social exclusion – is strongly associated with poor well-being and psychological states of severe depression (Mahon et al., 2006).[2]

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[1] SFI was the former National Research Center of Welfare in Denmark. SFI merged with KORA in 2017 and subsequently changed their name to VIVE.

[2] Of the 95 studies included in this meta-analysis, most applied the UCLA Loneliness Scale (n = 72), which contains questions such as "I lack companionship"; "I feel left out"; "my social relationships are superficial." For more information on this scale see https://psytests.org/interpersonal/uclaen.html

Moreover, pain and lack of well-being can have severe consequences. Marginalization among adolescents is associated with lower levels of emotional well-being and higher levels of distress and can evoke aggressive responses (Derrington & Kendall, 2008; Issmer & Wagner, 2015; Povedano et al., 2015). Thus, marginalization may lead to more bullying and ultimately more school violence, which has been confirmed in a study on social exclusion (Leary et al., 2003).

Another important point is that marginalization negatively impacts students' self-esteem. Socially excluded students do not perceive themselves as part of a larger group, which is why they often feel less valuable (Duru & Arslan, 2014). In fact, evidence suggests that the sense of belonging at school is strongly associated with increased self-esteem (Perry & Lavins-Merillat, 2019) and improved school achievement (Arslan, 2019). Thus, it is possible that preventing or reducing marginalization will naturally lead to better learning conditions (and a healthier school environment) for challenging and improving the skills of students, which is relevant in relation to another national goal:

- Public schools must challenge all students so that they become as skilled as possible.

  Source: MCE (2020); author's translation.

It is well-known that health problems can severely limit the motivation required for learning (Basch, 2011). Consequently, being marginalized might lead to slower academic progress and weaker academic performance. Hence, it is crucial to identify the underlying

mechanisms of social marginalization in public schools in order to develop the organizational capacity to reduce the severity of the problem or prevent it more effectively.

1.2 Social background and marginalization

Research points to a complex web of interconnectedness amongst social background factors and marginalization on various dimensions (e.g., social, economic, educational, and cultural), which can potentially lead to marginalization in education and ultimately in society at a larger scale. Thus, unraveling the complex patterns of marginalization on multiple dimensions is a demanding task (UNESCO, 2010).[3]

Therefore, it is crucial to include social background variables when examining the phenomenon in Danish public schools; for example, the parents' educational level, which is known to have a strong impact on students' academic achievement (Nordahl, 2018). In relation to social background, it is important to ascertain whether students with lower-educated parents are more likely to view themselves as socially marginalized, and whether this perception is associated with weaker academic performance. There is a lack of knowledge on the complex interplay between social, psychological, and academic outcomes, which was evident from the scoping review (see Chapter 5).

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[3] I.e., marginalization on one dimension can increase the risk of marginalization on other dimensions. Hence, it is important to specify which dimension is being investigated to avoid invalid circular or tautological statements.

Unraveling the patterns of marginalization

The importance of solving issues relating to social background and academic achievement is also underlined in one of the national goals:

- Public schools must reduce the influence of social background in relation to academic results.

  Source: MCE (2020); author's translation.

Thus, understanding the relationship between social background and academic results (and how this relates to well-being) is crucial since knowledge on these associations or patterns may assist schools in tackling complex problems and in reaching the current national goals.

In relation to the national goal mentioned above, research by SFI has shown that children of poorly educated parents are more likely to become early dropouts, which is particularly evident among marginalized groups. Not only are marginalized youth more likely to drop out of school early, but half of them also belong to the growing number of NEETs (Not in Employment, Education or Training) as 28-year-olds (Benjaminsen et al., 2015), indicating that marginalization in education can have severe long-term social and economic consequences.

The Danish Center for Social Science Research (VIVE) also concluded that children from resource-weak families perform worse in publics schools on average (Thomsen, 2016), implying that marginalization has long-term academic consequences. Reports from Program for Learning Management (PLM) similarly pointed to large differences in academic achievement depending on social background factors (Jensen et al., 2020; Nordahl, 2018; Qvortrup et al., 2016;).

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Comparing children with the lowest educated parents (basic schooling) to children with the highest educated parents (more than 4 years of tertiary education), the average difference corresponded to two school years of learning (Jensen et al., 2020; Nordahl, 2018).

Even though social background plays a significant role, especially in relation to academic results, Ejrnæs (2010) criticized the view that social problems are inherited (like biological traits), which Gustav Johnson suggested when he coined the popular term 'social heritage' in the 1960s. Ejrnæs argued that, even though some social background factors increase the risk of social problems, we should be careful about stigmatizing certain individuals simply because they belong to groups who are at greater risk of becoming marginalized. He emphasized that most students are in fact so-called 'pattern breakers.'

In alignment with this view, research by SFI indicates that approximately half of the marginalized youth belong to typical middle-class families where the parents are not registered on any known risk indicators. SFI therefore suggested looking elsewhere for plausible explanations on the causes of marginalization (e.g., *within* public institutions such as schools) rather than merely focusing on external factors relating to social background (Benjaminsen et al., 2015).

Likewise, Kyriaki Messiou (2017, 2019), professor of education, argued that researchers and educators should be careful about categorizing certain groups as marginalized as this can result in overlooking truly marginalized individuals, who do not belong to any predetermined category. Researchers should be aware that within any group there might be students who experience that they have nothing in

common with others placed in the same category. Therefore, carrying certain labels (or stigmas) should not be seen as synonymous with marginalization (Messiou, 2012, 2017, 2019).

Furthermore, educators should avoid labeling certain students as 'problematic' as this verbal practice can ultimately result in a self-fulfilling prophecy if these students start internalizing the negative labels, which can form the basis of a severely limited (and limiting) self-identity (Ejrnæs, 2010; Lauchlan & Boyle, 2007; Messiou, 2012).

For the above reasons, both external factors (outside schools) and internal factors (within schools) must be carefully considered since research indicates that social reproduction is not the sole cause of marginalization. Arguably, marginalization can affect *all* students – not just students in certain predefined categories (e.g., students in special schools, ethnic minorities, or students with special educational needs, etc.).

1.3 Unraveling the patterns of marginalization

A main challenge in social science and education research is the lack of consensus on how to define marginalization (Benjaminsen et al., 2015; Messiou, 2019; Mowat, 2015; UNESCO, 2010). In the field of education, the term is often used ambiguously, which is why some researchers consider the concept to be problematically underconceptualized (Messiou, 2019; Mowat, 2015; UNESCO, 2010). This dissertation therefore discusses (and contributes to) how the concept can be defined and operationalized in education research and in general.

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In the (online) Cambridge Dictionary (CD) marginalization is defined as follows: *"To treat someone or something as if they are not important"* (n.d.). Although this definition provides a general understanding of the term, it is unclear what the experience of being marginalized entails and whether the concept is multidimensional.

From a critical rationalist standpoint, Thomsen (2014) argued that studies on marginalization tend to be rooted in fuzzy definitions, which can lead to meaningless and tautological statements (e.g., "marginalization leads to marginalization"). Thus, she called for a more rigorous scientific approach and encouraged the use of transparent definitions as well as consistent and logical, quantitative measures.

This call for research inspired this dissertation, which is why a path was undertaken to explicitly define marginalization, operationalize the construct, and ultimately measure it. De Vaus (2014) explained that an abstract construct should be operationalized by breaking it down into meaningful, measurable subdimensions using concrete indicators. This approach enhances measurement validity because it becomes evident *what* is being measured and *how*.

The scoping review (see Chapter 5) indicates a general lack of quantitative studies on students' experience of marginalization in primary and lower secondary education, which can be labeled 'perceived marginalization.' In fact, no quantitative study explicitly about (experienced) marginalization was identified during the review process. In addition, studies on marginalization in school, or more broadly on school inequality, have almost exclusively been qualitative, which is

evident from earlier dissertations (e.g., Akselvoll, 2016; Frederiksen, 2015; Gilliam, 2009; Lund, 2017; Messiou, 2003).

Although qualitative dissertations (e.g., Akselvoll, 2016; Bentholm, 2017; Frederiksen, 2015; Gilliam, 2009) have provided a theoretical foundation for understanding different aspects of school inequality, marginalization, and inclusion in different Danish school contexts, it is generally unclear whether the identified patterns/tendencies are statistically generalizable – an inherent limitation of case studies that favor depth over width (Bryman, 2012; Kvale & Brinkmann, 2015). Thus, quantitative studies could provide additional insight into the general patterns of marginalization as one cannot generalize statistically from case studies (Bryman, 2012; Kvale & Brinkmann, 2015).

For instance, Akselvoll (2018) claimed that higher-educated parents were generally *more* involved in school collaboration, which she feared could intensify inequality among students, and Gilliam (2009) found that ethnic minority students (boys in particular) *often* act in ways that strengthen their inclusion in the main peer-group at the expense of inclusion in the broader school community, indicating that academic inclusion sometimes leads to social marginalization and vice versa. Hence, it is relevant to explore such complex patterns statistically as these qualitative studies contain so-called quasi-quantitative conclusions implied in the arguments (cf. Bryman, 2012). Such quasi-quantitative statements can be regarded as testable hypotheses.

Thus, multivariate analysis could be conducted based on rigorous hypotheses tests with the purpose of either revealing hidden patterns of marginalization or determining whether previously discovered

patterns/tendencies are statistically generalizable (i.e., whether they apply to the population in general). Moreover, multivariate analysis could provide knowledge on which key factors underlie the phenomenon.

The concept of marginalization is multidimensional, which makes it even more challenging to study. Marginalization in education is often regarded as the result of inequities in other areas of life, such as poverty or discrimination (UNESCO, 2010). Bourdieu (1986) argued that a lack of economic, social, or cultural capital reproduces inequality in society, and that these different forms of capital can be exchanged from one form to the other. Hence, from a multidimensional understanding, marginalization is more than an outcome, which is why it must be jointly examined as a *predictor of outcomes.*

In summary, there is a need for research that illuminates the complex patterns of marginalization, for instance, by clarifying and explaining how key variables are interrelated and how marginalization is predicted by key background variables (e.g., the parents' educational level) and how marginalization predicts other outcomes (e.g., academic performance). Knowledge on these complex patterns of marginalization may assist educators and schools in tackling the issue more effectively and thereby in reaching the current national educational goals (MCE, 2020). Specifically, research on students' experience of social marginalization is needed as it is unclear whether students who are considered socially marginalized by others in fact *feel* socially marginalized (Mowat, 2015; Thyrring et al., 2016). As such, it is key to highlight the students' subjective experience.

1.4 The main research question

The overarching research question of this dissertation is:

> *Which factors are associated with students' experience of social marginalization (in the classroom and/or the school in general) and where should attention be directed in schools to prevent/reduce social marginalization most effectively?*

1.4.1 Clarifying the dissertation's purpose and process

Based on the main research question, this dissertation's purpose and process can be conceptualized and ordered into five main steps:

(1) Define marginalization and break down the abstract concept into concrete and measurable subdimensions.

(2) Develop an instrument for measuring key dimensions and/or aspects of marginalization.

(3) Measure (or estimate) the percentage of students who experience social marginalization.

(4) Identify crucial social and academic factors associated with social marginalization.

(5) Interpret the data and identify possible causal structures (i.e., mechanisms) that underlie significant variable relations.

To achieve the first step, the notion of marginalization was investigated based on relevant scientific literature in education (e.g.,

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Messiou, 2003, 2012; Mowat, 2015; Nordahl, 2018; Qvortrup & Qvortrup, 2018; Thyrring et al., 2016; UNESCO, 2010) and more broadly in social science (e.g., Antonovsky, 1956; Benjaminsen et al., 2015; Johnston, 1976; Park, 1928; Stonequist, 1937). The theoretical background (Chapter 3) and the scoping review (Chapter 5) argues that it is crucial to define and delineate the concept of marginalization to make it measurable. From a quantitative understanding, it is crucial that hypotheses and predictions are concrete and measurable (Field, 2018). By descending *"the ladder of abstraction"* (de Vaus, 2014, p. 45), a social dimension of marginalization was identified in the PLM data using exploratory factor analysis (EFA) – an inductive approach for discovering empirical patterns (Romani, 2017). Messiou's (2003) typology of marginalization was also applied to identify the fundamental perspectives and dimensions of the concept (cf. Mowat, 2015).

At the second step, an original scale for measuring social marginalization of students (Grades 4–10) was developed: the Social Marginalization Scale (SMS; Andersen, 2021a; see Paper 1). The statistical validity and reliability of the SMS was secured before proceeding. Since students in Grades 0–3 answered less (and simpler) survey questions than students in Grades 4–10, the Classroom Inclusion (CI) Scale was utilized to measure social marginalization of students attending the first years of primary school (see Paper 4).

At the third step, the SMS was utilized to estimate the percentage of students who experienced social marginalization in the years 2015–2019 and to predict how many will experience social marginalization in the future given similar sociocultural circumstances (see Paper 1).

At the fourth step, the SMS was included in structural equation models (SEM) to study how social marginalization relates to other factors and manifest variables (see Papers 2–3 and Section 1.5.2). Key factors and critical control variables were identified from existing research and subsequently tested in SEM models through null hypothesis significance testing (Byrne, 2016). In addition, a SEM analysis was conducted to examine social marginalization among the youngest students (Grades 0–3) in relation to both academic and social outcomes (see Paper 4). Among other things, the aim was to identify crucial factors that may increase the risk of social marginalization for specific groups. In all the SEM analyses, the standardized effect sizes (spec. R^2)[4] were assessed and ranked to identify the most effective means of reducing social marginalization in public schools.[5]

At the fifth and final step, the results were interpreted, and conclusions were drawn from a critical realist stance through the interpretative process of retroduction and by contemplating the embedded limitations of the social context and the generality of the findings.

1.4.2 Concept clarification and definitions

In this section, the key concepts of the main research question are explained and defined.

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[4] R^2: R squared is a statistical measure that represents the proportion of the variance for a dependent variable that is explained by an independent variable (Field, 2018).

[5] All standardized effect sizes (beta-coefficients: β) were reported to allow for meaningful comparisons with other studies (Tabachnick & Fidell, 2014).

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Factors: latent variables

In this section, it is explained what is meant by 'factor' in statistical terms as this is different from the common usage in everyday language. Moreover, is it explained what a reflective model is, why this type of measurement model was chosen to assess marginalization, and what the implications are of this choice in terms of model validity.

In statistical terms, factors are constructs that cannot be directly observed in the physical or social world, which is why they are typically measured *indirectly* through a set of observable indicators (Byrne, 2016; Kline, 2016).

It is crucial to define whether factors are *reflective* (i.e., scales) or *formative* (i.e., indices; cf. Hair et al., 2019; Romani, 2017). A reflective factor is based on the assumptions that (1) the latent construct *causes* change in the measured variables, and (2) that measurement error results in an inability to fully predict the measured variables. Formative factors, in contrast, imply that (1) a set of measured variables together form a concept, and (2) that the measured variables are unable to fully capture the variance in a scale. A key assumption is that formative factors are not latent (Hair et al., 2019, Romani, 2017).

In Figure 1.1, the conceptual difference between reflective and formative models is graphically depicted.

Figure 1.1 Reflective vs formative models

Reflective Construct   Formative Construct
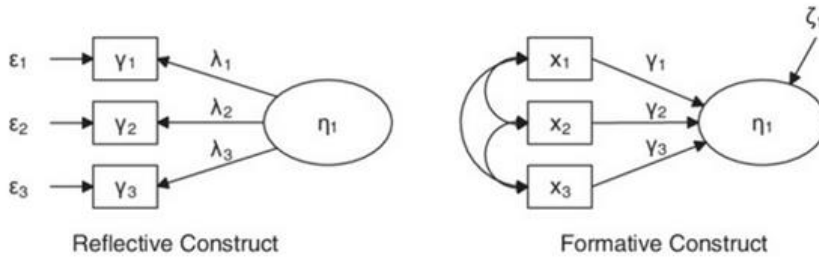
Source: Roberts et al. (2010).

A main characteristic of a reflective construct is that its indicators are *interchangeable* since they are thought of as *causes* of the same underlying construct. Hence, indicators of reflective models are expected to correlate, which is why internal consistency is considered crucial: *"[...] indicators positively associated with the same concept must be positively correlated to each other"* (Simonetto, 2012, p. 454).

If a redundant indicator is removed from a reflective model, it does not alter the interpretation of the model if there are sufficient indicators (typically three or more; Hair et al., 2019; Simonetto, 2012). In contrast, a formative model contains indicators that measure unique aspects of the construct, which is why its indicators are not expected to correlate (Hair et al., 2019; Romani, 2017; Simonetto, 2012). Removing indicators of a formative construct will thus invalidate the measure as these are based on deduction (Romani, 2017; Simonetto, 2012). It is unfeasible to define strict rules on choosing between formative and reflective models, which is why researchers must jointly consider the construct of interest and its observed measures

Introduction

(Simonetto, 2012). Wilcox et al. (2008) argued that it is not possible to determine *a priori* whether a given construct is inherently formative or reflective, but often the observed measures determine its nature.

In this dissertation, marginalization is conceptualized as a reflective factor for two main reasons: (1) It is not possible to directly observe the target construct or phenomenon as an external object, although its *consequences* or *behavioral manifestations* are sometimes observable.[6] (2) Reflective models have traditionally been preferred in social science when dealing with perceptual measures or psychological concepts or phenomena (Hair et al., 2019). As a central contribution of this dissertation, a new scale was therefore formed to measure social marginalization based on a reflective construct.

When inspecting the analyzed data, it became increasingly clear that the observed indicators of all measured constructs were interchangeable and possessed a high degree of internal consistency, which is why reflective models were constructed and subsequently analyzed in AMOS (v. 26 and 27) – a software program designed to handle covariance-based SEM (CB-SEM; Byrne, 2016).

It is not explicitly stated in the main research question whether *social* or *psychological* factors are examined. All included factors are based on subjective (ordinal) measures employed in a specific social

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[6] This limitation became apparent to Messiou (2003) who attempted to count the number of marginalized students in a primary school in Cyprus. She realized that marginalization is not always observable, which led to her typology that contains both observable and hidden forms of marginalization (see Section 3.6).

context; hence, they are considered *psychosocial* from an ontological viewpoint. In the (online) Oxford English Dictionary (OED), the term psychosocial is defined as *"[...] pertaining to the influence of social factors on an individual's mind or behavior, and to the interrelation of behavioral and social factors"* (OED, 2021a).

Although interrelations among psychological and social factors are examined in this dissertation, its content is mainly sociological as the aim is to explain marginalization among groups rather than individual behavior (cf. Mitchell, 2009).

Students: the statistical population

In this dissertation, the statistical population is students in Danish public schools (incl. special schools and special classes,). In Papers 1–3, the population is students in Grades 4–10 (ages 10–16). In Paper 4, the population is students in Grades 0–3 (ages 6–9).

From a critical realist position, generalizations outside of these age groups and school types (e.g., comparisons with school systems in other countries) should be performed with caution (cf. Jespersen, 2018). According to general statistical theory, extrapolating based on results without empirical support can lead to false claims (Clement & Ingemann, 2011). However, even though this dissertation´s results may not be applicable in other contexts (i.e., school systems in other countries), specific hypotheses could be formed based on its results and examined in other school contexts.

Introduction

Social marginalization

Messiou (2003) explained that social marginalization is fundamentally an experience of feeling rejected or excluded:

> At the social level children might experience marginalisation in a school when they are rejected by their peers or even denied the right of friendship. (p. 44)

This concise definition emphasizes the social dimension and children's subjective experience of marginalization and rejection, which may occur in a hostile social environment. From this definition, marginalization is not just a social phenomenon but also connected to the subjective or psychological experience of peer rejection and victimization. The above definition implies that marginalization is primarily caused by external factors and imposed on the individual by others.

Qvortrup and Qvortrup (2018) explained that whether psychological inclusion or marginalization occurs depends on the social context. Therefore, all measures in this dissertation are explained in relation to specific contexts (e.g., the classroom or the school in general) to enhance conceptual validity. Generalizations outside of the measured school contexts (incl. other countries) should be performed with care.

Messiou's (2003) basic definition of social marginalization was used as an anchor throughout the research process to secure *face validity* (see Bryman, 2012), but gradually a need arose to gather various understandings into a single definition presented below.

A psychosocial working definition of social marginalization

With inspiration from Messiou's (2003, p. 44) definition of social marginalization, along with classical definitions of loneliness (Asher & Paquette, 2003, p. 75; Perlman & Peplau, 1981) and common dictionary definitions (Lexico, 2021), I formulated the following working definition of (experienced or perceived) social marginalization:

> *Social marginalization is the cognitive and emotional aware-ness (either conscious or unconscious) of a deficiency in one's social and personal relationships (esp. the sense of be-ing regarded/treated as unimportant) that is generally ac-companied by negative emotions of sadness, isolation, lone-liness, and longing. It is a subjective experience that emerges through the interplay between the marginalized in-dividual (or group) and the surrounding environment.*

This expands the definition of social marginalization offered by Messiou (2003, p. 44) while being compatible with her typology that stresses that students can experience marginalization either *consciously* or *unconsciously*.[7] It emphasizes the *subjective experience* of marginalization rather than the *act* of marginalization, distinguishing it from common dictionary definitions (see Section 3.6). The emphasis on the subjective experience places this definition near the concept

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[7] I argue that Messiou's (2003) typology can be graphically conceptualized by utiliz-ing the Johari Window Model (Luft & Ingham, 1955; see Sections 3.6.2–3.6.3).

'psychological inclusion' in the so-called 'matrix definition of inclusion' (Nordahl; 2018; Qvortrup & Qvortrup, 2018; Thyrring et al., 2016; see Section 3.4.1), which implies that marginalization is a *process* between exclusion and inclusion. In social science, some researchers also view marginalization as a process between exclusion and inclusion (Mortensen & Larsen, 2009; Benjaminsen et al., 2015).

A core element of the above definition was derived from Perlman and Peplau (1981), who viewed loneliness as *"a discrepancy between one's desired and achieved levels of social relations"* (p. 32). This element is derived from cognitive discrepancy theory, which suggests that an individual's perception of relationships is mediated by his/her beliefs about the nature and number of relationships that is needed and considered ideal. In my view, this element is crucial in relation to marginalization as well. First, according to common loneliness theory, people can be *physically alone* without being *emotionally lonely* (Perlman & Peplau, 1981). Researchers in the field of education have similarly found that *physical inclusion* does not automatically lead to *psychological inclusion* (Bentholm, 2017; Mordal & Strømstad, 1998; Nordahl, 2018; Qvortrup & Qvortrup, 2018), implying that marginalization (like loneliness) concerns both social conditions and psychological perceptions thereof (i.e., that the psychological and social dimension are not identical). Secondly, researchers have argued that all humans have an innate desire for social bonding and a basic need to belong (Baumeister & Leary, 1995). Antonovsky (1956) stressed that the desire to become a part of the dominant culture/subculture is fundamental to marginalization as the marginalized group or individual is

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pulled by the superior reward potential offered. Therefore, I argue that the negative emotional response to a discrepancy between desired and achieved levels of social contact is also fundamental to perceived marginalization, which could explain the discrepancy observed by Messiou (2003) where some students were apparently marginalized without viewing themselves as such (see Section 3.6).[8]

An advantage of this conceptualization is that it considers both cognitive and emotional aspects as well as the individual's capacity to cope with marginalization (cf. Perlman & Peplau, 1981). Thus, including this element in the definition stresses that marginalization emerges through the *interplay* between the individual and the surrounding environment, which rejuvenates the idea from classic conceptualizations (e.g., Antonovsky, 1956; Goldberg, 1941; Stonequist, 1937) that the individual's ability to cope with adversity is crucial. In this manner, it is inaccurate to assume that marginalization is only caused by an external force over which the individual has no possible influence.

Another core component in the proposed definition is that social marginalization often manifests as a negative emotional and psychological experience. Virtually by definition, social marginalization is an unpleasant experience (Messiou, 2003, 2012). Although it can be argued that marginalization leads to (i.e., causes) reduced well-being

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[8] As a result of this theoretical viewpoint in combination with the statistical analyses performed (see Paper 1), the item 'Do you feel lonely in school' was measured as part of the Social Marginalization Scale (SMS; Andersen, 2021a) to capture the emotional component of being socially isolated or excluded.

(cf. Knoop et al., 2017), the statistical analyses of this dissertation strongly indicate that well-being should be measured as part of the marginalization construct, rather than as two separate constructs (see Papers 1–3), to secure discriminant validity.

Likewise, early theoretical conceptualizations highlighted the negative psychological consequences and manifestations of marginalization (Antonovsky, 1956; Goldberg, 1941; Park, 1928; Stonequist, 1937). Social marginalization is often considered an unfortunate and painful condition that is imposed on the individual by others, which is why it is regarded as an unwanted process for both the individual and society as a whole (Madsen, 2005; Thomsen, 2014).

However, like Johnston (1976), I argue that a *combination of a sociological and psychological perspective* is optimal for understanding marginalization. Thus, the presented working definition could be considered psychosocial as it encompasses both psychological and social aspects without claiming that marginalization is caused from either outside or inside the individual (or group) but rather in the *interplay* between the individual (or group) and the social world (or society).

Nevertheless, this psychosociological working definition should not be misused to stigmatize or place blame on specific students. Rather, it has the potential to critically assess in what ways marginalization is caused by or associated with both external and intrapersonal factors and structures, including the interaction between these.

This working definition is relevant to bear in mind when discussing plausible generative mechanisms (Chapter 8) since differences in

experienced social marginalization may reflect issues inherent in the social environment as well as divergent needs and desires of individuals.

1.5 Empirical data and method

In order to provide a general understanding of the foundation for this article-based dissertation, the following subsections present the survey data as well as the main methods applied.[9]

1.5.1 Program for Learning Management

In this dissertation, survey data from Program for Learning Management (PLM) are analyzed. PLM consisted of a partnership between the Laboratory of Research-Based School Development from Aalborg University, Center for Public Competence Development, and 13 municipalities (Qvortrup et al., 2016).[10] As part of this program, three huge cross-sectional surveys were conducted in 2015, 2017, and 2019 on more than 200 schools. Students (Grades 0–10), parents, teachers, class teachers, pedagogues, and school managements participated.

The PLM dataset is presently the largest in Danish educational history – covering roughly 10% of Denmark's school population (Nordahl 2018; Qvortrup et al., 2016). The data were collected in the

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[9] The method and the data are described in each paper in detail.

[10] The A.P. Moeller Foundation funded the project, which was part of the historic DKK 1 billion donation to Danish public schools (Qvortrup et al., 2016).

months of September and October to reduce random effects (e.g., effects of seasonality), and thus to allow for valid cross comparisons (Qvortrup et al., 2016). All students (and their teachers, parents, etc.) were invited to participate – randomization was therefore unnecessary. As 13 municipalities participated, the samples can be considered representative for the Danish (public) school system (Nordahl, 2018).

The cross-sectional surveys from PLM have previously been analyzed in three reports (Jensen et al., 2020; Nordahl, 2018; Qvortrup et al., 2016). However, in this dissertation the patterns of marginalization are investigated using SEM analysis, including both exploratory and confirmatory factor analysis, which has not been done before as the aforementioned reports mostly focused on bivariate analysis.

1.5.2 Structural equation modeling

As the primary purpose of this dissertation is to reveal and provide possible explanations to hidden patterns of marginalization, and to identify key factors (i.e., latent variables) and manifest variables (i.e., single-item constructs) associated with marginalization, structural equation modeling (SEM) is utilized as the core research method.[11]

First of all, the PLM data comprise numerous factors based on responses from multiple groups, which is ideal for SEM analysis (Byrne, 2016; Podsakoff et al., 2003; Kline, 2016). By using multiple

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[11] The specific factors, variables, and underlying hypotheses are outlined and explained in greater detail in each paper of the dissertation.

respondent groups, the risk of common methods bias (CMB) is significantly reduced (Podsakoff et al., 2003). Thus, the PLM data provide a unique opportunity for measuring complex associations among factors without increasing the risk of CMB, which is likely to strengthen measurement validity and thus reliability of the proposed models.

Moreover, SEM is considered superior to traditional, multivariate linear methods when analyzing factor relationships because this approach adjusts for random error variance resulting in more accurate parameter estimates (Byrne, 2016). Another advantage of SEM is that marginalization can be studied as both an outcome and a predictor *in a single model*, which is something that cannot be achieved with traditional regression analysis or even with multilevel linear modeling.[12]

Analyzing marginalization as both a predictor and an outcome has not been attempted previously on the PLM data (cf. Jensen et al., 2020; Nordahl, 2018; Qvortrup et al., 2016) and only to a small extent with the Danish Student Well-Being Questionnaire (DSWQ; e.g., Knoop et al., 2017), which is why this arguably represents a knowledge gap based on the current, available data.

Finally, SEM produces standardized correlation coefficients that indicate the strength of variable associations (incl. direct, indirect, and total effects). By ranking effects as small, moderate, and large (cf. Field, 2018), SEM may provide valuable insight into the strength of

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[12] Multilevel linear modeling was considered to account for clustering effects and differences between schools (see Appendix C: marginalization across schools).

patterns, which may assist schools in prioritizing practices with the largest expected impact in terms reducing social marginalization.[13]

1.6 The dissertation's structure

In the following sections, it is briefly explained how the four papers of this article-based dissertation relate to the main topic and the overarching research question, and how the linking text is divided into three parts comprising nine chapters.

1.6.1 Papers 1–4: different approaches and angles

This dissertation contains four distinct quantitative studies involving several perspectives on social marginalization of students (Grades 0–10, ages 6–16) in Danish public schools. Through the specific research questions and hypotheses of each paper, the overarching research question was addressed from multiple perspectives based on responses from three groups: (1) students (Grades 0–10), (2) parents, and (3) class teachers. Using multivariate methods, different research questions and hypotheses, the phenomenon was targeted from several angles to achieve a fuller view and understanding. The PLM data (2015–2019) were analyzed to assess both the problem's scope and to uncover hidden social and psychological factors (i.e., generative mechanisms or causal structures) associated with social marginalization.

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[13] The standardized effect sizes (beta-coefficients: β) were reported in the SEM analyses to allow for comparison with other studies (Tabachnick & Fidell, 2014).

In Figure 1.2, it is visualized how Papers 1–4 relate to the main topic. Since different methods were applied on different variables, the individual studies resulted in both unique and overlapping findings (illustrated by the intersecting circles). The bottom cylinder represents the dissertation's philosophical foundation: critical realism.

Figure 1.2 The overarching research area and the papers' foci
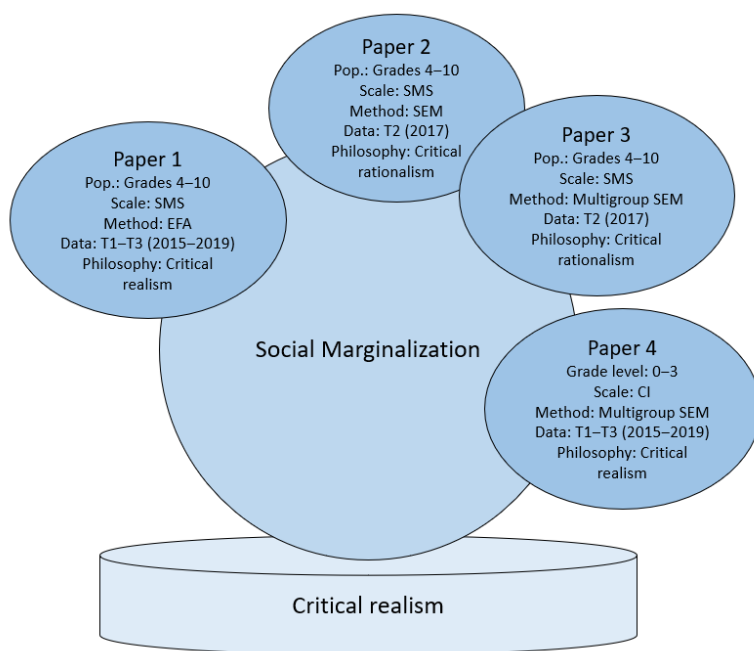
Note. The figure displays a general overview of the dissertation's papers. It displays the philosophical foundation of the dissertation (the linking text). The general research area is represented by the large circle in the middle; the "orbiting" ellipses represent the individual studies. The main population is students in Danish public schools (Grades 0–10: spec. from kindergarten to 10th grade). Papers 1–4 cover central aspects of social marginalization. Papers 2 and 3 contain the largest overlap in terms of method, data, and hypotheses. Paper 4 applies the Classroom Inclusion (CI)

scale directly from PLM while the SMS (original scale) is utilized to measure marginalization and its patterns in Papers 1–3.

In this dissertation's papers, core ideas are applied from both critical realism (Papers 1 and 4) and critical rationalism (Papers 2 and 3).

However, the main, encompassing philosophy of science in this dissertation is critical realism (i.e., transcendent realism), which encompasses inductive and abductive reasoning as well as retroduction (Bhaskar, 1975).[14]

1.6.2 Overview of the dissertation's chapters

This dissertation is divided into three main parts: The first part contains the theoretical and empirical background (Chapters 1–5). The second part contains the papers (Chapter 6) while the third part contains the results, the discussion, and the conclusion (Chapters 7–9).

Chapter 1 describes the background, the general method, data material, and the dissertation's core purpose. In Chapter 2, the social context is described, and relevant research is introduced. In Chapter 3, the concept of marginalization is explored from various theoretical angles to identify and highlight key dimensions, which are used to operationalize the concept in the dissertation's four studies. Chapter 4 outlines

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[14] Bhaskar (1975) distinguishes between three fundamental philosophical positions: (1) Empiricism (scientific knowledge is fact), (2) transcendent idealism (reality is a construction of the human mind), (3) transcendent realism (structures and laws do not depend on thought, but researchers can create models that *approximate* reality).

the general philosophy of science (incl. methodological considerations). Chapter 5 documents the systematic search strategy (e.g., keywords, databases, and relevant search results), along with the overall results of the scoping review, including an account of the general state-of-the-art. In Chapter 6, the dissertation's four papers are placed, each of which contains a comprehensive method section. Chapter 7 presents the key statistical results of the four quantitative studies. In Chapter 8, the results are discussed in relation to the reviewed research and relevant theory. In addition, theoretical and methodological limitations of the studies are discussed. In Chapter 9, the dissertation's conclusion follows, which highlights the theoretical, methodological, and empirical contributions.

The findings outline how schools can effectively prevent/reduce marginalization *in general* without pointing to specific solutions as these are considered highly dependent on the social context in each school (cf. Messiou, 2012), which is also underlined through the critical realist stance. Finally, some general recommendations and directions for future research are proposed.

2 The Danish educational context

Since the social context represents an inherent part and limitation of any study according to critical realism (Jespersen, 2018), the Danish educational context is described in this chapter.

The United Nations Educational, Scientific, and Cultural Organization (UNESCO, 2010) underlined the importance of both national and subnational contexts, implying that research findings are always contextual and thus somewhat dependent on the unique conditions of the education system in a particular country. The social context (incl. the political) is also essential from a critical realist view, which suggests that transcendent mechanisms dwell in the deeper layers of reality, which are sometimes triggered depending on the social or organizational context (Jespersen, 2018; Kringelum & Brix, 2021).

In Section 2.1, the Salamanca Treaty (UN, 1994) – a precursor of the Danish Inclusion Law (2012) – is explained to provide a basic understanding of current inclusion policies in Denmark. In Section 2.2, the national goals of the Ministry of Children and Education (MCE, 2020) are described. In Section 2.3, the declining popularity of Danish public schools is documented. In Section 2.4, relevant survey data and empirical research is presented on the Danish educational context. Lastly, Section 2.5 summarizes the chapter's key points.

2.1 The Salamanca Treaty

In recent years increased focus has been placed on cultivating inclusive schools. New policies have been implemented to relocate more children into regular classes from special schools, special classes, or other segregated offers. The aim of including more students into regular classes is formally connected to the United Nation's (UN, 2011) formulation of human rights for handicapped.

Denmark has officially agreed to follow the Salamanca Treaty (UN, 1994), which states that *all* children must have equal rights to receive normal education no matter their condition, abilities, or qualifications (i.e., inclusion should be the norm, not the exception).

The Salamanca Treaty states:

> *Regular schools with this inclusive orientation are the most effective means of combating discriminatory attitudes, creating welcoming communities, building an inclusive society, and achieving education for all; moreover, they provide an effective education to the majority of children and improve the efficiency and ultimately the cost effectiveness of the entire education system.[15] (UN, 1994, p. 9)*

The aim of promoting inclusive education is inextricably linked to the

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[15] http://www.csie.org.uk/inclusion/unesco-salamanca.shtml.

international strategy of fostering a more inclusive society with greater cost-effectiveness. The Danish government enacted the Inclusion Law in 2012, which originally stated that 96% of all students must attend regular schools or classes. Even though the 96% rule was officially abandoned in 2016 (MCE, 2016), more students were relocated (i.e., included physically; cf. Qvortrup & Qvortrup, 2018) into regular schools in the first years after the Inclusion Law was passed. In 2019/2020, 94.2% of the students (Grades 0–10) were included in the regular teaching sessions in Danish public schools (MCE, 2021b).[16] In the school year 2019/2020, the inclusion degree was 96.9% for girls and 91.8% for boys in Grades 0–10 (MCE, 2021b).

According to the Salamanca Treaty, inclusion is not only for students with special educational needs but for *all* students (UN, 1994). Therefore, this dissertation does not focus solely on students with special educational needs, but rather it seeks to assess, based on empirical evidence, whether students in general *feel* included: The subjective experience of inclusion (i.e., the child perspective) is a key component according to modern theory in education (Mowat, 2015; Nordahl, 2018; Qvortrup & Qvortrup, 2018; Thyrring et al., 2016).

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[16] In Danish public schools, the degree of inclusion has declined since it topped at 95.1% in 2014/2015. Thus, the 96% goal was never reached (MCE, 2021b).

2.2 The national goals

The Ministry of Children and Education (MCE) has formulated three national goals to improve Danish public schools:

1. Public schools must challenge all students so that they become as skilled as possible.
2. Public schools must reduce the influence of social background in relation to academic results.
3. Public trust and student well-being must be strengthened through respect for professional knowledge and practice.

   Source: MCE (2020); author's translation.

As evident from the above statements, promoting inclusive education is considered crucial for strengthening both academic achievement and student well-being. In the third goal, parents are indirectly referred to in relation to "public trust," which is deemed vital to strengthen along with students' general well-being.

Four quantifiable goals are based on the three national goals:

1. At least 80% of the students in public schools should be proficient in reading and math when measured in national tests.[17]

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[17] On October 29, 2021, leading political parties decided to formally replace the former (adaptive) national tests and implement a new assessment and evaluation system in Danish public schools (MCE, 2021c).

2. The percentage of the most proficient students must increase every year.

3. The percentage of students with poor test results in reading and math must decrease every year.

4. The well-being of every student must be increased.

Source: MCE (2020); author's translation.

In this dissertation reduced well-being is considered an aspect (or symptom) of social marginalization connected to the third national goal and the fourth quantifiable goal, which states that every student's well-being must be improved in Danish public schools.

The statistical relationship between social marginalization and academic performance is also explored in this dissertation, which could be relevant in terms of aiding both proficient and struggling students.

2.3 The declining popularity of public schools

In Denmark, parents can freely choose where their children should receive basic schooling. Most parents choose the public school ('folkeskolen'), but an increasing number enroll their children in private schools ('privatskoler') and private independent schools ('friskoler').[18] Although this cannot be critiqued at an individual basis, this tendency is likely to reproduce social inequality since a greater

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[18] Since these respective school types only differ in terms of historic and cultural variations differences but are identical according to Danish legislation, the term 'private school' is used to refer to both private schools and private independent schools.

proportion of highly educated parents from middle to upper classes favor private schools.

There are concerning indications that public trust in the public school system has declined in recent years, which is considered a central political challenge. Therefore, parents' school choice may reflect a cultural tendency that is gaining momentum. Register data clearly reveal this downward trend of Danish public schools.

Figure 2.1 Students in Danish public and private schools, 2007–2020
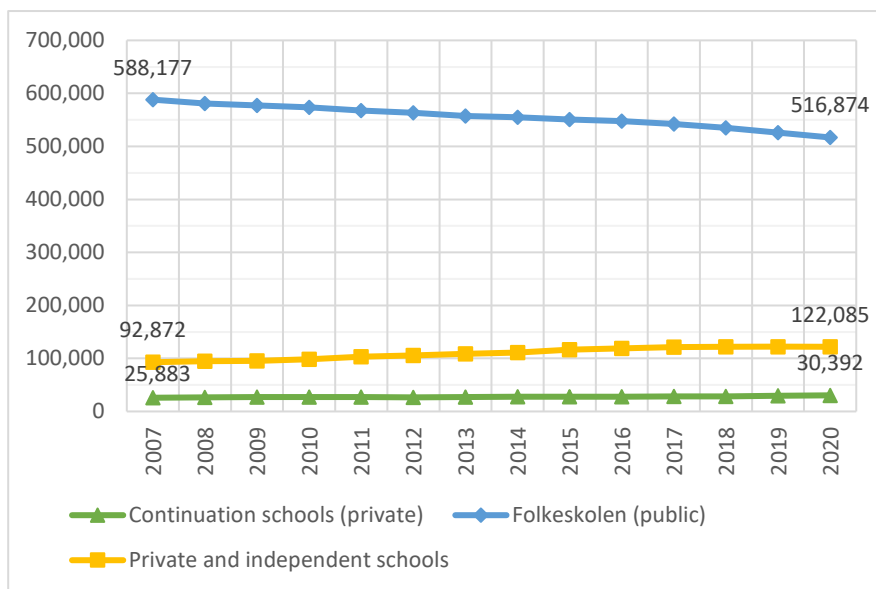
Note. School types with less than 10,000 students nationwide were excluded (e.g., special schools for children and public youth schools). Thus, only the three largest school types are shown in the graph. *Source:* Statistics Denmark (2021).

As Figure 2.1 shows, the total number of students in Danish public schools has declined steadily since 2007. In 2020 approximately

517,000 attended 'folkeskolen' while more than 150,000 students attended private schools or continuation schools. Private schools grew 28% in a period of 10 years (Holm, 2018).

Growing dissatisfaction among parents could be a driving force behind this cultural tendency. According to a recent survey, nearly 50% of the parents had chosen private schools because they were dissatisfied with the quality of public schools, including the quality of the teaching and the academic level (Holm, 2018).

Some politicians worry that a growing number of parents from strong socioeconomic positions will favor private schools while disadvantaged parents are forced to choose public schools out of sheer necessity (Oguz, 2017). Consequently, the negative effects of social heritage could become intensified, resulting in greater marginalization in public schools. According to Allerup (2017) quantitative data widely support the view that private schools are less burdened by the negative effects of social heritage. In public schools more fights occur, more bullying, and the students generally report lower well-being.

A recent analysis by the Economic Council of the Labor Movement documented that Denmark is one of the OECD countries where most children attend private schools (Pihl, 2019). In Denmark, about 17% of the children start in private schools in 1st grade: Only in Great Britain, Spain, and Belgium a higher percentage of children attend private schools (Pihl, 2019). More than 200 public schools have closed since 2007, which has possibly accelerated this development (Pihl, 2019).

In recent years, it has therefore become a central political challenge to strengthen parents' trust in the public school system to tackle

emerging social and economic issues. Countering marginalization in public schools may be a necessary step to increase public trust.

2.4 The Danish Student Well-Being Questionnaire

The Danish Student Well-Being Questionnaire (DSWQ) is the largest survey on student well-being in Denmark. It has been conducted annually since spring 2015 (MCE, 2021a).

The DSWQ provides a historical opportunity to assess well-being in public schools as more data are available on public schools today than earlier in history (Knoop et al., 2017). Using these data, researchers can analyze the national level, municipal level, school level, and even the classroom level of individual schools.

2.4.1 School belongingness, inclusion, and well-being

The Danish Centre of Educational Environment (DCUM) conducted an analysis based on the DSWQ, which suggested that the experience of belonging to a group (i.e., feeling socially included) is vital for students' well-being:

We see a much greater proportion of students with a high degree of well-being among students with a greater sense of belonging. [19] (Knoop et al., 2017, p. 56; author's translation)

Knoop et al. (2017) thus confirmed the link between the sense of belonging and well-being found in several international studies (Arslan, 2018a, 2018b; Perkins et al., 2011; Vaz et al., 2014), suggesting that social inclusion or greater levels of social acceptance will likely increase student well-being in Danish public schools.

Similarly, weak school belongingness and social exclusion has been found to increase the risk of many behavioral or psychological problems and negative social outcomes in school settings, including the risk of early school leaving (e.g., Bond et al., 2007; Booker, 2006).

2.4.2 Social well-being

In the following, data from the DSWQ are presented to highlight the percentage of students who experience a low degree of social well-being in Danish schools. This may give an impression on what to expect in relation to measures of marginalization in a Danish school context, which are presented in the papers of this dissertation.

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[19] The Danish word 'fællesskabsfølelse' was translated into 'sense of belonging' – a term that is often used in international research to describe the subjective feeling of connectedness to the school community (e.g., Arslan & Duru, 2017).

Figure 2.2 Social Well-Being of students (2019/2020)
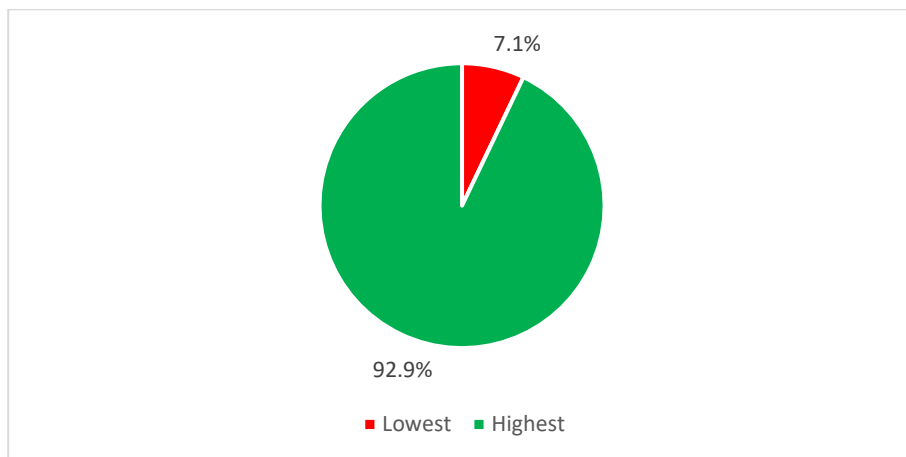
Figure 2.2 illustrates the percentage of students (Grades 4–10) nationwide who had the highest and lowest degree of social well-being in the school year 2019/2020. Of the students, 7.1% had the lowest degree of social well-being, whereas 92.9% had the highest degree of social well-being. Knoop et al. (2017) concluded that general well-being in Danish public schools is high on average. Still, 7.1% of the number of students in the school year 2019/2020 was equal to 29,136.[21]

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[20] https://uddannelsesstatistik.dk/Pages/Reports/1774.aspx

[21] In the school year 2019/2020, 410,362 students were enrolled in public schools (Grades 4–9). https://uddannelsesstatistik.dk/Pages/Reports/1683.aspx

Presuming that well-being and the sense of inclusion are connected (and that low well-being is therefore connected to the sense of exclusion), as suggested by Knoop et al. (2017), these results indicate that less than 1 of 10 students are marginalized to a high extent.

Admittedly, this method is quite crude as it does not highlight specific student groups who are at heightened risk of experiencing reduced well-being. However, it delivers a preliminary gauge, or a point of departure, from which the results of this dissertation can be interpreted and discussed.

2.4.3 Loneliness – an aspect of social well-being

As evident from the Social Well-being Scale in the DSQW (cf. uddannelsesstatistik.dk), it contains a single item for measuring loneliness. Similarly, loneliness is considered an aspect of social well-being in PLM (Qvortrup et al., 2016; Nordahl, 2018, Jensen et al., 2020), which is strongly associated with depression and even suicidal tendencies (Lasgaard et al., 2011; Masi et al., 2011).[22]

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[22] Consequently, the Social Marginalization Scale (SMS) presented in this dissertation contains a single item on loneliness (see Table 8.1). The inclusion of this item was found to increase the scale's measurement validity, which was initially established using exploratory factor analysis (see Paper 1).

Figure 2.3 Do you feel lonely? (2019/2020)
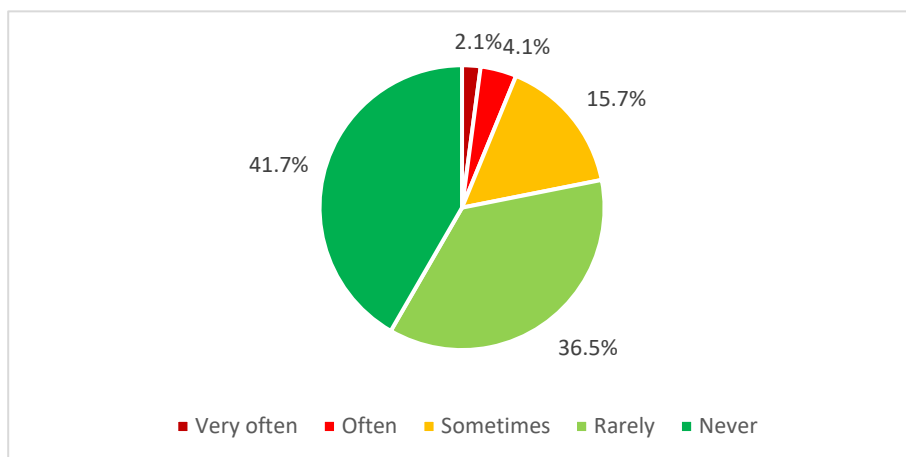
As Figure 2.3 shows, 6.2% of the students in the school year 2019/2020 answered that they feel lonely 'often' or 'very often' while 41.7% answered 'never.' Of the boys, 51.9% answered that they never feel lonely, whereas the same applied to 30.9% of the girls. Hence, it is apparent that girls report loneliness to a higher extent than boys. These measurements have been similar since 2014–2015.

Since loneliness is measured as an aspect of social marginalization in this dissertation, it is likely that girls experience more social marginalization in school compared to boys, which is why this hypothesis was tested statistically (see Papers 1 and 3). Moreover, it was

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[23] https://uddannelsesstatistik.dk/Pages/Reports/1773.aspx

expected that most students would experience a low degree of margin-alization just as most students experience a low degree of loneliness.

However, the studies based on the DSWQ do not supply a tool for specifically measuring marginalization, which is why these diagrams at most can give an indirect impression of the problem. Moreover, multivariate associations are not examined to a great extent in existing studies in relation to well-being (cf. Knoop et al., 2017, 2018). Thus, there is a richness of data that has not being analyzed in depth. For this reason, there is a need to specifically measure marginalization and explain how this phenomenon is associated with other key variables.

2.5 Summarizing key points

More than 9 out of 10 students in public schools experience a high de-gree of social well-being. In terms of loneliness, an aspect of social well-being in the DSWQ, about 2 out of 10 students feel lonely 'sometimes' or more often, which indicates that loneliness is a fairly common emotion among students. Still, only about 6 out of every 100 students report that they feel lonely 'often' or 'very often' in school.

Although these numbers can be considered positive overall, this implies that thousands of students still experience loneliness and poor social well-being, which is something that must be addressed consid-ering the current national goals of the educational system.

Another main point is that experienced inclusion or the sense of belonging is strongly associated with social well-being and inversely associated with loneliness (Knoop et al., 2017). It is therefore

reasonable to expect that a higher degree of experienced inclusion (i.e., less marginalization), will result in a higher degree of social well-being, which is why it is crucial to prevent marginalization.

Countering marginalization may also aid in strengthening public trust in the public school system, which has lost popularity over the last decades according to data from Statistics Denmark. Improving the reputation of public schools and increasing public trust, for example by promoting a safer and more inclusive school environment, is vital to hinder the concentration of social problems in public schools.

3 Theoretical background

In this chapter, the concept of marginalization is deepened to identify common scientific understandings and dimensions where the focus is placed on modern conceptualizations within education research.

In Section 3.1, marginalization is briefly described on a wider, global scale to provide useful background information on the concept and to outline common research themes. In Section 3.2, various definitions are discussed, and it is elaborated how marginalization can be understood and illustrated from a spatial understanding. Moreover, it is explained how marginalization is operationalized in this dissertation as a continuum between inclusion and exclusion. In Section 3.3, two central dimensions of marginalization are outlined: (1) 'quantitative marginalization,' and (2) 'qualitative marginalization.' In Section 3.4, the distinction between 'physical inclusion' and 'psychological inclusion' is explained along with the matrix definition of inclusion. In Section 3.5, the central distinction between social and academic marginalization is reiterated to clarify the position taken in this dissertation and to explain why the concept is operationalized as being multidimensional. In Section 3.6, a typology comprising four types of marginalization is presented along with an elaboration through the Johari Window Model, which presents a framework to conceptualize marginalization as ideal types. This framework is applied as a metatheory to interpret and discuss the results of this dissertation.

3.1 A global perspective on marginalization

The United Nations Educational, Scientific, and Cultural Organization (UNESCO, 2010) examined educational systems globally by comparing 49 countries from Asia, Latin America, and Africa. From a global perspective, girls are more deprived from education on average (the gender effect); and people from rural households and poor families have less education on average (the wealth effect). The general lack of access to education (esp. among women and poor families) is the main problem in developing countries. This challenge is termed 'quantitative deprivation' and is related to the quantitative dimension of marginalization. In this manner, marginalization can be understood simply as "the lack of access to education," which may ultimately lead to a more precarious position in society, both socially and economically.

According to UNESCO (2010), the wealth gap tends to widen over time, which is why marginalization is critical to counter as early as possible. Children from disadvantaged families should start education at the earliest opportunity since poverty, low levels of parental education, and speaking a minority language at home are among the most powerful generational transmitters of marginalization. Children raised in poverty, for instance, may receive little or even no access to education, which can eventually lead to unemployment and wider social exclusion in society. Poverty makes education unaffordable, which is why it can push children out of classrooms and ultimately into unemployment. Poorer households have fewer resources to invest in their children's schooling, health, and other assets. Consequently,

preventing or reducing marginalization in education is critical to prevent wider form of social exclusion at later life stages.

In this dissertation's papers, it is examined whether gender is associated with social marginalization (the gender effect), and whether parents' level of education is associated with schoolchildren's experience of social marginalization (social background), but the impact of poverty (the wealth effect) was not possible to measure as this variable was not present in the analyzed PLM data (see Section 1.5.1).

3.2 Defining marginalization

Definitions of marginalization vary in common dictionaries. Cambridge Dictionary (online) defines marginalization as follows: *"To treat someone or something as if they are not important"* (CD, n.d.). Oxford's free (online) English Dictionary similarly defines it as "*Treatment of a person, group, or concept as insignificant or peripheral"* (Lexico, 2021). While the above definitions agree that the phenomenon involves the (unfair) treatment of people or groups as insignificant and unimportant, and it is apparent that they encompass both individuals/groups (*'someone'*) and things (*'something'),* they fail to account for the *psychological* dimension (i.e., how marginalization is experienced subjectively). As such, these definitions imply that the act of being treated as unimportant will naturally result in experienced marginalization, yet it is uncertain whether those who are considered marginalized agree with the label that others ascribe to them (Mowat, 2015; Thyrring et al., 2016). In addition, these definitions do not

highlight the importance of the social context, which qualitative research has found to be essential (e.g., Bentholm, 2017; Gillam, 2009).

In the (online) Oxford English Dictionary (OED, 2021b) marginalization is defined with greater accuracy: *"The process or result of becoming or making marginal; spec. the process of making an individual or minority group marginal in relation to a dominant social group"* (OED, 2021b). Here, marginalization is described as both a process and a state and it includes the perspective of both the marginalized (i.e., the dominated individual/group) and those who marginalize (i.e., the dominant individual/group; cf. Antonovsky, 1956).[24]

Dictionary definitions commonly emphasize the *act* of marginalization, which emerges as discriminatory behavior targeted a single individual or group. However, these common definitions are not designed for education research; hence, they fail to encompass the general idea that marginalization consists of several dimensions, for instance, a social dimension (friendships, peer relationships, student–teacher relationships, etc.) and an academic dimension (involving learning and academic skills within different subject areas; cf. Angelides & Michaelidou, 2009; Messiou, 2003, 2012; Nordahl, 2018).

The Oxford Dictionary of Media and Communication presents multidimensional a sociological definition of marginalization:

> *A spatial metaphor for a process of social exclusion in which individuals or groups are relegated to the fringes of a*

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[24] Whether marginalization is a process, or a state, is further discussed in Paper 1.

society, being denied economic, political, and/or symbolic
power and pushed towards being 'outsiders.'
(Chandler & Munday, 2011)

From this definition, marginalization is understood as a social process that may cause individuals or groups to experience economic, political, and/or symbolic disempowerment. Moreover, the term 'outsiders' is mentioned as a synonym (cf. Becker, 1963), and *demarginalization* is seen as the reverse process of marginalization (Chandler & Munday, 2011). This definition is useful as it provides a spatial understanding of the term along with a multidimensional view on the phenomenon that can be considered more accurate for research purposes.

In the next section the spatial metaphor used in the above definition is further explained in the context of education research.

3.2.1 A spatial metaphor

In order to clarify how marginalization can be understood as a spatial metaphor for processes of social exclusion, one can imagine drawing a circle containing a person/group to symbolize inclusion and a circle with a person/group either outside (symbolizing social exclusion) or in the periphery (symbolizing marginalization). In a school context, one can draw a large circle to depict the entire school and smaller circles within to depict individual classrooms (Messiou, 2003). Such visual models can illustrate how inclusion in one school context (e.g., the classroom) does not necessarily imply inclusion in other school contexts (cf. Bentholm, 2017; Gilliam, 2009; Nordahl, 2018).

Figure 3.1 A simple graphical depiction of inclusion/marginalization
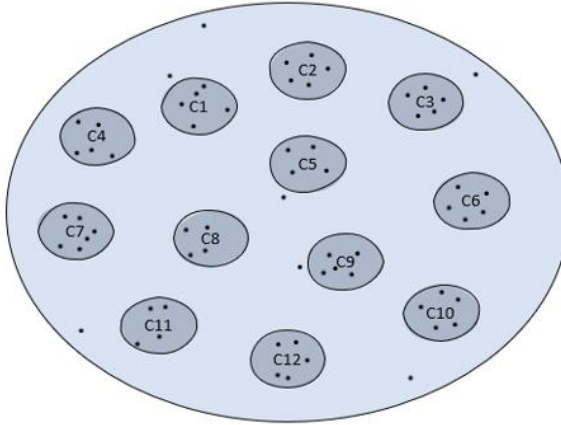
Note. Each dot represents a student and illustrates inclusion/marginalization on a classroom and school level: Some students are closer to the center (inclusion) of each circle while others are closer to the edge (marginalization) of each circle or even outside of it (i.e., exclusion; cf. Messiou, 2003, p. 203).

Figure 3.1 graphically depicts inclusion/marginalization on a classroom and school level from a spatial view. From this understanding, marginalization processes are caused by a kind of centrifugal power, which throws the individual closer to the edge of the community.

Although this representation is helpful, it has obvious drawbacks. For instance, some students may feel included in school whilst experiencing social issues in the classroom or vice versa. Moreover, the model does not depict the fundamental dimensions of marginalization (e.g., the social and the academic; Hattie, 2009; Messiou, 2003, 2012).

Based on a multidimensional view, some students may feel included socially and have good relationships with teachers and peers, but at the same experience academic marginalization. Others might feel included academically in the classroom but still feel socially marginalized or even bullied (e.g., 'the teacher's pet'; Frederiksen, 2015).

Still, using circles and dots to graphically depict marginalization is inherently meaningful since the notion of marginalization implies the existence of social boundaries or limits as well as the juxtaposition of entities (Dickie-Clark, 1966, p. 28; Messiou, 2012).

Benjamin et al. (2015, p. 26) similarly describe the process of marginalization as a metaphorical movement away from the center of society to its margins.

3.2.2 Social boundaries and marginalization

Becker (1963) emphasized that social boundaries of normality are socially constructed, and as such they are likely to change from one social setting to another. All social groups create and enforce rules: The rule breakers are called 'outsiders' (although some outsiders might perceive others as outsiders and themselves as normal).

Messiou (2003, 2012) similarly witnessed that some school children fell outside the socially constructed boundaries of normality in certain school settings. Social boundaries are not static as they are products of social interaction, which is why school children are often confronted with shifting social boundaries that they sometimes cross. Hence, all children are *potentially marginalized* since social

boundaries of normality are fluid and may change depending on the situation. Still, some children seemingly experience marginalization on a more permanent basis and across multiple situations in school.

Messiou (2003) therefore argued that 'constant marginalization' is more problematic than 'temporary marginalization':

> *Don't many children experience kinds of marginalisation at some point in school? Whilst many may well do, my concern here is the constant type of marginalisation that might be experienced by a child who, as a result, may not feel included within a school setting. (p. 44)*

Thus, educators should pay careful attention to children who are marginalized in multiple school contexts, and especially those who are, more or less, *constantly* marginalized.

3.2.3 Marginalization processes on a continuum

Even though the concept of marginalization permeates the scientific literature, it is rarely explicitly defined (Messiou, 2019; Mowat, 2015; UNESCO, 2010). It is typically discussed in relation to the concepts of inclusion and exclusion. For instance, Hansen (2012) argued that inclusion and exclusion are interrelated and interdependent processes. Thus, it may be oversimplistic to regard them as mutually exclusive opposites (cf. Mortensen & Larsen, 2009; Mowat; 2015; Thyrring et al., 2016). Often the concepts of social exclusion and marginalization are used interchangeably (e.g., Messiou, 2003, p. 203; Peace, 2001),

which raises theoretical concerns. Benjaminsen et al. (2015) considered social marginalization related to social exclusion, but they emphasized that experienced marginalization implies more than a simple dichotomy between inclusion and exclusion.

Razer et al. (2013) defined social exclusion as a state in which individuals or groups *"lack effective participation in key activities or benefits in society in which they live"* (2013, p. 1152). This points to marginalization as a social process connected to the state of being rejected (Mowat, 2015). To be marginalized is to experience a sense of not belonging and to feel that one is not a valued member of a particular group, organization, or society (Mowat, 2015). The term 'process' implies a phenomenon that should not be described dichotomously.

Therefore, the position taken in this dissertation is that marginalization is *not* a dichotomy but rather a *gradual process*, which unfolds between the *ideal types* of inclusion and exclusion in different social settings. According to Mortensen and Larsen (2009), marginalization is a social process between social exclusion and social inclusion.[25] This conceptualization is useful since it shows the relationship between some core concepts, but a drawback of their model is that it becomes seemingly impossible to determine whether a student *is* marginalized or merely *in the process* of becoming marginalized: The challenge of demarcation remains (cf. Messiou, 2003, p. 44). Thus, social exclusion and inclusion become ideal types that do not exist in

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[25] In Paper 1, it is discussed how this conceptualization can be applied in quantitative studies in the field of education (see Fig. 1 in the paper).

their pure form in empirical reality, implying that all students experience marginalization to some extent.

On the flipside, Mortensen's and Larsen's (2009) model has two major benefits: (1) Exclusion and marginalization are conceptually separated and are not considered identical or synonymous terms. (2) Marginalization can be understood as a *process* between opposites.

With this conceptualization, researchers should probably strive to measure exclusionary processes and the *strength of associations* (e.g., using R^2) rather than seeking to estimate the *number* of marginalized students, which has been attempted in previous studies, including qualitative (e.g., Messiou, 2003). Hence Papers 2–4 primarily concern how *processes* of marginalization are connected to factors and socio-demographic variables. Still, a basic attempt to identify the number/percentage of marginalized students is presented in Paper 1.

3.3 Quantitative and qualitative marginalization

UNESCO (2010) differentiates between *quantitative marginalization* and *qualitative marginalization*. Aspects of quantitative marginalization are relatively tangible and concrete, which is why this dimension is considered the easiest to measure. There is some degree of scientific consensus on how to assess different aspects of the quantitative dimension (e.g., years of education or the highest educational attainment; UNESCO, 2010). In contrast, the qualitative dimension of marginalization is less tangible, more subjective, and there is little scientific consensus on how to properly define or evaluate it (Messiou,

2019; UNESCO, 2010). The qualitative aspects involve the subjective experience of marginalization or social exclusion (e.g., from the view of students, teachers, or adults; Messiou, 2019; Mowat, 2015).

'Qualitative marginalization' is arguably a somewhat misleading term as it may give rise to the false idea that qualitative aspects might be impossible to quantify and therefore must be examined with qualitative methods designed to capture transient social processes. However, statistics are considered useful in identifying both stable structures and widespread social processes (Bryman, 2012). In fact, for several decades, researchers have studied subjective opinions, values, attitudes, perceptions, beliefs, etc., using surveys (Treiman, 2009).

Arguably, it is less relevant to assess the level of quantitative deprivation in Denmark since high-quality register data on quantitative marginalization already exist. As such, we already possess a great deal of data and knowledge about the educational attainment of citizens in Denmark. Hence, the subjective experience of marginalization is examined in this dissertation, which poses a greater scientific problem as the qualitative dimension of marginalization is considered harder to define and measure (Messiou, 2019; UNESCO, 2010).

3.4 Physical and psychological inclusion

In simple terms, children are marginalized if they are not included in regular classes or schools. However, research suggests that this perspective is too limited as the concept of inclusion is both multifaceted and multidimensional. Mordal and Strømstad (1998) wrote:

Whether we use the terms 'integration', 'inclusion', 'adapted education' or 'one school for all', for any particular child, we still have to ask: Is this child really included as a full member of the school community, or have we only made superficial adaptations, which leave the child just as isolated as in a special class or special school? (p. 106)

Some researchers (e.g., Bentholm, 2017; Mowan, 2015; Thyrring et al., 2016) consider the subjective experience primary (i.e., the subjective sense of belonging in school) while the outward situation or categorization is secondary. When a child is *physically* included in a regular class or school it does not imply that he/she will automatically experience *psychological* inclusion (Bentholm, 2017; Mowat, 2015; Thyrring et al., 2016). Hence, it is unlikely that superficial adaptions made in public schools will result in less perceived marginalization. Many researchers therefore view inclusion in broader terms (Messiou, 2003, Qvortrup & Qvortrup, 2018). From this broader, multidimensional view, inclusion is concerned with any kind of marginalization that might be experienced by *any child* – not just children with special educational needs (Messiou, 2003, 2012; Qvortrup & Qvortrup, 2018).

In order to broaden the definition of inclusion, the matrix definition of inclusion is explained in the following section.

3.4.1 The matrix definition of inclusion

In the matrix definition of inclusion, inclusion is conceptualized in three distinct dimensions: (1) the physical (numeric/passive); (2) the

social (active); and (3) the (experienced) psychological (Nordahl, 2018; Qvortrup & Qvortrup, 2018; Thyrring et al., 2016).

Physical inclusion concerns formal group membership or the physical presence of students in a given community; social inclusion concerns whether the student is actively engaged in a given social setting; psychological inclusion concerns whether the student *feels* included on an emotional level (Nordahl, 2018; Thyrring et al., 2016).

Qvortrup and Qvortrup (2018) emphasized the complex interplay between these three dimensions and argued that the social context (e.g., the classroom or the schoolyard) must be considered when assessing psychological inclusion since the experience of inclusion occurs in various school settings. In their view, inclusion has only truly succeeded when a child *experiences* it (i.e., a child is only truly marginalized if he/she feels it). Therefore, they criticized the narrow, one-dimensional definitions that solely concern physical inclusion:

> *In most definitions, there is a focus on the physical or numeric dimension, i.e., whether a child or student is physically present in the community (the classroom). Particularly in definitions within the sub-political system, this is dominant, since this implicitly legitimizes statistical goals, such as the Danish national objective that 96% of all students should be included. (p. 811)*

As explained in the above quote, a dominant discourse is present, particularly within the sub-political system, which focuses mainly on

physical inclusion. This discourse can be criticized since formal group membership does not necessarily imply a positive school experience (Bentholm, 2017). In other words, physical inclusion does not *cause* psychological inclusion (which does not rule out correlation).

The social dimension plays a crucial role because there is not just one but *many* social communities in school: The classroom is one such community, but equally important is the self-organized community of students in the schoolyard as well as the bilateral relationships between teachers and students (Qvortrup & Qvortrup, 2018). In reality, students are never fully included nor completely excluded in the totality of these contexts (Nordahl, 2018).

In relation to quantitative research, Qvortrup and Qvortrup (2018) argued that the physical dimension of inclusion is simpler to measure than both the psychological and the social dimension. While formal group membership can be measured using a simple dichotomous variable, the psychological experience of inclusion should preferably be measured *in degrees*, and the same applies to the level of social engagement (activity) in different school settings.

3.4.2 Adapting the matrix definition of inclusion

Based on the matrix definition of inclusion, which provided a core theory in this dissertation on how to operationalize marginalization, a

distinction was made between two central dimensions of inclusion: (1) physical inclusion and (2) psychological inclusion.[26]

This dissertation specifically concerns psychological (experienced) inclusion, which implies psychological (experienced) marginalization that is non-binary whereas the physical dimension is binary (physical inclusion = yes/no; Qvortrup & Qvortrup, 2018).

Table 3.1 Two fundamental dimensions of inclusion

Dimension	Type of variable (measure)
1. Physical inclusion	Binary
2. Psychological (experienced) inclusion	Ordinal

Note. Created with inspiration from Qvortrup and Qvortrup (2018, p. 815), Nordahl (2018), and Thyrring et al. (2016). The social (active) dimension was excluded.

In Table 3.1 two basic forms of inclusion are shown plus their proposed level of measurement. Rather than merely stating that psychological inclusion should be measured in degrees (see Qvortrup & Qvortrup, 2018)*,* this dissertation argues that psychological measures of inclusion must be considered *ordinal*. Subjective ratings (e.g., self-report ratings) are typically ordinal, which means that the distance

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[26] In the matrix definition of inclusion, the social dimension concerns active participation and engagement in social settings (Thyrring et al., 2016). However, since this dissertation also applied Messiou's (2003) definition of social marginalization, the social dimension of the matrix definition could easily have resulted in confusing these two terms. Therefore, the social dimension was excluded from Table 3.1.

between individual ratings cannot be accurately measured or compared as on continuous variables (Field, 2018). Unlike ratio variables, ordinal variables do not contain a natural zero point, which is why it cannot be assumed that the lowest score on a scale measuring psychological inclusion would signify complete exclusion (hence, the SMS begins at a score of 1). Still, social researchers often treat ordinal variables as continuous, especially in large surveys (Byrne, 2016; Field, 2018), which is why CB-SEM was used in this dissertation's studies. Psychological inclusion, which could also be named experienced (or perceived) inclusion, implies processes of marginalization in degrees. Thus, the continuum between inclusion and exclusion is measured, which can be said to imply processes of marginalization and demarginalization (Benjaminsen et al., 2015; Mortensen & Larsen, 2009).

Based on a common statistical understanding, a dimension should be measurable in itself and separable from other dimensions to secure discriminant validity (Hair et al., 2019). For this reason, the active, social dimension was formally excluded in this dissertation because it can be thought of as implied in the psychological dimension.[27]

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[27] Social marginalization is measured in this dissertation using some questions that indirectly concern the student's level of engagement in certain social settings as well as their psychological perception of inclusion. For instance, the question "I feel left out in school" (see Table 8.1). It is impossible to determine whether students who give a negative response to this particular question feel left out due to not being properly engaged in social settings or whether they feel left out for psychological reasons. Hence, the matrix definition of inclusion was adapted in this dissertation as it became problematic to operationalize these two dimensions separately.

Messiou (2003, 2012) conceptualized social marginalization as a distinct dimension of marginalization. This understanding is applied in this dissertation in combination with the matrix definition of inclusion, which also points to the core idea that students can experience varying degrees of inclusion (and marginalization) in different school settings (e.g., the classroom). Hence, it can be argued that this dissertation concerns psychological inclusion (i.e., the psychological experience of marginalization), which is also connected to the main term.

3.5 Academic and social marginalization

In education research it is common to distinguish between academic and social outcomes (e.g., Hattie, 2009; Jeynes, 2008), which includes research on inclusion and marginalization (Angelides & Michaelidou, 2009; Frederiksen, 2015; Messiou, 2012; Nordahl, 2018).

Messiou (2003) explained the difference between 'academic marginalization' and 'social marginalization' as follows:

> *From my experience limits or boundaries within a school setting seem to be experienced at two levels: the academic and the social level. At the academic level, a child can experience marginalization when he/she cannot access the curriculum, when he/she is not given opportunities for participating in the classroom, when his/her abilities are not valued. At the social level children might experience*

marginalisation in a school when they are rejected by their peers or even denied the right of friendship. (p. 44)

While academic marginalization can occur when students feel less valued in terms of their academic abilities, social marginalization concerns social relationships in school and social bonds with both peers and teachers. An important area of study is whether and how academic marginalization is connected to social marginalization.

This dissertation's papers mainly explore the social dimension of (experienced) marginalization (see Papers 1 and 2), but the academic dimension of marginalization is to some extent explored indirectly through teacher responses (see Papers 3 and 4), which reflect how teachers assess (i.e., judge/value) the students' academic abilities.

3.6 A perspective-based typology of marginalization

Messiou (2003, 2012) recognized that marginalization is fundamentally a matter of *perspective* since it is not only a social but also a psychological phenomenon. For this reason, she made a distinction between the experience of marginalization (as construed by the individual and/or others) and the recognition of it (by the individual and/or others), recognizing the subjectivity of the construct (Mowat, 2015).

From this premise, Messiou (2003, 2012, p. 14) outlined a typology of marginalization comprising four fundamental types:

1. When a child experiences marginalization and this is recognized by everybody, including himself/herself.
2. When a child feels that he/she experiences marginalization, while others[28] do not recognize it.
3. When a child is found in what appears to be marginal situations but does not feel it.
4. When a child experiences marginalization but does not admit it.

Messiou (2003, 2012) explains that children in the first group tend to talk freely about their feelings and marginal situation while adults recognize the problem. Students in this group often make active efforts to become included and express their feelings openly. These children often seem to experience severe forms of marginalization. Hence, this type of marginalization is commonly easier to identify. In the second group, the children feel marginalized while others disagree. Children in this group typically experience occasional (i.e., temporary) marginalization. They sometimes experience not being believed in or listened to, which can result in frustration. These children feel marginalized according to their own experience and reality, which is why their views should not be immediately dismissed or neglected. Children in the third group experience marginalization from the adults' perspective, but they do not agree or view it as such. Sometimes children in this group can shake off being excluded or bullied due to the way they respond to challenging situations. In the fourth group, the children do

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[28] When referring to 'others' it means teachers, researchers, or other adults.

not admit feeling marginalized, even when it is apparent to others. Students in this group sometimes lack emotional awareness. Therefore, they tend to hide their true emotions or even deny the problem.

The four forms overlap depending on the social context. Thus, the four types of marginalization could be considered Weberian ideal types, specifically of action or behavior (cf. Ritzer, 2011, pp. 120–123), which never appear in their pure form in empirical reality.

3.6.1 Discussing the typology of marginalization

Messiou's (2003, 2012) typology is useful since it considers a combination of perspectives. Thus, both psychological and social aspects are considered (e.g., the child's ability to cope with difficult situations).

Despite the typology's strengths, a few challenges must be mentioned. First, it can be hard to differentiate between the third and fourth type of marginalization in practice. A core difference between these types is that students in the fourth group tend to describe situations related to marginalization without openly admitting feeling marginalized, whereas students in the third group do not actually *feel* marginalized. For the observer, however, distinguishing between the two is not always possible as only the student, obviously, can experience his or her emotions at first hand. Another limitation is that marginalization is understood as a binary outcome in this typology (either a child experiences it or not). Yet, according to other conceptualizations (e.g., Mortensen & Larsen, 2009; Qvortrup & Qvortrup, 2018), marginalization implies *degrees* of exclusion or inclusion. It is also

debatable which forms of marginalization are the most severe. According to Messiou (2019), marginalization is mainly real if the child (consciously) experiences it, which is also argued by Thyrring et al. (2016) and Mowat (2015).

Hence, Messiou (2012) emphasizes the child's subjective experience and considers it crucial that children have the possibility of openly sharing their emotions of feeling marginalized in order to promote awareness about the problem in schools. Thus, enabling and allowing children's voices to emerge is the first step of any effective strategy that aims to prevent or reduce marginalization in schools.

Consequently, the typology, in my view, might lead to the idea that certain forms of marginalization are more real than others, if the child-perspective is overemphasized. To avoid this conception, it could be theorized that the realness of the phenomenon depends more on its *intensity* and *duration* rather than the *form* it takes in the typology.

3.6.2 The Johari Window Model and marginalization

The psychologists Joseph Luft (1916–2014) and Harrington Ingham (1916–1995) developed the Johari Window Model (JWM) in 1955, which is a graphical model used to depict self-awareness in

interaction. This tool is used to illuminate interpersonal awareness and intersubjective communication.[29]

The JMW has four distinct panes or quadrants, which differ between individuals and vary across social contexts (Luft, 1969; Luft & Ingham, 1955; Mahoney, 2019; Zakel, 2011). The four panes are commonly named: (1) 'The open,' (2) 'the blind,' (3) 'the hidden,' and (4) 'the unknown.' The open is also named 'the arena' and the hidden is sometimes named 'the facade' or simply 'mask' (Frey, 2018; Mahoney, 2019).

I argue that this psychological/communication model can be utilized to visually represent Messiou's (2003, 2012) typology of marginalization since it distinguishes between 'what is known by the individual' (i.e., the self) and 'what is known by others.'

This allows for the possibility to combine theory on marginalization with a well-known psychological theory, which could prove fruitful in future studies. This model has been applied implicitly during the research process and to reflect on the results (see Section 8.4.2).[30]

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[29] "Johari" is a combination of the researchers' first names: Joseph and Harrington. For more information, confer *Encyclopedia of educational research, measurement, and evaluation* (Frey, 2018).

[30] For example, it is hypothesized that more boys are unaware of being marginalized, or less inclined to share their emotions, which could explain why more girls on average report being socially marginalized across schools (pp. 293–294).

Table 3.2 The Johari Window Model (and marginalization)

	Known by self	Not known by self
Known by others	1 Arena	Blind Spot 2
Not know by others	3 Facade	Unknown 4

Note. The framework of the Johari Window Model (JWM) was used to categorize Messiou's (2003, 2012, p. 14) four types of marginalization: Type 1 (Arena); Type 2 and Type 4 (Facade); Type 3 (Blind Spot). In this process, an additional type of marginalization was added: the unknown exclusionary processes (Unknown).

In Table 3.2, the first pane represents what the person, in this case the child or student, knows about himself/herself. This pane illustrates the first type of marginalization presented in Section 3.6, where marginalization is both experienced by the child and confirmed by others (e.g., teachers or researchers). Messiou (2012) explains that this type of marginalization is typically the easiest to identify in schools since children in this category are often outspoken and open about their feelings. Thus, they are more likely to act on their emotions and express how they feel. This pane is called 'arena' in the JWM (Mahoney, 2019; Zakel, 2011), which means it is openly recognized and

known by both the self and others. Generally speaking, when persons meet the first time the arena pane is smallest (Zakel, 2011).[31]

The second type of marginalization (see the bullet points at p. 63) is when the child feels that he/she experiences marginalization while others do not recognize it. In this case, there is disagreement between the perspectives (e.g., children's and teachers'). Messiou (2012) explains that children in this group are often outspoken and frustrated because they feel they are not listened to or believed in. Children in this group often experience momentary marginalization, which they may openly react against. Children in this category still experience marginalization according to their own view but others disagree. In this sense, children of this group belong to the facade pane because their views are regarded as false or as if they were acting/pretending. The typology's fourth type could be placed in the same pane ('Facade'). This is when the child experiences marginalization without openly admitting it. Children in this group either try to hide their emotions or deny them: *"In a way, it can be said that these children were masking their experiences as a way of dealing with them"* (Messiou, 2012, p. 17). Some children may hide their true emotions due to fear or anxiety. Sometimes this works, and the adults therefore remain unaware of how these children feel. At other times, the adults may simply not recognize that the child is marginalized, even when the child

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[31] The panes of the JWM are considered dynamic (for each person), meaning that they change in size depending on the quality of communication, the social context, and the level of awareness (Luft, 1969; Zakel, 2011).

openly expresses it. I argue that this second marginalization type fits the facade category in JWM (pane 3) since children in this group often seek to either hide or mask their pain. For this reason, this type of marginalization is often unrecognized. In my view, the 'hidden area' might be a better term to encapsulate both the second and fourth type of marginalization because not all children deliberately attempt to hide their pain behind a facade.

The third type of marginalization is when the child appears to be in marginalizing situations without recognizing it or without viewing it as such. Children in this group might seem very relaxed (from the adult's perspective) about their marginal position. These children often *"go with the flow of the situation"* (Messiou, 2012, p. 16). They often act in ways regarded as unproblematic within their school. It can be difficult to know whether children in this category feel marginalized or whether they simply hide their true emotions and innermost thoughts (Messiou, 2012). In the JWM, this type is often called the 'blind spot' (Luft & Ingham, 1955; Mahoney, 2019; Zakel, 2011).

Finally, the fourth pane of the JWM is the 'unknown.' This type of marginalization is not present in Messiou's typology (2003, 2012). However, it is logical that (1) if children can be unaware of being marginalized, and (2) if adults do not always recognize marginalization, this leaves an additional type where the state of marginalization is unknown for *both* students and adults. This pane can be symbolized by the iceberg mostly hidden beneath the sea's surface.

It can be argued that using surveys as an instrument may provide an opportunity to bring hidden forms of marginalization to the surface,

which are not immediately visible or observable for neither teachers nor students. As such, the purpose of this dissertation's papers is not only to measure the conscious types of marginalization (pane 1: the arena) but also to bring challenges to the surface that may be unrecognized (panes 2–4: the hidden, the blind spot, and the unknown).

In the PLM survey, the students were asked indirectly about situations of marginalization and not directly whether they feel marginalized. As such, their responses may reveal patterns that direct questions would not capture, especially when dealing with a complex and multifaceted social psychological construct (cf. de Vaus, 2002).

3.6.3 Elaborating the typology of marginalization

It can be argued that Messiou's (2012) typology of marginalization could be placed within the JWM, which would place two types of marginalization (Type 2 and Type 4; see Section 3.6) in one pane: 'the facade' or 'the hidden area' (see Table 3.2). These two types of marginalization share a fundamental characteristic: Children in these groups are *aware* of being marginalized, but it is not confirmed by others (e.g., teachers). Using the JWM allows for an elaboration of marginalization theory using a well-known psychological framework. It results in a new type of marginalization that is entirely concealed: the unknown. A common aim of the JWM is to expand the open area and concurrently shrink the other panes (Frey, 2018). Based on this theory, it is crucial to bring marginalization into the open before the problem can be consciously addressed. This is similarly stated by

Messiou (2012) in her four-step framework to handle marginalization where (Step 1) "Opening doors: enabling voices to emerge" and (Step 2) "Looking closely: bringing concerns to the surface" are crucial steps before fruitful action can be taken for school improvement. Therefore, building trust and high-quality relationships is important (Messiou, 2012; Zakel, 2011). Thus, promoting awareness about marginalization in schools is an integral part of the process of effectively preventing marginalization (Messiou, 2012, pp. 32–48).

The view that marginalization can be either consciously known or exist independently of the student's mind is also in alignment with the critical realist approach to science, which separates ontology from epistemology to avoid the epistemic fallacy (see Chapter 4). In critical realism, causal structures or forces are considered ontologically real, even if humans are completely unaware of these (Bhaskar, 1975).

A limitation of using the JWM is that a dichotomy between unconscious and conscious marginalization is quite simplistic. Rather than considering awareness to be either present or absent, it could be defined as something that varies in degrees or intensity, which would be in alignment with classic psychoanalytic theories on the conscious and unconscious mind (e.g., Jung, 1991). Still, an advantage of this simplification is that it becomes possible to identify four ideal types of marginalization, which can be graphically depicted using the JWM.

Most importantly, this typology is useful as a framework to interpret and discuss the results of this dissertation, also in relation to theory of science, which is presented in the next chapter, where the ontology of the core phenomenon is discussed in relation to critical realism.

4 Philosophy of science

In this chapter, two key philosophical questions are asked: (1) What is marginalization (ontology); and (2) how can valid knowledge about marginalization be acquired (epistemology)? Reflections on these questions jointly form the basis of this dissertation's philosophical stance, including the choice of a suitable methodological approach.

Section 4.1 clarifies the realist ontological stance and the ontological view on (experienced) social marginalization. Section 4.2 explains the epistemological constructivist stance, which emphasizes the social construction of knowledge. Sections 4.3 describes the research process. Section 4.4 considers limitations of categorizations and causal interpretations. Section 4.5 summarizes the chapter's main points.

4.1 Ontological realism

Since a quantitative strategy was employed, a realist (objectivist) stance was chosen in terms of ontology (Bryman, 2012). Lawson (1997) concisely defined ontology as the nature of social reality. Ontology not only applies to social reality but also to the nature of social phenomena (Jespersen, 2018).

In this dissertation, it assumed from ontological realism that social reality is *real*, meaning it is believed to exist independently of social actors' knowledge, implying that it exists independently of the *mind* of social actors (Frauley & Pearce, 2007; Niiniluoto, 2004).

The ontological realist stance is relevant in relation to the dissertation's research question because a central aim in statistical studies is to minimize bias by measuring social phenomena as accurately as possible, which implies that statistical models must resemble reality as much as possible to secure validity (Field, 2018).

Ontological realism is the stance of critical realism (Bhaskar, 1975), which rejects the radical social constructivist assumption that social reality is merely a subjective construction (Rasborg, 2018).

4.1.1 The stratified social world

Critical realism deals with core philosophical questions such as: What can we know about social reality and social phenomena (epistemology), and what is ultimately real (ontology)? These questions are relevant to ponder before it is asked: What can we know about marginalization, and what is the ontology of marginalization?

Hence, the critical realist theory on the three ontological layers of reality is presented in the following to provide a philosophical foundation for understanding the main construct as well as the main findings of this dissertation and its possible limitations.

In critical realism, the stratified social world is an ontological foundation, which carries profound epistemological implications for all studies on social phenomena (Jespersen, 2018).

Table 4.1 The stratified view of reality in critical realism

Ontological layer	Levels of knowledge
1. Empirical level: data	Measurements (imprecise)
2. Factual level: tendencies, events	Empirical relations (statistical)
3. Deeper level: structures, powers, hidden mechanisms	Open (theories), possible structures

Source: Jespersen (2018).

Critical realists work with an ontological stratification of reality in three distinct layers: On the *empirical level* data can be observed and registered; on the *factual level* different analyses can be performed (incl. statistical calculations of regularities/patterns); at the *deeper level* (i.e., the *transcendent level*) different structures and mechanisms dwell that are neither directly observable nor direct objects of knowledge; hence, they cannot be described in traditional positivist terms (Edwards et al., 2014; Jespersen, 2018; Lawson, 1997).

A core aim of critical realism is to unravel the connection between these levels of knowledge. To develop hypotheses, the researcher must be aware of the intricate relationship between the respective ontological levels. It is assumed from this threefold division that social reality is both *open* and *changing* (i.e., epistemological constructivism), but structured at the same time with a certain degree of stability (ontological realism). Although objects at the empirical and the factual level in varying degrees are observable, the deep level is entirely concealed. Thus, all knowledge in social science is limited from a critical realist perspective in that one can only *approximate* social reality on

the deeper level. The deeper level is unknown, in principle, and it interacts with the social context in any given situation. The search for context independent laws is therefore doomed to fail from the perspective of critical realism (Jespersen, 2018). In contrast, critical rationalism is more optimistic in the prospect of discovering universal truths.

However, according to both realist stances, theories are continuously refined and improved to correspond more accurately to reality (Corson, 1991; Frauley & Pearce, 2007; Gilje & Grimen, 2002; Jespersen, 2018; Koch, 2018). The critical realist stance enables the possibility of identifying possible causal structures at the deeper level by assessing data on the empirical and factual level. These mechanisms or structures are not directly observable, which is why the statistical procedures performed on the factual level are not expected to directly reveal the underlying causes, although they might provide strong indications.

4.1.2 The ontology of marginalization

Messiou (2003, p. 111) explored the ontology of marginalization from a grounded theory (inductive) approach. She conducted participant observation and interviewed 227 school children (aged 6–12) in a primary school in Cyprus. She concluded that marginalization is fundamentally a subjective experience and thus ultimately *a matter of perspective*. For this reason, she argued that it is possible to examine marginalization from the perspective of students or teachers (or other adults), but she emphasized that these perspectives are not necessarily

in agreement, which complicates the research process, especially if one is analyzing more than dyadic social relationships.

From this fundamental idea, Messiou (2003) created a typology of marginalization as one of her central, scientific contributions. A key implication of Messiou's typology is that marginalization is only *partially observable* as some children hide their emotions, whereas others are seemingly unaware of being marginalized, which is why they do not express it openly in words or behavior. Therefore, it is typically easiest to recognize marginalization when the child expresses it openly while adults agree. Arguably, this typology points to a deeper ontology, which can be conceived from critical realism.

In Chapter 3, I expanded Messiou's (2003) theory by arguing that certain forms of marginalization are easier to observe and measure because they are *ontologically different*, which is explained by utilizing the Johari Window Model (see Sections 3.6.2–3.6.3). This theory is revisited in Chapter 8 (see Section 8.4.2) since ontological prerequisites and conditions, from the stance of critical realism, have crucial implications for the type of knowledge that can be acquired.

4.1.3 Accounting for several subjective perspectives

Lawson (1997) argued that researchers must identify the ontology of a social phenomenon before applying a specific research method. Based on reflections on the ontology of marginalization, I therefore decided to focus on student responses for assessing their subjective experience, because, if researchers neglect the student perspective, it is possible

that some students who do not (consciously) experience marginalization will be miscategorized as marginalized; conversely, there is a risk that researchers might overlook truly marginalized students if they pay attention solely to those who belong to certain predetermined categories (Messiou, 2017, 2019; Mowat, 2015).

Yet, concentrating solely on the student perspective also has inbuilt limitations since social marginalization can be explored and experienced from several angles (e.g., the viewpoint of teachers or parents).

In this dissertation's papers, the students' subjective experience of social marginalization is therefore measured in relation to survey responses of both class teachers and parents in order to discover complex statistical patterns across multiple respondent groups.

4.2 Epistemological constructivism

In this dissertation, a constructivist stance is chosen in terms of epistemology, which states that scientific knowledge is socially constructed and thus dependent on the researcher's mind (Rasborg, 2018). Hence, it is acknowledged that methodological choices, such as definitions, theory, variable types, etc., will result in different subjective perspectives/interpretations. From the stance of critical realism, reality is always *mediated* through 'perceptual filters'; therefore, fully objective knowledge (i.e., knowledge unaffected by the researcher) is practically impossible to acquire (Kringelum & Brix, 2021). Hence, it is wrong to claim that knowledge *always* corresponds *exactly* to what exists (Frauley & Pearce, 2007).

Bhaskar (1975) warned firmly against the so-called 'epistemic fallacy,' which occurs when the nature of a subject field is considered identical to the acquired systematic knowledge. The nature of a phenomenon (ontology) determines what type of knowledge can be acquired (epistemology). Hence, the relationship between 'being' and 'knowledge about being' is crucial to maintain (Jespersen, 2018).

This epistemological constructivist stance is considered prudent as this dissertation concerns a partially latent and multidimensional construct. Although an indirect measurement method was chosen due to the phenomenon's ontology, it is acknowledged that other measurement instruments could have been applied, which likely would have produced different results. From the position of epistemological constructivism, no concept definition is objectively true. Still, in both critical realism and critical rationalism some theories (and definitions) are considered superior to others. In critical realism, the purpose of any theory (or definition) is to adequately capture a phenomenon's ontology (Jespersen, 2018), whereas the main purpose in critical rationalism is to disprove false theories through deduction and thereby build more accurate theories over time (Koch, 2018; Thornton, 2011).

Critical realism is a *realist* perspective in terms of ontology (Jespersen, 2018; Koch, 2018). Critical realism emphasises contextual conditions and the ongoing changes of nature and society, which are believed to limit the universality and stability of scientific knowledge, for instance, the ability to predict future outcomes (Bhaskar, 1975; Corson, 1991; Jespersen, 2018).

4.2.1 Critical realism, contextual limitations, and objectivity

From a critical realist view, knowledge about social reality is always limited, which is why statistical results are never final or fully objective, undebatable evidence. The deeper (transcendent) level of social reality is ultimately inaccessible and unmeasurable. Researchers can develop scientific tools to measure what occurs in the empirical and factual layer of social reality and infer (i.e., retroduction) what happens in its deeper layer (Frauley & Pearce, 2007). Although mechanisms and structures are *emergent* in the deeper level of social reality, the social context ultimately determines whether certain mechanisms are *triggered* (Frauley & Pearce, 2007; Kringelum & Brix, 2021). Complex interactions occur in any social context among the three ontological layers, meaning that mechanisms can result in multiple outcomes (multi-causality), which implies that findings are not necessarily reproducible in alternate social contexts or that similar conditions will always produce similar effects (Jespersen, 2018).

Hence, it must be emphasized that the dissertation's four papers rely on survey data from Denmark (2015–2019) gathered during a particular period under specific sociocultural conditions. Thus, it is unlikely that *identical* results will emerge in future studies (incl. studies in Denmark). However, some (transcendent) structures may dwell in the deeper level of social reality, which may trigger similar events or conditions in future contexts (Frauley & Pearce, 2007).

From a critical realist stance, the tools utilized to measure marginalization in this dissertation, as well as the applied theories and definitions, are *social constructions*, which carry implications for the results

as well as the interpretations (Jespersen, 2018). Therefore, the interpretations and conclusions in this dissertation are neither entirely objective nor totally unaffected by subjective research decisions.

Still, the scientific deal was to minimize bias as much as possible. Researcher "degrees of freedom" do not preclude the possibility nor the importance of reducing bias (Field, 2018).

4.2.2 Identifying mechanisms on the deeper level

In critical realism objects are held to belong to a *stratified reality* and are only considered partially observable (Frauley & Pearce, 2007). In critical realism a phenomenon's transcendent aspects belong to the deeper level of reality (i.e., the invisible realm or the real domain), which has subtle epistemological consequences. Only the effects (i.e., the social and/or psychological consequences) of the deeper level are observable on the empirical or factual level, which is why retroduction is required to infer what occurs in the deeper layers of social reality (Jespersen, 2018). The process of retroduction can be succinctly defined as the attempt to explain the world and events observed through generative mechanisms that dwell in the real domain (Edwards et al., 2014). The fundamental aim of retroduction is to explain what conditions need to be at place in the world before generative mechanisms are triggered in the empirical or actual domain (Edwards et al., 2014).

In this dissertation, empirical data were derived from the PLM surveys, which made it possible to directly assess facets of experienced marginalization on an empirical and factual (i.e., statistical) level. This

was achieved by selecting specific survey items (i.e., indicators) based on student responses (e.g., whether they felt lonely, excluded, bullied, or isolated in school). Multivariate statistical models were then formed to identify significant correlations and patterns with the aim of revealing *possible* social structures and mechanisms in the real domain.

Through the process of retroduction, theoretical explanations were subsequently formulated. Although transcendent structures or generative mechanisms underlying social marginalization cannot be directly measured, the results of this dissertation point to *possible* mechanisms and causal structures in the deeper level of reality – some were cautiously identified in Papers 1–4 and the Discussion (see Chapter 8).

4.3 Modes of reasoning

In this dissertation's studies, a hypothetico-deductive approach was mainly followed since this is considered the method *par excellence* in quantitative research (Field, 2018; Treiman, 2009). Typically, quantitative research is based on a deductive approach since induction is considered a potential source of error (Field, 2018). Therefore, specific hypotheses were formulated in each study, derived from both theory and empirical research, which were subsequently tested.

However, different statistical models were tested and post-hoc modifications were applied, especially if the results were uninterpretable, which is why the research process could be considered *abductive* rather than purely deductive (i.e., a mix between induction and deduction; Morgan, 2007). In fact, SEM research typically contains

exploratory elements (Byrne, 2016). In critical realism, the typical research process is considered abductive and retroductive rather than purely deductive or inductive (Jespersen, 2018). In this methodological sense, the research process was in alignment with critical realism.

Regarding the final discussion of the results (see Chapter 8), the approach (e.g., retroduction) is explicitly critical realistic as one of the main purposes is to identify underlying mechanisms or tendencies.

4.4 Categorizations and causality

Although certain groups of marginalized students were identified, it is emphasized in the papers that the uncovered variable relationships should not be considered *causal* but rather *correlational*, especially since correlational data were analyzed (Byrne, 2016). With correlational data, causal interpretations are, strictly speaking, invalid because alternative explanations cannot be fully dismissed (Field, 2018).

To avoid strict notions of determinism and causality, inspiration was sought from critical realism. Critical realism emphasizes contextual conditions and stresses that transcendent mechanisms are not always triggered. Given the right conditions, transcendent social mechanisms *may* get triggered, which can result in multiple outcomes (multicausality) in open systems (Frauley & Pearce, 2007; Jespersen, 2018). Thus, causality does not occur in a strict sense in the social world as events do not only have a single cause (Bhaskar, 1975).

Causal language (e.g., variable X *affected* variable Y) is still used to some extent in this dissertation, but such statements should not be regarded as deterministic statements about causality (rather as statements about probability and risk). 'Effect' is a standard term in quantitative science, which does not necessarily imply causality in a deterministic sense (Field, 2018). This is also in alignment with Bhaskar (1975), who proposed that causal laws in social science should be analyzed and understood as *tendencies* (involving probability).

Finally, it is recognized that schools are complex systems, which is why structural connections between variables are rarely, if ever, unidirectional. It is typically the case that variables in a school context are reciprocally connected (Christensen & Qvortrup, 2022). This challenge is discussed in greater detail in the individual papers in relation to the proposed structural models (see Papers 2–4).

4.5 Summary: philosophy of science

In summary, a realist position is chosen between epistemological constructivism and ontological realism – the fundamental position of critical realism (Koch, 2018). Specific hypotheses were derived from theory and empirical research (incl. existing models) and subsequently tested. Thus, a hypothetico-deductive approach was mainly followed, although it can be argued that the approach was abductive in practice.

In terms of interpreting the results across the four papers, a critical realist understanding is applied. Critical realism rejects strict causal interpretations because the context matters along with the individual's

actions and interpretations of reality: Similar circumstances may thus produce a wide range of effects (Jespersen, 2018). Thus, causal laws and mechanisms are understood as *tendencies* (Bhaskar, 1975).

Since a central aim in this dissertation is to identify possible mechanisms (i.e., causal or probabilistic structures) that are ontologically unobservable or transcendent (Bhaskar, 1975), the understanding of the three ontological domains is utilized to conceptualize the difference between the empirical, factual, and the deeper domain. The process of retroduction is applied in the Discussion (Chapter 8) to identify possible mechanisms (i.e., causal powers).

5   The scoping review

As quantitative research on marginalization is sparse a broader scoping review was conducted to uncover possible knowledge gaps and to the identify the common state-of-the-art in relation to research on marginalization research and closely linked constructs.

By performing a scoping review, one may uncover essential knowledge gaps, areas of disagreement, opposing views, or even paradoxical statements, and results (Levac et al., 2010; Munn et al., 2018).

5.1 The guiding question and main concepts

This dissertation is about the subjective experience of marginalization (the key concept) among students' (the target population). The empirical research and theory (see Chapters 1–3) revealed that other constructs, such as inclusion/exclusion, well-being, school belongingness, and loneliness, are either a part of the marginalization construct or, at the minimum, closely associated with it.

Levac et al. (2010) recommends combining a broad research question with a clearly articulated scope of inquiry that includes (1) defining the key concept, (2) defining the target population, and (3) developing a systematic search strategy.

Therefore, a systematic search strategy was formed to capture the complexity of existing research with a broader scoping review where the following guiding question was formulated:

How is marginalization (and closely related constructs) operationalized and how and to what extent is marginalization (and closely related constructs) associated with other constructs/variables?

As explained earlier, it is assumed in critical realism that ontology and epistemology are separate, which is why the same phenomenon can be addressed and examined using different labels, which is also in alignment with common theory on factor analysis (Kline, 2016).

Figure 5.1 Experienced marginalization and related concepts
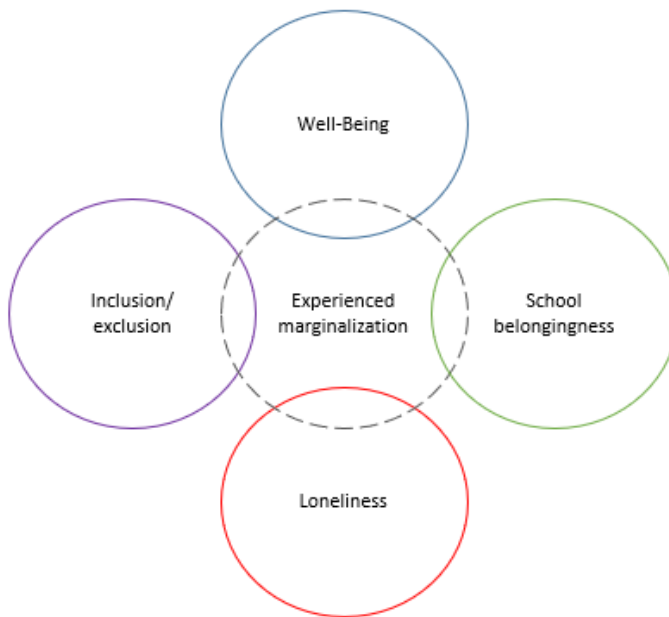
Note. The scoping review presents an overview of quantitative research on the subjective experience of experienced marginalization or related concepts.

As shown in Figure 5.1, the scoping review was divided into four themes, treating four key concepts in relation to experienced marginalization: (1) inclusion (implying the opposite term 'exclusion' or 'marginalization'; Messiou, 2003; Qvortrup & Qvortrup, 2018), (2) loneliness, (3) well-being, and (4) school belongingness.

5.2 Inclusion and exclusion criteria

Only quantitative (empirical) studies were included that focused on either (1) developing and validating scales for measuring marginalization (or related concepts/constructs) or (2) examining complex variable relations revolving around marginalization (or related concepts/constructs). The population is students at primary and lower secondary education (Grades 0–10, ages 6–16). Therefore, only studies directly treating (or overlapping with) this age group were included. Since the main concept is *experienced* social marginalization, only studies emphasizing students' subjective experience were included. Finally, a snowballing approach was followed where additional studies were identified through existing studies (Wohlin, 2014).

All qualitative studies were excluded from the scoping review, since they mostly concerned narrow populations (e.g., students with hearing impairment, learning difficulties, or mental disabilities). As such, these studies were considered too specific to answer this dissertation's research question, which concerns students in general, including proficient students without any learning difficulties.

5.3 Databases

A systematic literature search was performed in four scientific databases. All searches were performed to discover relevant international, Danish, and Nordic research in education.

The following four databases were used:

1. *ProQuest* was used as the main search engine to discover peer-reviewed international studies in education (ProQuest, 2021).

2. *PsycInfo* was used as a secondary database to discover relevant international, cross-disciplinary research (APA, 2021).

3. *Idunn* was used as the primary database to discover Nordic literature in education (primarily written in Swedish, Norwegian, or Danish; SUP, 2021).

4. *VBN*[32] (Vidensbase Nordjylland) was used as the primary database to discover relevant national (i.e., Danish) research (AAU, 2021).

5.4 General strategy: blocks and search terms

Each search was conducted in 1–3 blocks. To the extent possible, identical search terms were applied in each database (in English, Danish, Norwegian, etc.). The general strategy was to search for main concepts in Block 1, the social context in Block 2 (school research),

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[32] VBN was used instead of Forskningsdatabasen.dk, which included research from all databases of Danish science institutions. Forskningsdatabasen closed in January 2021 (https://www.forskningsdatabasen.dk/).

and the research method in Block 3.[33] As marginalization is the dissertation's central concept, this concept was sought for in the document title (if possible). If only a few or no valid results emerged, related terms were added to the first block, such as 'inclusion,' 'exclusion,' 'loneliness,' 'school belongingness,' and 'isolation' (cf. Benjaminsen et al., 2015; Messiou, 2003; Søndergaard & Hansen, 2018).

In the second search block, the strategy was to limit results to studies on education as the concept of marginalization is used in countless research areas. Therefore, the following truncated search terms were added: 'school*,' 'student*,' and 'pupil*.'

In the third block, the search terms 'SEM,' 'structural equation model*,' 'EFA,' 'CFA,' and 'factor analysis' were added to focus on quantitative and empirical studies on marginalization where the concept had been operationalized with a multifaceted scale or index.

Only peer-reviewed publications were included; all results were limited to either English or Nordic languages (Danish, Swedish, and Norwegian). Moreover, the search results were limited to publications within social science and humanities. Different filters were applied depending on the database. The general strategy was to broaden the

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[33] In order to account for both British and American spelling, the key search term was truncated, if possible, by adding an asterisk (*): 'marginali*.' By using truncation, the search retrieved all results that included every possible inflection of the word beginning with the entered letters (incl. all British variants containing the letter 's' instead of 'z'). Truncation was also applied to additional search terms to account for various word inflections (see Tables 5.1 and 5.2).

search as much as possible to include key concepts. If more than 250 hits emerged, the search was narrowed by applying additional filters.

5.5 Search results

In this section, the search results are highlighted. First, searches were conducted in ProQuest and PsycInfo to discover relevant international literature. Subsequently, searches were conducted in Idunn and VBN to discover relevant national (i.e., Danish) and Nordic literature.

5.5.1 ProQuest and PsycInfo

Initially, ProQuest and PsycInfo were used to search for *general* literature (search in abstract), which resulted in many irrelevant hits. Therefore, a more fine-grained search strategy was employed instead in three blocks, displayed in Table 5.1 (see Appendix A for a more detailed account of the search process in each database).

Table 5.1 Search results (international research)

Database	Keywords			Filter	Excluded subject	Search results (relevant results in parenthesis)	Date of last performed search
	Block 1 (search in document title)	Block 2 (search in abstract)	Block 3 (search anywhere)				
ProQuest	marginali* OR inclusi* OR exclusi* OR "school belongingness" OR loneliness	school* OR pupil* OR student*	"factor analysis" OR "structural equation model*" OR SEM OR EFA OR CFA	peer-reviewed; English language; full text.	colleges and universities; higher education; teacher education.	205 (43)	30.6.2021
PsycInfo	marginali* OR inclusi* OR exclusi* OR loneliness OR "school belongingness" OR well-being OR wellbeing OR bullying OR social isolation	school* OR pupil* OR student*	"factor analysis" OR "structural equation model*" OR SEM OR EFA OR CFA	peer-reviewed; APA full text.	all ages were excluded except "school age (6–12 years)"; "adolescence (13–17 years)."	24 (7)	30.6.2021

An advanced search strategy was employed using different search terms in Blocks 1–3. Rather than searching in abstracts in Block 1, the results were limited to chosen keywords in the document title as this resulted in a greater proportion of relevant hits.

All search results were restricted to the age group of the statistical population (ages 6–16) to the extent possible by applying specific filters. In ProQuest, three subject areas were excluded. In PsycInfo, all ages were excluded except 6–17. In PsycInfo, additional search terms

were added in Block 1. In total, 229 international studies were discovered whereof 50 were deemed relevant.

5.5.2 Idunn and VBN

Table 5.2 displays the search results in Idunn and VBN. Idunn and VNB are less advanced and provide fewer search options, which is why a simpler search strategy was employed in these databases.

Table 5.2 Search results (Nordic and national/Danish research)

Data-base	Keywords			Filter	Excluded subject	Search re-sults (rele-vant results in paren-thesis)	Date of last per-formed search
	Block 1 (search in document ti-tle)	Block 2 (search in ab-stract)	Block 3 (search any-where)				
Idunn	marginali* OR ekskl* OR inkl* OR ensomhed OR trivsel* OR skoletrivsel*	none	none	helse- og sosialfag; humanistiske fag; pedagogikk og utdanning; samfunnsfag.	none	87 (1)	25.3.2021
VBN	marginali* AND inklusi*	skole* OR elev*	none	publikationer	none	115 (0)	2.9.2021

Note. In VBN, the search in Block 1 included indexed text, such as descriptions, and names.

In Idunn, all results were limited to social and human sciences and relevant subfields (e.g., pedagogics and education). In VBN, all results were limited to published work.

In total, 202 studies were discovered in relation to Nordic and national educational research; only 1 study was deemed relevant.

5.6 Summarizing the results

In this section, the results of the scoping review are summarized to clarify two aspects: (1) How the main concepts are typically measured,[34] and (2) what common variable relationships have been established in relation to each main concepts.

5.6.1 Summary: inclusion and exclusion

Scales for measuring inclusion and exclusion

- A few multidimensional scales/indices designed for measuring self-reported inclusion were identified, specifically the Social Inclusion Index (SII; Booth & Ainscow, 2002, 2011; Fernández-Archilla et al., 2020), the Perceptions of Inclusion Questionnaire (PIQ; Venetz et al., 2015; Zurbriggen et al., 2019), and the SSP-School Inclusion Questionnaire (SSP-SIQ; Damean, 2012).

Inclusion and exclusion and key variable associations

- A single longitudinal study found a relationship between peer inclusion and academic achievement (at the individual level), which was associated with the teacher's liking of students (Sette et al., 2020).

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[34] See Table 5.5 for an overview of the scales used in the reviewed studies.

- Emotional intelligence was positively related to prosocial behavior and psychological flexibility, which was shown to facilitate inclusive behavior among students in general (Méndez-Aguado et al., 2020).

5.6.2 Summary: loneliness

Scales for measuring loneliness

- The most common scale proved to be the University of California and Los Angeles Loneliness Scale (ULS-20; Russel et al., 1978, 1980)[35] while other common scales were the Perth A-loneness Scale (PALS; Houghton et al., 2014), Children's Loneliness Scale (CLS; Asher & Wheeler, 1984), and Loneliness and Aloneness Scale for Children and Adolescents (LACA; Marcoen et al., 1987).

- The ULS-8 (short version of the scale) had a strong negative correlation (r −.71) with General School Belongingness (GSB; Yildiz & Duy, 2014), indicating that school belongingness and loneliness are strongly associated constructs (with strong indications of being the same latent construct).

Loneliness and key variable associations

- Several studies could establish a strong link between loneliness and negative affective states, such as depression, anxiety (Baytemir & Yildiz, 2017; Danneel et al., 2019; Lasgaard et al., 2011; Lau et al.,

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[35] The ULS was used in 14 of the reviewed studies in different versions and languages (e.g., the short version in Danish; Lasgaard et al., 2007).

1999; Mahon et al., 2006; Qualter et al., 2010; Van den Eijnden et al., 2008), and self-injury (Madjar et al., 2021)

- Several longitudinal studies suggested that loneliness and anxiety often endure and cause depression over time (Danneel et al., 2019; Lasgaard et al., 2011; Qualter et al., 2010).

- Several studies could confirm negative links between loneliness and positive affective states, such as positivity (Yildiz, 2016), positive well-being, and self-esteem (Baiocco et al., 2019; Houghton et al., 2016; Kapikiran, 2013; Lyyra et al., 2021), life satisfaction (Kapikiran, 2013), and happiness (Baiocco et al., 2019; Yavuz, 2019).

- Some studies (incl. a longitudinal) have shown that the positive attitude toward loneliness increases during adolescence while the negative attitude decreases (Danneel et al., 2018; Houghton et al., 2014)

- A study suggested that victimized and lonely boys tend to express themselves violently and aggressively, but positive classroom environment buffers these negative emotions (Povedano et al., 2015).

- Popular students who like sports and are perceived as athletic experience less loneliness and rejection (Dunn et al., 2007; Yavuz, 2019).

- Neuroticism is connected to loneliness as a personality trait (Lasgaard & Elklit, 2009; Stokes, 1985). Anti-social behavior and poor social competencies are associated with loneliness and low peer acceptance (Junttila et al., 2012; Mouratidis & Sideridis, 2009).

- Loneliness is associated with diagnoses, such as autism spectrum disorder (ASD; Lasgaard et al., 2010), attention deficit hyperactivity disorder (ADHD; Houghton et al., 2020), and special educational needs (SEN; Tekinarslan & Kucuker, 2015).

- Lonely students experience less academic progress and success (Benner, 2011), and cyber-victimization can lead to loneliness and lower academic achievement (Cañas et al., 2020).

- Parental warmth and positive child–parent communication (Liu et al., 2015, Ying et al., 2018) is negatively associated with loneliness, and children of divorced parents experience greater family-related loneliness (Lasgaard et al., 2016). Abuse, neglect or being a member of a dysfunctional family is also associated with loneliness (Lin & Chiao, 2020).

- Students whose need for social relationships is fulfilled report lower loneliness, and the ability to modify emotions reduces loneliness (Martín-Albo et al., 2015).

5.6.3 Summary: school belongingness

Scales for measuring school belongingness

- The Psychological Sense of School Membership Scale (PSSM; Goodenow, 1993) and the School Belongingness Scale (SBS; Arslan & Duru, 2017) were the most common scales to measure school be-longingness (they were used in three studies each; see Table 5.5).

- The School Belongingness Scale (SBS) had a strong, negative corre-lation with the University of California and Los Angeles Loneliness

Scale (Arslan & Duru, 2017), suggesting that school belongingness reduces loneliness.[36]

School belongingness and key variable associations

- School belongingness positively predicts school achievement (Arslan, 2019).

- School belongingness is positively related to mental health functioning over time (Vaz et al., 2014) as well as mental health and well-being (Arslan, 2018a, 2018b), which is in alignment with research that suggests that social exclusion leads to anxiety and depression (Perkins et al., 2011), aggression (Twenge & Campell, 2003), and school violence (Leary et al., 2003).

- School belongingness is strongly linked to self-esteem (Perry & Lavins-Merillat, 2019).

5.6.4 Summary: well-being

Scales for measuring well-being

- Multidimensional scales/indices are used to measure students' subjective well-being, such as the Student Subjective Well-Being Questionnaire (SSWQ; Renshaw et al., 2015), the tripartite model of subjective well-being (SWB; Long et al., 2012), and the Well-Being Index (WBI; Luthar et al., 2020).

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[36] Interestingly, the SBS contains the sub scales "social exclusion" and "school acceptance," which can be said to measure marginalization implicitly as it involves the continuum between inclusion and exclusion (cf. Mortensen & Larsen, 2009).

Well-Being and key variable associations

- Teacher support and classmate support are significantly associated with school satisfaction, which in turn is associated with life satisfaction and self-regulated learning (Danielsen, 2012).

- Parental autonomy is positively associated with self-esteem and negatively associated with depression (Duineveld et al., 2017).

- Girls report higher school satisfaction than boys (Long et al., 2012).

5.6.5 The results of the scoping review

Table 5.3 shows the condensed results of the scoping review, specifically the key results of the reviewed studies (only the strongest associations and significant results) based on whether these were cross-sectional or longitudinal. The results were also ordered in the rows based on the key construct of each paper. A few key studies found through the snowballing approach are listed in the table as well (e.g., references to the original versions of individual scales or indices).

Table 5.3 The results of the scoping review in overview

	Existing scales [a]	Cross-sectional: Confirmed associations (→). [b]	Longitudinal: Confirmed associations (→)
1. Inclusion/exclusion	SII (Booth & Ainscow, 2002, 2011; Fernández-Archilla et al., 2020; Mendez-Aguado et al., 2020). PIQ (Venetz et al., 2015; Zurbriggen et al., 2019) SSP-	Exclusion → anxiety & depression (Perkins et al., 2011), aggression (Twenge & Campell, 2003) & school violence (Leary et al., 2003). Emotional intelligence & prosocial behavior → inclusive behavior (Méndez-Aguado et	Peer inclusion → academic achievement (Sette et al., 2020).

	Existing scales [a]	Cross-sectional: Confirmed associations (→).[b]	Longitudinal: Confirmed associations (→)
	SIQ (Damean, 2012)	al., 2020).	
2. Lone-lineness	ULS-20 (Lasgaard, 2007; Russel et al., 1978, 1980). PALS (Houghton et al., 2014), CLS (Asher & Wheeler, 1984), LACA (Marcoen et al., 1987). LSDS (Bagner et al., 2004; Dunn et al., 2007). Loneliness Scale for Adolescents (de Minzi & Sacchi, 2004).	Parental warmth & positive child–parent communication → lower loneliness (Liu et al., 2015; Ying et al., 2018). Parental divorce → family-related loneliness (Lasgaard et al., 2016). Cyber-victimization → loneliness & lower academic achievement (Cañas, 2020). Victimization & loneliness → aggression and violence (Povedano et al., 2015). A positive classroom environment → less loneliness (Povedano et al., 2015). ASD, ADHD & SEN → loneliness (Houghton et al., 2020; Lasgaard et al., 2010; Tekinarslan & Kucuker, 2015). Popularity and perceived athletic skills → less loneliness (Dunn et al., 2007; Yavuz, 2019). Neuroticism → loneliness (Lasgaard & Elkit, 2009; Stokes, 1985). Anti-social behavior & poor social skills → loneliness (Mouratidis & Sideridis, 2009). Age → positive attitude toward aloneness (Houghton et al., 2014). Loneliness → negative states: low well-being, poor self-esteem, unhappiness & low life-satisfaction (Baiocco et al., 2019; Houghton et al., 2016; Kapikiran, 2013; Lyyra et al., 2021; Yavuz, 2019; Yildiz, 2016). Loneliness → depression, anxiety, self-injury (Baytemir & Yildiz, 2017; Lau et al., 1999; Madjar et al., 2021). Girls are lonelier than boys (Majorano et al., 2015). Emotional repair & relatedness → less loneliness (Martín-Albo et al., 2015).	Loneliness → slower academic progress (Benner, 2011). Abuse, neglect & family dysfunction → loneliness (Lin & Chiao, 2020). Age → positive attitude toward aloneness (Danneel et al., 2018). Loneliness & anxiety → depression (Danneel et al., 2019; Lasgaard et al., 2011; Qualter et al., 2010; Van den Eijnden et al., 2008). Anti-social behavior & poor social skills → loneliness (Junttila et al., 2012).
3. School belong-ingness	PSSM (Goodenow, 1993), SBS (Arslan & Duru, 2017). GSB (Malone et al., 2012; Yildiz & Duy, 2014).	School belongingness → mental health and well-being (Arslan, 2018a, 2018b). School belongingness → school achievement (Arslan, 2019).	School belongingness → mental health functioning (Vaz et al., 2014). School belongingness → self-esteem (Perry & Lavins-

	Existing scales [a]	Cross-sectional: Confirmed associations (→).[b]	Longitudinal: Confirmed associations (→)
			Merrilat, 2019).
4. Well-Being	SSWQ (Renshaw et al., 2015), SWB (Long et al., 2012), and WBI (Luthar et al., 2020).	Girls have higher school satisfaction than boys (Long et al., 2012). Teacher support & classmate support → school satisfaction, life satisfaction & self-regulated learning (Danielsen, 2012).	Parental autonomy → self-esteem & lower depression (Duineveld et al., 2017).

Note. [a] SII: Social Inclusion Index (or Index for Inclusion). PIQ: The Perceptions of Inclusion Questionnaire. SSP-SIQ: School Success Profile; School Inclusion Questionnaire. ULS-20: UCLA (University of California and Los Angeles) Loneliness Scale (20-item version). PALS: Perth A-loneliness Scale. CLS: Children's Loneliness Scale. LACA: Loneliness and Aloneness Scale for Children and Adolescents. PSSM: The Psychological Sense of School Membership Scale. SBS: School Belongingness Scale. SSWQ: Student Subjective Well-Being Questionnaire. SWB: Subjective Well-Being. WBI: Well-Being Index. [b] Although one-sided arrows (→) are used to suggest the direction of an association some could be bidirectional, particularly within complex systems such as schools (Christensen & Qvortrup, 2022). It could be discussed, for instance, whether loneliness leads to low self-esteem, or whether low self-esteem leads to loneliness, or whether the association is circular (cf. Lasgaard & Elkit, 2009). Thus, the table simplifies the theorized associations from the literature.

5.7 Discussing the state-of-the-art

A shared characteristic of all the reviewed studies was that they were observational (i.e., correlational or non-experimental), which is why causal claims should be made with caution (Field, 2018). Approximately three out of four (76.5%) studies were cross-sectional and contained a single measurement while the remaining (23.5%) were

longitudinal. Another main characteristic was that all studies treated the main construct as either a first or second-order construct. Thus, third-order constructs were not encountered in any of the reviewed studies.

In the following sections, the common state-of-the-art is discussed, including strengths and limitations of the reviewed studies.

5.7.1 General limitations of the reviewed studies

A main limitation of observational studies is the lack of ability to determine whether modeled variables *causally* affect each other, whether the relationships are unidirectional or bidirectional (i.e., circular), or whether there is simply *correlation* (Field, 2018). Thus, this limitation is openly declared in many of the reviewed studies (e.g., Arslan, 2018a; Houghton et al., 2020; Kapikiran, 2013; Ying et al., 2018).

Another critical limitation is that *nearly all* of the reviewed studies rely on self-report measures with a single respondent group to examine relationships among multiple factors (Arslan, 2018a, 2018b; Houghton et al., 2014, 2016; Lyyra et al., 2021; Ying et al., 2018). Using self-report measures with common raters *substantially* increases the risk of common methods bias (CMB; Podsakoff et al., 2003; Ying et al., 2018). Thus, there is arguably a general need to reduce CMB in studies on experienced inclusion, loneliness, well-being, or lack or belongingness by measuring key relationships with multiple respondent groups, which should be considered in future studies.

Table 5.4 The main respondent group(s) of the reviewed studies

No of groups [a]	Freq.	%
One group (students)	49	96.1
Two groups (students plus an extra group)	2	3.9
Three groups or more (students plus extra groups)	0	0
Total	51	100

Note. [a] Excluding subgroups (e.g., subgroups of students).

Table 5.4 displays the number of respondent groups in the reviewed studies. Nearly all (96.1%) contain a single group, although many analyzed complex variable relationships among several self-report variables using different factor analytical methods.

Factor analytical methods are generally based on large datasets that should be at least $N = 200$ (Kline, 2016). Even though the median sample size ($M_{ed} = 642$; excl. longitudinal studies) was large enough to meet this standard criterion, most of the reviewed studies were relatively small considering their huge complexity. Generally, a complex model with more parameters requires a greater sample size.

According to the so-called *N:q* rule, the sample size (N) should preferably be 20 (or at least 10) times greater than the number of estimated parameters (q), but SEM studies are generally based on too small studies (Kline, 2016).

For instance, Méndez-Aguado et al. (2020) used the 38-item SSI in a complex SEM analysis ($N = 727$) containing four factors measured with 50 observed variables. To reduce model complexity, they merged the indicators until left with only 13. This still resulted in lots

of parameters: $0.5 \times [p(p + 1)] = 0.5 \times (13 \times 14) = 91.$[37] According to the *N:q* rule (Kline, 2016), the recommended sample size would be at least $91 \times 10 = 910$ and preferably $91 \times 20 = 1{,}820$.

A final limitation is that some researchers did not explicitly consider the difference between reflective and formative constructs (cf. Romani, 2017), which are not validated and measured using the same methods: *"Formative scales do not represent latent factors and are not validated using the same methods as conventional reflective factors"* (Hair et al., 2019, p. 733; see Section 1.4.2: "Factors: latent variables"). This methodological issue is particularly apparent in relation to the SII (cf. Fernández-Archilla et al., 2020; Méndez-Aguado et al. 2020), which has been validated as a reflective construct using CB-SEM, even though the index is apparently formative (it is called 'The Index for Inclusion'; cf. Booth & Ainscow, 2002, 2011).

5.7.2 Commonly used scales

Table 5.5 shows that the ULS (in diff. languages or versions) was the most common scale, which indicates that quantitative research on loneliness is more standardized than research on inclusion, well-being, school belongingness, or marginalization.

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[37] In this equation, *p* represents the number of measured variables, and *q* is the number of unique variances/covariances (Hair et al., 2019).

Table 5.5 The main scale of interest in the reviewed studies

Scale	*Freq.*	%
Loneliness		
ULS	14	27.5
PALS	3	5.9
CLS	4	7.8
LACA	4	7.8
LSDS	2	3.8
School Belongingness		
PSSM	3	5.9
SBS	3	5.9
Inclusion		
SII	2	3.9
All concepts		
Other scales (single study each)	16	31.4
Total	51	100

Note. ULS: UCLA Loneliness Scale; PALS: Perth A-loneness Scale; CLS: Children's Loneliness Scale; LACA: Loneliness and Aloneness Scale for Children and Adolescents; LSDS: Loneliness and Dissatisfaction Scale; PSSM: Psychological Sense of School Membership Scale; SBS: School Belongingness Scale (SBS); SII: Student Inclusion Index.

The CLS, the LACA, and the PSSM were each found in three of four studies. As evident, no scale for explicitly measuring marginalization was identified. However, a scale for measuring school connectedness was identified as part of the Well-Being Index (WBI; Renshaw et al, 2015), and social exclusion was measured as part of the SBS (Arslan & Duru, 2017). The scale most similar to the SMS was the 16-item CLS (Tekinarslan & Kucuker, 2015). Thus, it can be discussed whether the SMS presented in this dissertation measures not only

marginalization but also aspects of loneliness (which also correlates strongly with school belongingness; Yildiz & Duy, 2014). To answer this question, theory needs to be developed to distinguish more accurately between *experienced* marginalization and loneliness.

5.8 Concluding the review: specifying the knowledge gap

First of all, it stands clear that current quantitative research on loneliness is far more standardized than research on (perceived) inclusion, marginalization, school belongingness, or well-being. The scoping review revealed that most of the studies regarding loneliness utilized the UCLA Loneliness Scale (Russel et al., 1978).

However, it became increasingly apparent that school belongingness, loneliness, and well-being are empirically related constructs, and that the measurement instruments used to assess each of these constructs, are somewhat similar, albeit not identical, which presents a challenge in terms of securing discriminant validity (cf. Kline, 2016, p. 301 for more information on jangle-fallacy).

Just as researchers have argued that loneliness and depression are inseparable constructs (e.g., Weeks et al., 1980), or at least strongly correlated (Malone et al., 2012), school belongingness and loneliness are seemingly highly correlated (Arslan & Duru, 2017). Thus, it is reasonable to expect that marginalization is also associated with school belongingness, inclusion, well-being, and loneliness, suggesting that the SMS shares core features with other scales, which arguably enhances its concurrent validity (Hair et al., 2019).

Most of the reviewed studies look into whether a lack of school belongingness or inclusion is associated with loneliness, depression, or poor mental health, and most of these studies were cross-sectional. In a few studies, a longitudinal design was used to document that such negative states tend to persist (Danneel et al., 2019; Lasgaard et al., 2011; Qualter et al., 2010). Thus, it is reasonable to presume that (experienced) social marginalization also tends to persist over time.

Still, a complete lack of multivariate quantitative studies on marginalization was recognized. Thus, no scale for explicitly measuring marginalization was identified in any study, but some similar scales were identified, which measure similar or related phenomena.[38]

It is methodologically exceptional that two or three respondent groups are included in SEM analyses as in this dissertation (see Table 5.4), which substantially limits the concerns regarding CMB. In this regard, the SEM analyses in this dissertation are unique, which is why both EFA and CFA were performed to explore and confirm the factor patterns of each model. Furthermore, the data in Papers 2–4 greatly

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[38] Although no instrument for measuring social marginalization was identified in the scoping review, an instrument similar to the SMS, named the Children's Loneliness Scale (CLS; Asher & Wheeler, 1985), emerged, suggesting that the Social Marginalization Scale (SMS; Andersen, 2021a) presented in this dissertation measures social marginalization as well as aspects of loneliness. Still, no studies containing SEM models identical to those in Papers 2–4 emerged, which is not surprising given that the PLM survey (2015–2019) is unique and comprises numerous factors, which have not been analyzed in conjunction with any previous multivariate SEM models.

surpass the standard requirements for sample size, whereas some of the reviewed studies are questionably small. SEM is an advanced *large-sample* technique (Kline, 2016) and in this regard the validity of the PLM data is excellent for this type of method.

Lastly, most of the reviewed studies concern the link between school belongingness, loneliness, and well-being, which has been *firmly* established. The link between inclusion and well-being has also been confirmed in a Danish study (Knoop et al., 2017). Therefore, knowledge is specifically needed on what other factors marginalization is connected to. For instance, only a few of the reviewed studies have investigated the association between social and academic outcomes (e.g., Arslan, 2019; Benner, 2011; Cañas et al., 2020; Sette et al., 2020). In order to address this knowledge gap, focus was directed toward other variable associations of interest rather than the association between marginalization and poor well-being. Hence, to avoid merely re-examining the well-established relationship between marginalization and poor well-being using another scale and different labels (see Section 8.4.1), this dissertation aims to examine students' perception of social marginalization in relation to additional factors.

Thus, well-being is considered an inherent part of experienced inclusion in this dissertation (implying marginalization; cf. Qvortrup & Qvortrup, 2018). Furthermore, well-being is also a part of the definition of social marginalization proposed in this dissertation (see section 1.4.2: "A psychosocial working definition of social marginalization").

7 Results

In the following sections, the aggregated findings of the individual papers are presented in bullet points.[61] First, the key findings of Papers 1–3 are summarized in Section 7.1. Thereafter, the main findings of Paper 4 are summarized in Section 7.2.

To examine the findings in greater detail, consult the key tables (showing the direct, indirect, and total effects) and main figures in each paper – mainly the structural models (for clarification on the results, e.g. on differences between the papers, see Appendix B).

7.1 Papers 1–3

The following results were derived from Papers 1–3 where social marginalization among students (Grades 4–10) was examined. In these papers, the SMS[62] was utilized to measure social marginalization.

- Roughly 3–3.5% of the students experienced a high to very high degree of social marginalization (see Paper 1).

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[61] All results were rounded to two decimal points. Unless otherwise noted, the newest results are reported from the latest survey.

[62] SMS: Social Marginalization Scale (introduced in Paper 1; Andersen, 2021a).

- The results were highly stable across the measurement points,[63] indicating some degree of prolonged social marginalization.[64]

- This percentage translates into a total number (estimate) of 15,615 students (446,144 × 0.035; school year: 2019/2020), who experienced a high or very high degree of social marginalization.

- Social marginalization gradually decreased with age as it was associated with grade level.

  - The results were similar across measurement points, suggesting strong external validity (see Paper 1, Figure 3).

  - A small direct effect of grade level was revealed ($\beta = .25$, $R^2 = .06$, $p < .001$), explaining 6% of the variance in social marginalization (see Paper 2).

  - The total effect of grade level was smaller ($\beta = .13$, $R^2 = .02$, $p < .001$), explaining 2% of the variance in social marginalization when accounting for other variables (see Papers 2 and 3).

  - Multigroup SEM showed that boys ($\beta = .16$, $R^2 = .03$, $p < .001$) experienced a steeper reduction in social marginalization with age compared to girls ($\beta = .10$, $R^2 = .01$, $p < .001$; see Paper 3, Table 7).

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[63] The three measurement points: T1 (2015), T2 (2017), and T3 (2019).

[64] The terms *relatively permanent* (Park, 1928), *constant* (Messiou, 2003) or *prolonged* marginalization (see Paper 1) are not clearly defined. It should be discussed how to operationalize these terms with greater precision, for instance, in terms of duration (e.g., 6 months or 1 year) or intensity (relies on quantifiable measures).

Results

- Girls were found to experience higher levels of social marginalization than boys on average (see Papers 1 and 3).[65]

  - The average difference between boys and girls was small (0.27 SD; see Paper 1).

  - Both girls and boys experienced more social marginalization in Grades 4–7 than in Grades 8–10.

- Teacher support reduced social marginalization (see Papers 2 and 3).

  - A moderate indirect effect was revealed ($\beta = .40$, $R^2 = .16$, $p < .001$), indicating full mediation, suggesting that teacher support reduces social marginalization *through* a positive classroom environment (see Paper 2, Table 5).

  - The classroom environment had a strong direct association with social marginalization ($\beta = .67$, $R^2 = .45$, $p < .001$), suggesting that a positive classroom environment greatly prevents or reduces social marginalization (see Paper 2).

  - The total buffering effect of teacher support on social marginalization was stronger for girls ($\beta = .38$, $R^2 = .14$, $p < .001$) than for boys ($\beta = .33$, $R^2 = .11$, $p < .001$), indicating that the influence of teacher support in terms of preventing or reducing social marginalization is moderated by gender (see Paper 3).

- A stronger parental community was associated with less social marginalization among students (see Papers 2 and 3).

  - The total effect of parental community on social marginalization was small ($\beta = .16$, $R^2 = .03$, $p < .001$, see Paper 2; $\beta = .15$, $R^2 = .02$, $p <$

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[65] These results were significant based on ANOVAs, $p < .001$ (the sample power was large enough to presume significance in the Papers).

.001, see Paper 3) suggesting that 2–3% of the variance in social marginalization is attributable to the parental community.

- o The parental community indirectly affected social marginalization ($\beta = .13$, $R^2 = .02$, $p < .001$), suggesting that the total effect of the parental community is primarily mediated by the classroom environment and minimally through teacher support (see Paper 2).

- o The parental community was predicted by grade level ($\beta = .34$, $R^2 = .12$, $p < .001$), suggesting that 12% of the variance in parental community is attributable to grade level, pointing to a moderate tendency for parents to become less involved as their children get older (see Papers 2 and 3).

In summary, girls experienced more social marginalization than boys. and social marginalization gradually decreased with age (more steeply for boys). Teacher support and the parental community was associated with reduced social marginalization while a positive classroom environment was strongly associated with reduced social marginalization. Paper 2 revealed that the classroom environment almost fully mediated the buffering effect of teacher support on social marginalization.

In terms of explaining social marginalization, the model presented in Paper 2 is deemed superior to the one presented in Paper 3 as it explained a greater proportion of variance in social marginalization (41% compared to 14%) as measured by the squared multiple correlations of the endogenous variables (Andersen, 2022).

7.2 Paper 4

The final results concern primary school students (Grades 0–3). The factor Classroom Inclusion (CI) from PLM was utilized to measure the continuum between exclusion and inclusion (i.e., marginalization processes) on the classroom level (see Paper 4, Table 6).[66]

- Classroom inclusion and school liking were associated with grade level.

  - There was a weak (total) association between grade level and CI ($\beta = -.13$, $R^2 = .02$, $p < .001$), suggesting that the degree of classroom inclusion drops slightly from kindergarten to third grade. This tendency gradually intensified between 2015 and 2019.

- Classroom inclusion predicted school liking.

  - A moderate association was revealed between CI and school liking ($\beta = .39$, $R^2 = .16$, $p < .001$), suggesting that 16% of school liking is explained by classroom inclusion. This relationship was equally strong across all measurement points.

- Adaption to school norms predicted both academic performance and classroom inclusion.

  - Adaption to school norms was strongly associated with academic performance ($\beta = .58$, $R^2 = .34$, $p < .001$), explaining 34% of the variance, and with CI ($\beta = .20$, $R^2 = .04$, $p < .001$) to a small extent.

  - Both gender ($\beta = .27$, $R^2 = .07$, $p < .001$) and the mother's educational level ($\beta = .14$, $R^2 = .02$, $p < .001$) had a small total effect on school-

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[66] The 2019 results are reported unless otherwise noted.

adaption ability, each accounting for 7% and 2% of the variance, respectively (i.e., girls and children of higher-educated mothers generally had superior school-adaption skills).

In summary, no significant association was found between gender and academic performance, suggesting that social skills explain most of the variance in students' academic performance. Thus, school-adaption abilities are seemingly critical in relation to explaining the gender gap in performance. Moreover, a small correlation was found between adaption to school norms and classroom inclusion. As expected, based on the results of the scoping review, a significant association was observed between classroom inclusion and school liking (an aspect of well-being) across all measurement points between 2015 and 2019, underlining the crucial consequences of inclusionary practices.

No important connection was found between classroom inclusion (implying marginalization) and academic performance. The negative effects of marginalization in the classroom may take longer to manifest, which is why a cross-sectional design could be limited in terms of studying the long-term social and psychological consequences.

8 Discussion

In this chapter, the combined results of the papers are discussed from a critical realist stance (see Section 4.2.2). This stance enables the ability to illuminate possible mechanisms underlying social marginalization and thus provide an answer to the main research question.

As a reminder, the main research question is:

Which factors are associated with students' experience of social marginalization (in the classroom and/or the school in general) and where should attention be directed in schools to prevent/reduce social marginalization most effectively?

Additionally, it is explained how to interpret the results of the Social Marginalization Scale (SMS; Andersen, 2021a) utilized in Papers 1–3.

8.1 The SMS: measuring social marginalization

One of the main purposes of this dissertation was to measure (i.e., estimate) the percentage of students who experience social marginalization (see Section 1.4.1). In Paper 1, it was estimated that roughly 3–3.5% of the students (Grades 4–10) experienced a high or very high degree of social marginalization between 2015 and 2019. Conversely, 96.5–97.0% of the students experienced a high or very high degree of inclusion. However, since the main term was not operationalized

dichotomously, but rather on a continuum between the ideal types of exclusion and inclusion (cf. Mortensen & Larsen, 2009), any score > 1 arguably indicated at least *some* degree of social marginalization.

Only a handful of students had an average score of 5, indicating maximum exclusion.[67] In contrast, 29.6% had an average score of 1, indicating maximum inclusion. These students felt highly included and reported high well-being in relation to the classroom and school in general. Yet it cannot be ruled out that these students have experienced occasional moments of marginalization (Antonovsky, 1956; Messiou, 2012; Park, 1928) – like the widespread experience of loneliness reported among youth (Perlman & Peplau, 1981).

Although the uncovered percentage of socially marginalized students seems small, it translates into a total of 15,615 students in Denmark (3.5% of the students in Grades 4–10 in 2019/2020). Hence, the low percentage is quite deceptive in terms of describing the problem.

In addition, the results were unexpectedly similar across measurement points, which could indicate some degree of *prolonged* marginalization: If marginalization were only a short-lived process, it would be reasonable to expect more fluctuation, making the results less stable, harder to replicate, and ultimately less valid.

Still, longitudinal research is needed to assess to what extent social marginalization is experienced by the same individuals over time.

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[67] Arguably, total exclusion only really occurs when students are physically expelled from school or if they leave school before completing their education (cf. Nordahl, 2018; Thyrring et al., 2016; Qvortrup & Qvortrup, 2018).

8.1.1 The SMS: an ordinal and contextual measure

According to existing research, experienced inclusion (implying marginalization) should preferably be measured *in degrees* (Nordahl, 2018; Qvortrup & Qvortrup, 2018; Thyrring et al., 2016). This represents a challenge as subjective ratings are *ordinal* (Field, 2018), meaning that the SMS does not contain a natural zero point. Therefore, one cannot assume that the lowest score implies the total absence of social marginalization or vice versa. Moreover, processes of inclusion and exclusion may vary depending on the context (Becker, 1963; Gilliam, 2009; Goffman, 1963; Nordahl, 2018), which matters when interpreting the results – especially from critical realism (Jespersen, 2018).

The scale presented in Paper 1 provides a gauge of the problem in Danish public schools. Still, it is unclear whether the results reflect temporary exclusionary processes or social marginalization as a more permanent state. Some argue that most (if not all) students experience marginalization, at least occasionally (Messiou, 2003, 2012).

8.1.2 Short-term vs prolonged marginalization

According to Park (1928) *true* marginalization is a "relatively permanent" state (p. 893) that tends to become a personality type. Messiou (2003, p. 44) similarly differentiated between *temporary* and *constant* marginalization and argued that temporary marginalization often occurs in school settings and is generally unproblematic, whereas the constant type is when a child feels permanently marginalized.

In Paper 1, I argue that *short-term* and *prolonged* marginalization might be more fitting terms from a critical realist view that emphasizes the changing nature of social phenomena (Bhaskar, 1975). These proposed terms imply that there is no actual contradiction in claiming that marginalization can be both a process and a (relatively) permanent state (i.e., a prolonged process), which Bryman (2012) considers true for social phenomena in general. Thomsen (2014) argued that marginalization must be considered *either* a process or a state to avoid logical contradiction, but I dismiss this dichotomous view from a critical realist stance. Logic dictates that if we define a state as something permanent it implies that change is impossible. Thus, by considering social marginalization permanent, it is erroneously (and rather impractically) implied that the problem cannot be addressed by any means.

Therefore, it must be discussed, first of all, how to properly define prolonged marginalization (e.g., in terms of duration and intensity).[68] No longitudinal studies on marginalization were identified in the scoping review, but longitudinal studies on loneliness and anxiety clearly indicate that negative emotional states tend to persist, which may ultimately lead to depression (Danneel et al., 2019; Lasgaard et al., 2011; Qualter et al., 2010) and even suicide (Lasgaard et al., 2011; Schinka et al., 2012). Longitudinal research also suggests that school belongingness strengthens mental health functioning, mental health, and well-being over time (Arslan, 2018a, 2018b; Vaz et al., 2014).

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[68] From a critical rationalist stance, it is essential that theories are concrete and falsifiable to qualify as scientific (Gilje & Grimen, 2002; Popper, 1959).

Hence, it is reasonable to presume that experienced social marginalization similarly has a tendency to endure. Nonetheless, longitudinal studies of social marginalization are needed to clarify this issue (e.g., by utilizing the SMS, as in this dissertation, or another scale intended to measure social marginalization [cf. Messiou, 2012, pp. 74–75]).

8.2 Social Marginalization: key variable associations

Another main purpose of this dissertation is to uncover fundamental patterns of social marginalization in relation to both social and academic outcomes and subsequently explain the identified patterns and highlight possible generative mechanisms (see Section 1.4.1).

When the results of each study were assessed, it became apparent that the discovered associations did not directly reveal any underlying causes (i.e., generative mechanisms), which was expected based on the critical realist theory of the three ontological layers of reality (see Table 4.1). Therefore, existing research was applied throughout the discussion to identify possible mechanisms through retroduction.

In the following sections, the main results are discussed and compared with relevant research to illuminate some possible mechanisms.

8.2.1 Age and social marginalization

In this dissertation's papers, social marginalization was found to gradually decrease with age. Both girls and boys reported stronger social marginalization in Grades 4–7 compared to Grades 8–10 (see Papers 1 and 3). Although the underlying causes were not directly evident from

the data (the deeper ontological layer is unobservable), possible explanations may be derived from existing research.

First, age-related development may play a role. Studies (incl. a longitudinal) have shown that the positive attitude toward loneliness increases during adolescence while the negative attitude decreases (Danneel et al., 2018; Houghton et al., 2014). It is possible that cognitive attitude changes – linked to age-related developments – influence the perception of desired social relations. Thus, it can perhaps be elucidated from cognitive discrepancy theory (see Section 1.4.2: "A psychosocial working definition of social marginalization").

Second, the gradual reduction in social marginalization may be partly caused by a natural increase in social skills. Children of different ages are believed to have different social needs and social skills, which influence their ability to cope with loneliness (Perlman & Peplau, 1981). Weiss (1973) argued that social skills are essential to both develop and maintain friendships and that lacking social skills can severely increase the risk of social exclusion and loneliness.

The importance of social skills is highlighted in the reviewed studies. Emotional intelligence (positively related to prosocial behavior and psychological flexibility) seems to facilitate inclusive behavior among students (Méndez-Aguado et al., 2020). Studies similarly suggest that anti-social behavior and poor social competencies are associated with loneliness and low peer acceptance (Junttila et al., 2012; Masi et al., 2011; Mouratidis & Sideridis, 2009). Moreover, allowing children to express their feelings and experiences is considered a prerequisite for successfully preventing marginalization (Messiou, 2012).

Discussion

In any case, it is likely that multiple mechanisms, both social and psychological, exert their influence on the association between age and social marginalization.

8.2.2 Gender and social marginalization

A small gender difference was detected on all points of measurement, revealing a common pattern. On average, girls experienced greater social marginalization than boys, which may seem surprising given that girls in primary school also displayed superior social skills in terms of school-adaption ability (see Paper 4), which, in theory, should reduce their overall risk of social exclusion (cf. Weiss, 1973).[69]

Notably, this result does not fit the narrative that boys are weaker and more fragile than girls and thus are at elevated risk of being "left behind" in school (cf. Zlotnik, 2004).[70] Cultural conditions may play a role. Long et al. (2012) found that girls in reported slightly higher school satisfaction and positive affect than boys in USA and a Chinese study showed that boys were significantly lonelier and more depressed

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[69] A significance test was not performed to attain an exact *p*-value, but the conclusion is deemed safe based on power analysis: The statistical power of a sample size of 5,000 (much smaller than the actual) is 0.80 on effects of about 0.04 standard deviations (equal to 4 points on the converted 500-point scale; see Paper 1, Fig. 3).

[70] In 2019/2020, 97% of the girls received teaching in regular schools while this applied to 92% of the boys (MCE, 2021b). Thus, in terms of 'physical inclusion,' boys are more marginalized and thus more likely to attend special schools than girls. However, in terms of 'psychological inclusion' (see Qvortrup & Qvortrup, 2018), this dissertation's results indicate that boys feel more socially included than girls.

than girls and that eight and nine graders scored higher on loneliness and depression than younger students (Lau et al., 1999). Nonetheless, the findings of this dissertation are compatible with recent quantitative studies. For instance, Lyyra et al. (2021) found that boys scored higher on mental well-being and various health indicators while girls scored higher on loneliness, which was associated with poor mental well-being and low self-esteem. Similarly, Baiocco et al. (2019) found that girls reported lower happiness than boys but that having one mutual friend along with higher SES significantly increased happiness. Likewise, the DSWQ has consistently shown that girls experience more loneliness than boys in Danish public schools in Grades 4–9.[71]

The mixed findings of the reviewed studies point to a complex interplay between gender and sociocultural factors in relation to social marginalization. Early research on loneliness has indicated the importance of demographic characteristics, such as gender, income, and age (Perlman & Peplau, 1981). In regard to gender, some researchers have argued that women may be more willing to reveal their feelings and admit feeling lonely (e.g., Borys & Perlman, 1985; Weiss, 1973). Therefore, it is possible that girls are also more inclined to share or report their emotions of feeling marginalized.[72] Thus, one should be careful about committing the epistemic fallacy and equate knowledge about reality with the deep ontology of a phenomenon as it is possible that boys more frequently hide their state of marginalization.

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[71] See https://uddannelsesstatistik.dk

[72] NB: The first item of the SMS is "I feel lonely in school" (see Table 8.1).

Thus, a combination of psychological, social, and cultural factors may underlie these differences, making it difficult (or even impossible) to point to a *single* mechanism that fully explains the result. More research is therefore needed to identify the main causes and reasons why girls report greater social marginalization as well as more loneliness than boys in Denmark (cf. Lyyra et al., 2021).

8.2.3 Teacher support and the classroom environment

Teacher support emerged as one of the strongest predictors of social marginalization in the SEM studies (see Papers 2 and 3).

Figure 8.1 Mediation model
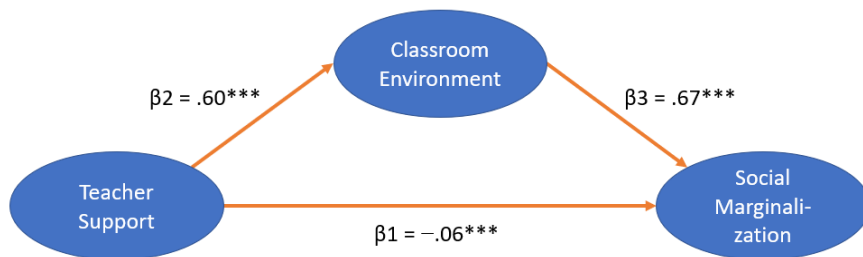
Note. Social Marginalization was coded inversely; a positive coefficient thus denotes stronger inclusion. *Source:* Paper 2 (Table 5), T2 data 2017, *** $p < .001$.

Figure 8.1 depicts the uncovered relationship between teacher support, classroom environment, and social marginalization.[73] In Paper 3, the direct relationship between teacher support and social marginalization

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[73] For more detail, consult the path diagram in Paper 2 (Fig. 4).

is close to moderate ($\beta = .33$, $R^2 = .11$), but the SEM model of Paper 2 is arguably the most accurate as it accounts for the classroom environment, which scientists consider vital (e.g., Hughes et al., 2001; Povedano et al., 2015).[74] In different ways, research indicates that the three depicted variables are closely linked. For instance, teacher support is deemed important for students' ability to cope with both social and academic demands (Howes et al., 1994); and children who receive more teacher support tend to experience greater classroom inclusion (Hughes et al., 2001; Perry et al., 2019). In addition, a positive student–teacher relationship can buffer children at risk of peer rejection (Elledge et al., 2016; Havik, 2017), and boost school satisfaction (Danielsen, 2012). Victimized and lonely boys tend to express themselves violently and aggressively, but a positive classroom environment can buffer negative emotions (Povedano et al., 2015). Moreover, class-mate support increases school satisfaction (Danielsen, 2012).

Although the above empirical findings propose the existence of significant direct and indirect effects, it was unexpected to discover *such* a powerful indirect effect. The direct relationship between teacher support and social marginalization nearly disappeared after factoring in the classroom environment, suggesting *full mediation*: In other words, when students experience a high degree teacher support, emotionally and academically, they tend to experience a positive

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[74] The models in Papers 2 and 3 were optimized in terms of statistical fit. Hence, each construct (e.g., Teacher Support) was not measured with the exact same indicators: Redundant indicators are removed from reflective factors (Hair et al., 2019).

classroom environment, where they feel both safe and accepted, which ultimately leads to less social marginalization in school.

Of these factors, mainly the positive classroom environment – which is continuously affected and reinforced by the teacher – promotes inclusion and diminishes social marginalization. Without a positive classroom environment, the buffering effect of teacher support is seemingly irrelevant. Hence, this (full) mediation model provides statistical support that teacher support prevents social marginalization almost entirely *through* the quality of the classroom environment. This indicates that building capacity to prevent marginalization should occur on a collective level in the classroom. Messiou (2012) suggests involving "forgotten students" (p. 117) – for example, as co-researchers and collaborators – to address issues of marginalization and to improve the classroom and school environment. Playing an important role may help boost self-confidence for excluded children. Thus, the research process itself can be used to facilitate and support inclusion.

Note that the total effect of teacher support on social marginalization was slightly stronger for girls than boys, indicating that this variable relationship is moderated by gender, which calls for further investigation into the social processes behind this variable relationship.

8.2.4 The parental community and social marginalization

Akselvoll (2016) hypothesized that higher-educated parents in general are more involved in schoolwork, which might lead to increased inequality among students in terms of social and academic outcomes.

Potential negative consequences of parental involvement in the parental community (i.e., how well parents know each other and cooperate in relation to the classroom environment) were therefore examined as well as the hypothesized positive consequences.

Research has suggested that increased parental involved can protect students from exclusion and victimization (Jeynes, 2008; Lee & Song, 2012; Wang et al., 2018), which are measured as aspects of social marginalization in the SMS (see Paper 1).

Figure 8.2 Mediation model with one sociodemographic variable
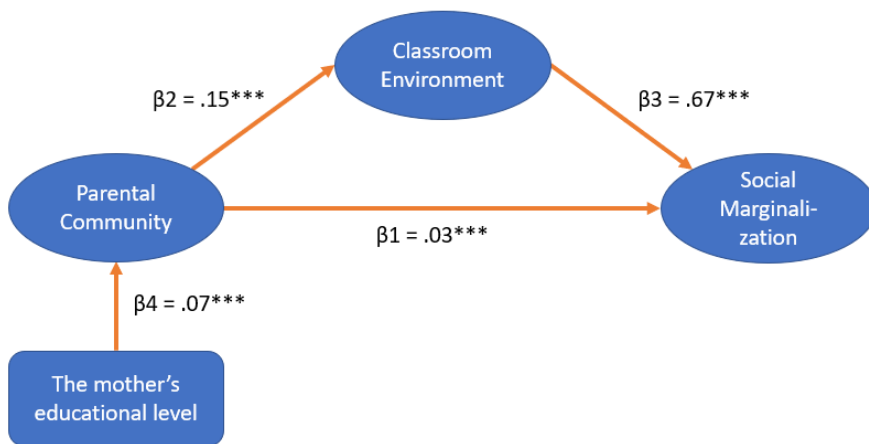
Note. Social Marginalization was coded inversely; a positive coefficient thus denotes stronger inclusion. *Source:* Paper 2 (Table 5), T2 data 2017, [***] $p < .001$.

Figure 8.2 depicts the relationship between the parental community, the classroom environment, and social marginalization. The SEM analyses indicate that the parental community has a small, yet positive, impact on social marginalization. In Papers 2 and 3, a small

association was revealed, suggesting that children of more involved parents generally experience (slightly) less social marginalization in school. In Paper 2, it is estimated that roughly 2–3% of the variance in social marginalization is attributable to the parental community – a small effect (Cohen, 1988). Paper 2 presents a superior model (cf. Paper 3), which suggests that the parental community prevents social marginalization indirectly *through* the classroom environment.[75] Again, the classroom environment was the central factor connecting all the others. This indicates that building capacity in the classroom to prevent social marginalization is not only achieved by involving teachers but also by involving parents in a collaborative endeavor. Still, the expected impact of a strong parental community must be considered small, whereas teacher support is apparently a more critical factor for preventing social marginalization.

The parental community has not been assessed specifically in any of the reviewed studies, but some studies indicate that parental warmth and positive child–parent communication reduce loneliness (Liu et al., 2015; Ying et al., 2018), whereas abuse, neglect, or being a member of a dysfunctional family, intensify loneliness (Lin & Chiao, 2020). In combination, these findings highlight the importance of the parent factor in connection to the social background.

The SEM models indicate that the parental community gradually weakens as students get older. Thus, the student's grade level is the

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[75] The model presented in Paper 2 explained 41% of the variance in Social Marginalization, whereas the model presented in Paper 3 explained 14%.

most significant predictor of the parental community – *not* the parents' educational level (cf. Akselvoll, 2016). Although a tiny association was identified between the mother's educational level and the parental community (see Paper 2), no evidence in this dissertation supports that unequal involvement in the parental community increases inequality among students as Akselvoll (2016, 2018) proposed. However, only a single factor of the multidimensional construct of parental involvement was measured in this dissertation, specifically the parents' degree of contact to each other (Nordahl, 2018), which is why these quantitative results do not settle this dispute definitively. Overall, the findings indicate that the parental community strengthens the classroom environment (rather than the student's perception of teacher support), which is likely to benefit *all* students. Only very limited evidence was found that children of higher-educated parents receive higher-quality teacher support than children of lower-educated parents (cf. Akselvoll, 2016, 2018). This indicates that teachers do not directly discriminate students based on social background (see Paper 2).

Still, the SEM models paint a complex picture as there is a small tendency for children (Grades 0–3) of higher-educated mothers to exhibit greater school-adaption abilities, which in turn enhances both social and academic outcomes. Thus, a hidden form of social reproduction may still occur – perhaps caused by differences in social skills (see Paper 4), which could be considered a part of the embodied habitus of students, which is not easily acquired or transformed (cf. Bourdieu, 1986; Bourdieu & Passeron, 1977).

8.2.5 Social marginalization and academic performance

In Paper 3 the association between social marginalization (using the SMS) and academic factors was examined more thoroughly, which yielded unexpected results.[76] The strongest association was found between the parents' educational level and the students' academic performance: Both the mother's and the father's educational level had a small association with the students' academic performance. The mother's and the father's educational level correlated strongly ($r = .5$; see Paper 3, Figure 2), which is why these variables could be used both interchangeably and concurrently (the latter approach was taken).

Based on previous measures, this effect was expected to be larger (Jensen et al., 2020; Nordahl, 2018; Qvortrup et al., 2016). The results suggest that the negative influence of social background is still present in Danish public schools. A significant association between teacher support and academic performance was revealed, but the effects were generally minimal or negligible. In *combination*, however, these small effects explained 10% of the total variance in academic performance (see Paper 3, Figure 2), nearly a moderate effect (Cohen, 1988).

The weak link between social marginalization and academic performance was surprising as the subjective experience of belonging in school has been found to significantly predict both school achievement (Arslan, 2019) and self-esteem (Perry & Lavins-Merillat, 2019).

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[76] In the PLM survey, each class teacher assessed the individual student in terms of academic performance in various subjects. Student and teacher responses were linked into individual cases and later anonymized.

The link between peer inclusion and academic achievement (at the individual level) has been confirmed in a longitudinal study (Sette et al., 2020). Similarly, researchers have found that lonely students typically experience slower academic progress and less school success (Benner, 2011) and that loneliness leads to lower self-esteem, less life satisfaction (Kapikiran, 2013), and lower academic achievement (Cañas et al., 2020). Hence, it is possible that it takes time for the negative consequences of social marginalization to fully manifest. Since, in theory, mainly the constant type of marginalization is concerning (Messiou, 2003, 2012; Park, 1928), a longitudinal study might be a superior research design for investigating the theorized association between social marginalization and academic performance.[77]

In summary, the results did not confirm the expected relationship between social marginalization and academic performance, which could be due to inherent limitations of the cross-sectional design, which does not account for the significance of time.

8.3 Classroom Inclusion: key variable associations

Since students in Grades 0–3 answered less questions than older students, the factor Classroom Inclusion (CI) was utilized in Paper 4 to

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[77] A longitudinal design was not possible with the available data from PLM since student responses had been anonymized on each measurement point.

examine relationships among social and academic factors.[78] Notably, psychological inclusion implies marginalization processes (Qvortrup & Qvortrup, 2018). Hence, the following discussion concerns results in relation to inclusion and marginalization in the classroom.

In the following sections, the main results are discussed and compared to existing research to reveal possible mechanisms.

8.3.1 Classroom inclusion and school liking

School liking is measured as an aspect of well-being both in the DSWQ (MCE, 2021a) and in PLM (Nordahl, 2018). Since the well-being factor for younger students was deemed statistically unreliable and thus invalid, school liking was measured with a single item and interpreted as being associated with well-being (see Paper 4).

Using SEM analysis, a moderate association was revealed between classroom inclusion and school liking, suggesting that students who feel emotionally, socially, or psychologically included in the classroom are more likely to enjoy school. This relationship was clear across all measurement points, indicating that classroom inclusion is vital for young students' well-being. Research suggests that a positive classroom environment buffers negative emotions and reduces loneliness and victimization (Povedano et al., 2015). Strong social skills

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[78] Classroom Inclusion was measured with an existing scale from the PLM data containing the following items: "The students in class are good friends"; "I have become friends with many in class"; "My classmates help me if there is something I cannot do or do not understand"; "My classmates like me."

may lead to higher classroom belongingness and less school-related loneliness (Mouratidis & Sideridis, 2009).

In summary, classroom inclusion can be categorized as a central variable or mechanism (akin to classroom environment; see Papers 2 and 3). Paper 4 confirms that classroom inclusion is central for school liking, but the critical role of teacher support was not accounted for in this paper. Research in early elementary school research suggests that children who receive high-quality teacher support tend to be experience greater peer-acceptance and inclusion (Hughes et al., 2001), and that students are more emotionally engaged in classrooms with emotionally supportive teachers (Havik & Westergård, 2019).

8.3.2 Classroom inclusion, grade level, and gender

Paper 4 showed that classroom inclusion dropped slightly from kindergarten to third grade, which could be a main reason why school liking concurrently drops. This points to an underlying mechanism where classroom inclusion is vital for students' well-being. A gradual drop in school liking in the first years of primary has been confirmed in the DSWQ, and girls in Grades 0–3 tend to like school more than boys.[79] This relationship was weaker in the PLM data, but the DSWQ is arguably more representative as it includes nationwide school data.

In future studies it should be further evaluated why girls like elementary school more than boys and why classroom inclusion and school liking tend to drop with age.

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[79] https://uddannelsesstatistik.dk/Pages/Reports/1792.aspx

8.3.3 Adaption to school norms and academic performance

The core finding of Paper 4 revolves around students' social skills, particularly their ability to adapt to school norms. Social skills were theorized to affect classroom inclusion (e.g., Mouratidis & Sideridis, 2009), which is why adaption to school norms was conceptualized as an antecedent (see Figure 8.3). The core finding of this study suggests that students who are considered well-behaved and socially competent by teachers are much more likely to exhibit better than average academic performance. In fact, when accounting for adaption to school norms, no statistically significant difference was present between boys and girls in terms of academic performance, which is a strong indication of the criticalness of adaptability as a social skill in school.

The gender gap has been widely confirmed in educational research (Voyer & Voyer, 2014), but the underlying causes are still heavily disputed due to the issue's complexity (e.g., Egelund et al., 2018; Zlotnik, 2004, Havik & Westergård, 2019). The significant difference in school-adaption ability between girls and boys might be one core mechanism underlying the gender gap in performance.

Moreover, there was a clear link between the mother's educational level and the students' social skills, which led to higher academic performance, suggesting that the influence of social background is already markedly present in the first years of primary school.

Figure 8.3 Causal diagram with two sociodemographic variables
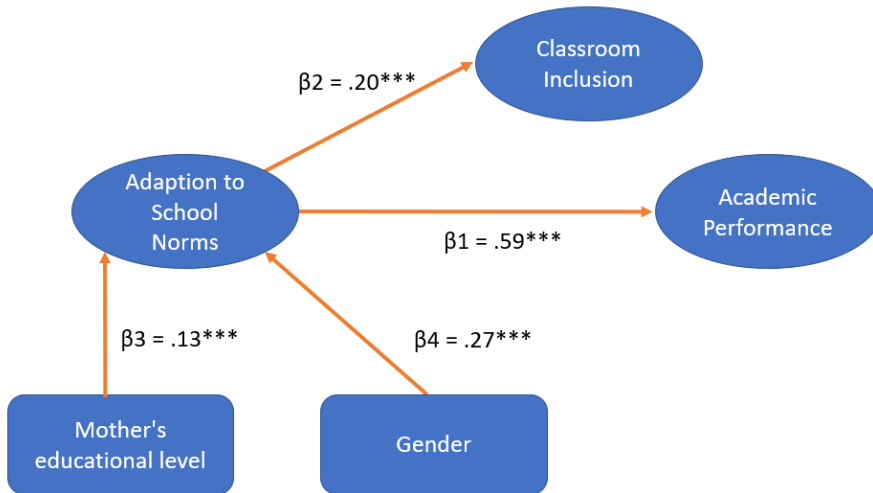
Source: Paper 4, Fig. 2, Table 6. T3 data 2019. *** $p < .001$.

Figure 8.3 displays the central part of the SEM model in Paper 4, which represents one of the dissertation's main findings. Adaption to school norms turned out to be a core variable, which connected both social and academic outcomes for young children. Moreover, the ability to adapt to school norms was affected by two key demographic variables: the mother's educational level and the student's gender. In combination, these demographic variables accounted for roughly 10% of the variance in adaption to school norms (almost a moderate effect; Cohen, 1988) – apparently a crucial social skill in school.

In fact, adaption to school norms accounted for more than *one third* (34%) of the variance in academic performance, which is considered strong in social science (Cohen, 1988), and even stronger in educational science where effects are often relatively small (Hattie, 2009).

Furthermore, adaption to school norms was linked to higher classroom inclusion, which was connected to greater school liking (see Paper 4). Thus, it seems that both girls and children of higher-educated mothers display a greater school-adaption ability on average, which is strongly connected to higher academic performance. These results point to a key generative mechanism, which could be considered in future capacity building projects in public schools as students' social skills are apparently critical for improving both social and academic outcomes.

Jensen et al. (2020) found that inequality in academic performance increased for older students in Danish public schools. The academic differences were largest in lower secondary schooling (Grades 7–10). Hence, an early prevention strategy with a focus on students' social skills could probably strengthen inclusion (i.e., decrease marginalization) and enhance students' academic performance.

In quantitative analyses, researchers have found that social skills are key to unlocking students' potential in relation to both social and academic outcomes. Anti-social behavior and poor social competencies have been linked to loneliness and low peer acceptance (Junttila et al., 2012; Margalit, 2010; Masi et al., 2011; Mouratidis & Sideridis, 2009), and loneliness has been linked to slower academic progress and lower academic achievement (Benner, 2011; Cañas et al., 2020). Thus, social skills are seemingly vital to prevent marginalization, decrease loneliness, and improve academic performance. Especially the ability to conform or (more precisely) *adapt* to school norms.

Hattie's (2009) meta-analyses indicated that social skills are crucial and that children of higher-educated parents learn the language of

schooling more easily. This apparently provides some children with an early educational advantage. In other words, some children might have acquired a burdensome habitus with less cultural capital, which is not easily affected as it is embodied and thus cannot be transmitted instantaneously like economic capital (Bourdieu, 1986).

For this reason, more research is called for to examine the role of social competencies in primary schools. Specifically, research is needed to investigate how to build organizational capacity and aid students in acquiring stronger social skills. Finally, it could be examined whether the results of Paper 4 are connected to a Rosenthal-effect where teachers' positive expectations of certain students evoke higher academic performance (cf. Knoop et al., 2018).

8.4 General limitations

In the following, general limitations are discussed. For more information, confer the limitation section in each paper.[80]

8.4.1 The jingle-jangle fallacy and social marginalization

The Social Marginalization Scale (SMS) of this dissertation could have been labelled differently. However, labeling this scale differently would *not* alter the underlying phenomenon's ontology. Hence, measurement validity is not affected by the choice of a factor label.

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[80] Most importantly, the limitations in terms of deriving causal interpretations from correlational data are discussed in Papers 2–4.

Discussion

Kline (2016) referred to this belief as jingle-jangle fallacy, which is quoted in full because of the centrality of this argument:

> *Jingle-fallacy is the assumption that because different things are called by the same name, they must be the same thing. Jangle-fallacy refers to the belief that things must be different from each other because they are called by different names. In measurement, the jingle-fallacy is indicated when low intercorrelations are observed among tests claimed to measure the same construct. In this case, no single test can be relied on as actually reflecting the target domain. The jangle-fallacy is apparent when very high intercorrelations are observed among tests that are supposed to measure different constructs. The lesson of jingle-jangle fallacies is that interpretations of test scores should not be based on test names; instead, researchers should rely on more rigorous methods, including CFA, to establish convergent validity and discriminant validity. (p. 301)*

As explained, the factor name is strictly a theoretical choice. What matters most is to establish validity using rigorous methods.

In this dissertation, the factors Social Well-Being and Social Isolation were merged into the SMS because discriminant validity was not supported in the EFA (see Paper 2, Figure 3). Subsequently, the label 'Social Marginalization' was attached to this construct (cf. Messiou, 2003, 2012, pp. 74–75) as the indicators revolved around well-

being, loneliness, social exclusion, and bullying (e.g., the latter represents an intensification of marginalization processes; Søndergaard & Hansen, 2018). This label was also chosen to highlight the continuum between exclusion and inclusion and to accentuate that no student is neither totally excluded nor totally included in his/her own experience in every school context as these concepts represent *ideal types* (Benjaminsen et al., 2015; Mortensen & Larsen, 2009; Ritzer, 2011).

It would also have been valid to interpret the findings as related to social well-being and social isolation (Nordahl, 2018), loneliness (Tekinarslan & Kucuker, 2015), psychological (experienced) inclusion (Nordahl, 2018; Qvortrup & Qvortrup, 2018; Thyrring et al., 2016), or school belongingness (Arslan, 2018a; Arslan & Duru, 2017).

Comparing the SMS with the CLS

As explained in the scoping review, it is common that factors carrying different labels are statistically and conceptually related, which can in fact signify concurrent validity (Frey, 2018).

It was noticed during the review process that no scales in existing publications were identical to the Social Marginalization Scale (SMS), which was formed from the PLM data (cf. Qvortrup et al., 2016). Still, the scoping review indicates that social marginalization and loneliness overlap to some extent. While this is less apparent on complex multi-dimensional loneliness scales, such as the PALS (Houghton et al., 2014, 2016) or the LACA (Danneel et al., 2018; Marcoen et al., 1987), some items of the 16-item CLS (Asher et al., 1984) are directly comparable to those of the SMS.

Table 8.1 A partial comparison between the CLS and the SMS

Item	CLS: Children's Loneliness Scale [a]	SMS: Social Marginalization Scale [b]
1.	I am lonely at school.	I feel lonely in school.
2.	I feel left out at things in school.	I feel left out in school.
3.	I do not have anyone to play with at school.	I spend time with the other students in the breaks.
4.	I am well-liked by my friends.	I am often bullied by other students.
5.	I feel alone in school.	I feel sad in school.
6.	I do not have any friends in the classroom.	I feel good in my classroom.
7.	I do not get along with the children at school.	I feel good in the breaks.

Note. [a] *Source:* Asher et al. (1984); Asher and Wheeler (1985); Tekinarslan and Kucuker (2015). [b] *Source:* Andersen (2021a; Paper 1).

Table 8.1 compares selected items of the 16-item CLS (Tekinarslan & Kucuker, 2015) to the 7-item SMS (Andersen, 2021a). While some items of the SMS are positively phrased – for instance, items that explicitly measure well-being aspects – the main concepts are evidently operationalized similarly in the CLS and the SMS (e.g., with reflective, interchangeable indicators; cf. Hair et al., 2019). Hence, it is plausible that the SMS is associated with other loneliness measures. For instance, the 16-item LSDS also contains strong similarities with the CLS and the SMS (cf. Bagner et al., 2004).

Thus, this dissertation's results could be interpreted as related to loneliness. Messiou (2012) also formed a survey instrument to measure marginalization, which is similar and includes the well-known

concept of belonging.[81] Additional research should therefore be conducted to further differentiate (or unite) experienced marginalization (or psychological inclusion) from loneliness and belonging.

A key difference between marginalization and loneliness is the common belief that marginalization is caused by external factors (Madsen, 2005; Thomsen, 2014), which is reflected in common dictionary definitions (e.g., Chandler & Munday, 2011), whereas loneliness research considers personality traits (e.g., extraversion/introversion, neuroticism, and psychoticism), and emotions of lonely individuals (Lasgaard & Elklit, 2009; Saklofske, 1986; Stokes, 1985).

However, this belief or assumption is fundamentally flawed, in my view, as marginalization arguably arises in the *interplay* between the social environment and the individual or group. Johnston (1976) argued that a fusion between psychological and sociological theory is optimal for understanding marginality since such an approach would consider the social context, the actions of others, and the subjective nature of the experience of marginalization.

Therefore, a working definition of experienced social marginalization is proposed in this dissertation, which incorporates elements from both loneliness theory and marginalization theory (see Section 1.4.2).

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[81] In a research project, Messiou (2012, p. 74) used the following two questions (among others) to measure marginalization: "I feel included at my school"; "When I am at school, I feel safe and that I belong" (cf. items 1, 2, and 5 in Table 8.1).

8.4.2 Self-report measures and social marginalization

In the following sections, it is considered whether certain limitations exist in terms of using self-report measures to assess marginalization.

Self-report data and the typology of marginalization

The typology of marginalization suggests that some children may hide their true emotions due to shame or lack of emotional awareness (Messiou, 2003, 2012). Vice versa, it is possible that highly sensitive children will report feeling marginalized even if others disagree in their perception (Messiou, 2003; Mowat, 2015).

Thus, self-report measures may be less useful in capturing the types of marginalization where children mask or hide their pain ('the hidden area') or when they have a so-called 'blind spot' (see Section 3.6.2). Conversely, using self-report measures may (indirectly) reveal inequities that neither the students nor the teachers are aware of because a survey provides an anonymous space to express opinions.

These limitations should be discussed further in future research. In any case, using questionnaires is a valuable way of enabling children's voices to emerge. However, there are many other ways of gathering information on students' experience (cf. Messiou, 2012, pp. 49–77).

Self-report data and common methods bias

A central limitation of self-report data is the risk of common methods bias (CMB) when measuring multiple variable relationships using a common group of respondents (Podsakoff et al., 2003).

It was impossible to eliminate this type of bias in the utilized SEM models where some factors were measured from the same respondent group. In order to account for this issue, responses from multiple respondent groups were included to reduce CMB as much as possible.

The scoping review revealed that most studies used a single respondent group, whereas the SEM studies of this dissertation includes 2–3 respondent groups, which greatly mitigates the risk of CMB, such as mood and personality effects (Podsakoff et al., 2003).

8.4.3 Special classes and special schools

The PLM data did not contain a variable to filter out students from special schools and special classes, Therefore, this dissertation's SEM studies concern general relationships underlying marginalization common to *all* students. Some researchers also argue than one should avoid placing students in predefined categories as this can result in overlooking *potentially marginalized* students (Messiou, 2017, 2019).

The estimate of marginalized students in Paper 1 would probably have been *slightly* lower if students from special classes and special schools had been excluded.[82] Loneliness is more prevalent among students with special educational needs (Tekinarslan & Kucuker, 2015), which most likely also applies to experienced social marginalization

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[82] In the school year 2019/2010, the nationwide inclusion degree of students (Grades 4–10) was 93.2% https://uddannelsesstatistik.dk/Pages/Reports/1791.aspx.

(see Appendix C for additional information on the variation of social marginalization across schools).

8.4.4 Missing values

In this dissertation's SEM studies, full information maximum likelihood (FIML) estimation was applied to treat missing values, which is considered a state-of-the-art approach and the least biased under most missing conditions (Hair et al., 2019; Newman, 2014).

Before FIML was applied, missing value analysis (MVA) was conducted. Little's MCAR test (IBM, 2021) was run, which yielded significant results ($p < .001$) in relation to all studies (Papers 1–4), indicating that the data were missing not at random (MNAR). Fortunately, on most variables, the missing values did not exceed 10–15%.

Table 8.2 shows the MVA for the SEM analysis in Paper 2 (See Appendix D for MVA on the other papers). This SEM analysis was largely unbiased as most variables had less than 15 percent missing values (Hair et al., 2019, p. 634). The rate of missingness was highest for parents at about 50 percent. Yet it is generally difficult to achieve a high response rate for parents, which is why 50 percent is considered decent in present-day surveys involving this group (Nordahl, 2018).

MVA revealed that construct-level missingness was present; hence, FIML was applied, which fares better than most traditional approaches when the data are MNAR with construct-level missingness (Baraldi & Enders, 2010). Even so, there are no perfect techniques of treating missing data (Baraldi & Enders, 2010). Therefore, the SEM

models in Papers 2 and 3 were applied on the 2017 data to minimize the number of missing responses and thereby increase validity.

It is typically expected that higher-educated parents, older individuals, and females are overrepresented in surveys (Cheung et al., 2017). Hence, it is likely that younger parents with less resources were underrepresented in PLM.

Table 8.2 Missing value analysis: Paper 2

Item	N	M	SD	Missing	
				Count	%
SM1	41,812	3.55	0.72	2,444	5.5
SM2	41,618	3.66	0.62	2,638	6.0
SM4	41,786	4.30	0.82	2,470	5.6
SM5	41,707	4.46	0.84	2,549	5.8
SM7	41,657	4.63	0.70	2,599	5.9
TS1	41,622	3.37	0.76	2,634	6.0
TS3	41,405	3.22	0.94	2,851	6.4
TS5	41,562	3.61	0.66	2,694	6.1
TS6	41,420	3.32	0.79	2,836	6.4
TS7	41,325	3.14	0.84	2,931	6.6
TS8	41,380	3.47	0.74	2,876	6.5
TS9	41,370	3.54	0.69	2,886	6.5
CE1	41,478	3.48	0.71	2,778	6.3
CE2	41,377	3.34	0.77	2,879	6.5
CE4	41,498	3.48	0.70	2,758	6.2
PC1	21,646	2.79	0.79	22,610	51.1
PC2	21,719	2.56	0.84	22,537	50.9
PC3	21,687	2.38	0.80	22,569	51.0
PC4	21,699	2.04	0.70	22,557	51.0
PC5	21,704	2.63	0.80	22,552	51.0
MEL	21,924	3.37	1.19	22,332	50.5
GL	44,256	6.46	1.73	0	0

Note. T2 data (2017). All variables from the structural model. SM = Social Marginalization; TS = Teacher Support; CE = Classroom Environment; PC = Parental Community: MEL = Mother's educational level; GL = Grade level.

Little's MCAR test = $p < .001$.

As shown in Table 8.2, the data were of high quality in terms of the high or even excellent response rates of class teachers and students. The parents' responses were the most limited, which was addressed by replacing item-level missingness with the construct's mean and by applying FIML to estimate missing values (see Appendix E for a clarification on the sample size of each study).

Still, a response rate near 50 percent is considered decent by modern standards. It has become hard to achieve a higher response rate, probably because the use of surveys has become more widespread, especially online. Nowadays, more people are therefore inclined to reject survey invitations without much consideration (Clement & Ingemann, 2011).

8.4.5 Theoretical and conceptual limitations

Since the primary aim of this dissertation (see Section 1.4.1) was to form a valid and reliable quantitative measure of social marginalization and deliver knowledge on the empirical patterns of social marginalization, the construct of marginalization was central. Thus, this dissertation mainly concerns marginalization and the empirical results.

In the scoping review, it is summarized how related constructs have been measured in other studies. Although these constructs are not always measured in the same manner, they often correlate. Moreover, this dissertation's SEM studies include several factors, which could have been described more fully in terms of theory (e.g., the construct of teacher support or parental involvement).

However, a more pragmatic approach was taken, where the concepts were just sufficiently delineated in order to establish measurement validity as the main aim was to measure and reveal the empirical (statistical) patterns of social marginalization on the factual domain. Hence, the main results and conclusions (see Chapters 7 and 9), are empirical, although some (possible) mechanisms were identified and elucidated based on both theory and existing empirical studies.

As such, this dissertation mainly constitutes an empirical contribution to education research as well as a methodological contribution in terms of how to measure the phenomenon adequately and validly based on existing theories and models. Thus, the main aim of this dissertation was not to develop marginalization theory within the field of education but rather to apply existing theory with the purpose of constructing valid conceptual and statistical models in order to reveal hidden empirical patterns in the context of Danish public schools.

The discovered patterns were confirmed across multiple measurement points, indicating that these patterns are in fact relatively stable and therefore relevant to consider in future studies (the patterns could be present in other countries and other school contexts as well). Despite the theoretical and conceptual limitations, the conceptual models and empirical results of this dissertation could thus prove valuable and pertinent in future studies. For instance, the conceptual models proposed in the papers could be re-used in similar contexts and form the basis of new statistical studies.

9 Conclusion

At the beginning of this dissertation, the following research question was asked:

> *Which factors are associated with students' experience of social marginalization (in the classroom and/or the school in general), and where should attention be directed in schools to prevent/reduce social marginalization most effectively?*

Based on the PLM data, I developed the 7-item Social Marginalization Scale (SMS; Andersen, 2021a) to measure social marginalization in schools among students in Grades 4–10. The SMS was utilized in multivariate analyses to estimate the percentage of marginalized students and to examine how social marginalization is associated with other factors and manifest variables. All effect sizes (direct, indirect, and total) were estimated, and the strongest variable relationships were identified to uncover where schools should primarily focus attention to prevent/reduce social marginalization most effectively.

For students in Grades 4–10 (Papers 1–3), it is concluded:

- Social marginalization does not have a single cause; rather there are multiple causes/conditions that affect students' subjective experience of social marginalization (which underscores the core concept of multicausality in critical realism; Jespersen, 2018).

Unraveling the patterns of marginalization

- The statistical analyses indicate that social marginalization is strongly connected to reduced well-being. Thus, reducing social marginalization will most likely improve student well-being. Although experienced marginalization can probably never be eradicated in all school contexts (Hansen, 2012; Qvortrup & Qvortrup, 2018), this dissertation concludes it is critical to reduce social marginalization in order to improve students' social well-being (cf. MCE, 2020).

- The results indicate that roughly 3–3.5% of students experience a high or very high degree of social marginalization. However, marginalization theory needs to be developed to distinguish more accurately between short-term and prolonged marginalization (see Paper 1). Longitudinal studies could elucidate this issue.

- No substantial relationship was found between social marginalization and academic performance among students. It may take longer for the negative effects of social marginalization to manifest. Therefore, longitudinal studies may provide clearer answers on the likely link between social marginalization and low academic performance.

- Social marginalization was moderately related to teacher support (emotional and academic) and strongly related to the quality of the classroom environment. This implies that schools *can* build organizational capacity to prevent/reduce social marginalization since marginalization is partly caused by conditions *within* schools. To deal with social marginalization, schools should therefore focus on fostering positive and inclusive communities in each classroom while being vigilant of not enacting new exclusionary processes.

- The classroom environment was a key factor, which mediated the buffering effects of both teacher support and the parental community

on social marginalization. For this reason, improving the classroom environment is a critical factor in terms of reducing social marginalization in both the classroom and the school in general.

- The parental community had a small buffering effect on social marginalization through the classroom environment. Higher-educated parents were a bit more involved in the parental community. Consequently, schools could work on strengthening the parental community as this would likely benefit most students.

- Girls experienced greater social marginalization than boys. The causes are not directly observable from the data and must therefore be examined further (e.g., by using cluster analysis to identify specific subgroups or by conducting qualitative in-depth studies).

- Social marginalization gradually decreased with age. Although the causes are not evident from the data, it is possible that this relationship is linked to age-related developmental changes (e.g., a gradual increase in social skills among students due to maturation).

To assess marginalization (in the classroom) in the first years of primary school, the Classroom Inclusion scale from PLM was applied (Nordahl, 2018) since psychological inclusion implies marginalization (Qvortrup & Qvortrup, 2018; Thyrring et al., 2016).

For students in Grades 0–3 (Paper 4), it is concluded:

- Adaption to school norms was a strong predictor of academic performance. Children with better school-adaption abilities experienced greater social inclusion in the classroom, which was positively

associated with school liking. This suggests that social skills (esp. school-adaption abilities) are crucial for both academic and social outcomes. This calls for more research to provide concrete solutions and strategies on how to aid students in enhancing their school-adaption skills in the first years of primary school.

- The ability to adapt to school norms was partly explained by gender and the mother's educational level, which implies that some core mechanisms are external to the school. Boys of lower-educated parents seem to be at particular risk in this regard.

- When controlling for the impact of social adaption skills, the association between gender and academic performance vanished. This indicates that, if educators must reduce the gender gap in performance, it is vital to work with students' social skills and clarify *why* some students find it hard to adapt.

I propose that the typology of marginalization (Messiou, 2003, 2012) is placed within the Johari Window Model (Luft & Ingham, 1955; Zakel, 2011) to graphically depict the typology of marginalization, consisting of four ideal types, and elaborate it by placing it within a well-known theoretical framework (see Sections 3.6.2–3.6.3).

Based on this typology, combined with core elements of marginalization and loneliness theory, I have formulated a working definition of social marginalization, which highlights the individual's experience along with the interplay between the marginalized and his/her surroundings (see Section 1.4.2: "A psychosocial working definition of social marginalization"). I propose that this theoretical framework,

and the accompanying working definition, can be used as a starting point in future studies on experienced social marginalization.

Finally, it must be emphasized that marginalization is a complex, multifaceted, and multidimensional construct, which calls for a combination of methods, theoretical approaches, and research strategies to investigate the phenomenon in depth. For example, the role of social media and online relations could be examined in future studies.

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Appendix A: the systematic search process

The search process in ProQuest

In ProQuest, the initial search only contained the truncated keywords 'marginali*' and 'inclusi*' (search in document title) along with the listed keywords in Block 2 and Block 3 (see Table 4.1). At first, this search string resulted in 122 total hits. By removing the keyword 'marginalization' from Block 1, the total hits lowered to 116. Only 6 publications had the term 'marginalization in the document title.

During the search process, it became increasingly apparent that the terms' school belongingness' and 'loneliness' were frequently used in studies about students' subjective experience of exclusion, loneliness, social isolation, or depression, etc., which overlap with research on experienced social marginalization. For example, the term 'exclusion' is often used synonymously with marginalization (e.g., Benjaminsen et al., 2015; Messiou, 2003; Peace, 2001). To broaden the search, the keywords 'school belongingness,' 'loneliness' and 'exclusi*' were therefore added, resulting in 205 total hits in the final search. Both quantitative and qualitative research suggests that marginalization (incl. bullying) is associated with reduced well-being (e.g., Knoop et al, 2017; Messiou, 2012; Søndergaard & Hansen, 2018). Therefore, it was attempted to add the keyword 'well-being' to the final search string, but this resulted in 1,450 hits. Consequently, this term was not included in the final search in ProQuest.

The search process in PsycInfo

In PsycInfo, the number of hits was much lower. Therefore, the following keywords were added: 'inclusi*,' 'exclusi*,' 'loneliness,' 'school belongingness,' 'well-being' (with and without hyphenation), 'bullying,' and 'social isolation.' Bullying and social isolation are considered aspects of marginalization (Benjaminsen et al., 2015; Søndergaard & Hansen, 2018), whereas reduced well-being is considered associated with exclusion and marginalization (Knoop et al., 2017; Rasmussen & Due, 2007, 2011, 2019), which is why these terms were included. From this search, 24 publications emerged. Although the search could have been widened, this would have uncovered even more studies with only a limited or implicit focus on marginalization.

In PsycInfo, no quantitative studies on marginalization emerged where either EFA or CFA had been applied. Most identified studies revolved around loneliness, well-being, and depression.

The search process in Idunn

With the truncated keyword 'marginali*' both Scandinavian and English word inflections were captured. Surprisingly, only 19 studies contained the central keyword 'marginalization' ('marginalisering' in Danish, Swedish, and Norwegian) in the document title. Therefore, additional keywords were added, specifically 'inkl*' (inclusion) ekskl* (exclusion), 'ensomhed' (loneliness), and 'trivsel' (well-being) separated by the Boolean operator 'OR.' Most keywords were truncated to capture inflections in multiple, Nordic languages. By including the search term 'skole' (search in document title), the number of results dropped to 0. Therefore, the search was not narrowed further. The final search resulted in 87 publications. Of these, 1 was considered

relevant, specifically a quantitative study about the factors underlying well-being in Norwegian schools (Danielsen, 2012).

The search process in VBN

In VBN, only a few publications contained the central keyword in the document title. For this reason, an advanced search was applied. In Block 1, the keywords 'marginali*' and 'inklusi*' were added, separated by the Boolean operator 'AND.' To focus exclusively on school research, the keywords 'skole*' (ENG: school) and 'elev*' (ENG: student) were added, separated by the Boolean operator 'OR.' This search resulted in 115 hits. Of these, 2 studies seemed relevant in relation to inclusion and marginalization of students (Jensen et al., 2020; Thyrring et al., 2016). However, upon closer inspection, these studies were excluded because they concerned academic marginalization or how to conceptualize inclusion.

Some relevant Danish quantitative studies (e.g., Nordahl, 2018; Qvortrup et al., 2016) did not appear from this search. This is partly because the term 'marginalization' is rarely used explicitly in publications on inclusion, although one can argue that psychological inclusion implies marginalization (Qvortrup & Qvortrup, 2018). Although no Danish studies are described in the scoping review they are referred to in central parts of the dissertation, including the individual papers. Danish studies were included to contextualize the results.

Appendix B: clarification regarding the results

The PLM data were used in all studies, which contained many of the same variables. However, all presented statistical models are unique, which is why the results sometimes differed between the papers in terms of the coefficients, also between the same variables. For instance, the direct effect between parental community and social marginalization was lower in Paper 2 (β = .03) than in Paper 3 (β = .12). This is because SEM accounts for direct, indirect, and total effects. In comparison, the total effect of parental community on social marginalization was *slightly* higher in Paper 2 (β = .16) than in Paper 3 (β = .15). Thus, it is critical to interpret the (standardized) *total effects*, especially when comparing the distinct models presented in the papers.

As explained in Chapter 1 (see Section 1.4.2: "Factors: latent variables"), the constructs were conceptualized as *reflective*, which is why CB-SEM was employed. This means that the indicators are *interchangeable* since they are expected to correlate (Hair et al., 2019; Romani, 2017). When working with reflective models, it is crucial to reduce model complexity to improve model fit and validity and thereby form a more parsimonious model, which can be achieved by removing redundant indicators (Kline, 2016). For instance, Teacher Support was not measured using the same bundle of indicators in Paper 2 and Paper 3. This is because each reflective model was assessed in terms of validity (e.g., to improve the AVE), which resulted in model adjustments that affected (i.e., fine-tuned) the coefficients.

Appendix C: marginalization across schools

Figure C1 Marginalization among students in Grades 4−10 (2019)
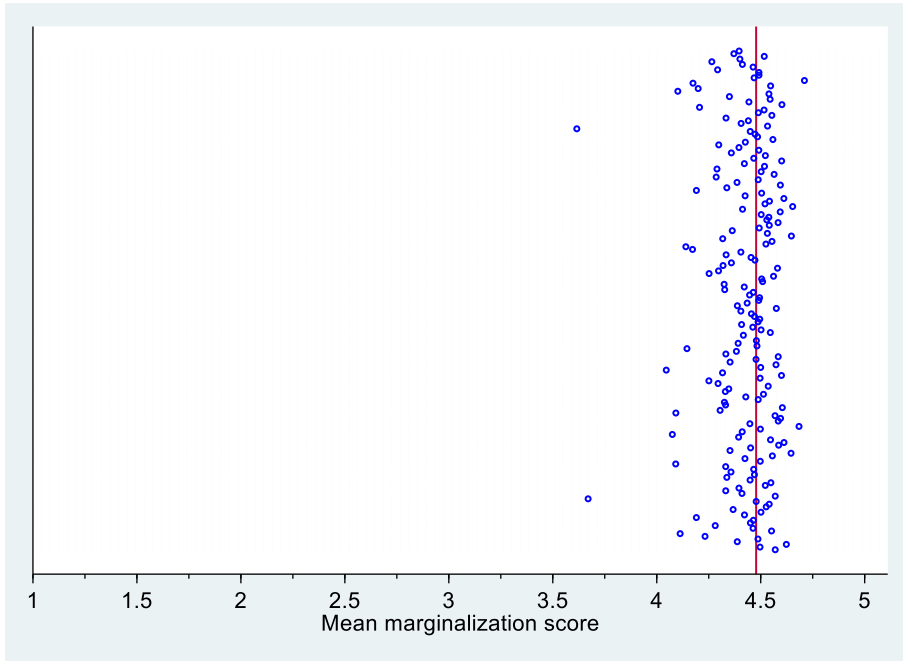
Note. The Social Marginalization Scale (SMS; Andersen, 2021a) was utilized to calculate the mean marginalization score (1–5) at the school level. The vertical reference line represents the grand mean ($M = 4.48$), and each school is represented by circles. Two schools ($n_1 = 24$, $n_2 = 16$) had a marginalization score far below 4 indicating a high degree of marginalization (the scale was coded from high to low). Both of these outliers were special schools for children with severe emotional and social problems. Using a random intercept model with school ($n = 186$) as the grouping variable and by calculating the intraclass correlation (ICC = .03), it was estimated that only about 3% of the variance in marginalization could be explained due to clustering effects.[83] Multilevel linear modeling was therefore not applied. Still, the diagram shows that there is some degree of variance between schools, which is likely connected to the geographic location of schools, school quality, school type, economy, and other contextual factors.

T3 data from 2019. $N = 39,428$.

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[83] https://advstats.psychstat.org/book/multilevel/index.php

Appendix D: missing value analysis

Table D1 Missing value analysis: Paper 1

Item	*N*	*M*	SD	Missing	
				Count	%
SM1	39,315	3.52	0.74	3,528	8.2
SM2	39,183	3.64	0.64	3,660	8.5
SM3	39,221	3.76	0.62	3,622	8.5
SM4	39,319	4.24	0.85	3,524	8.2
SM5	39,265	4.42	0.85	3,578	8.4
SM6	39,278	4.53	0.88	3,565	8.3
SM7	39,249	4.60	0.72	3,594	8.4
Gender	42,843	1.49	0.50	0	0.0
Grade level	42,843	6.47	1.71	0	0.0

Note. T3 data (2019). Cases with construct-level missingness were deleted. Item-level missingness was reduced by replacing missing values with the construct mean. SM = Social Marginalization (items 1–7).

Little's MCAR test = $p < .001$.

Table D2 Missing value analysis: Paper 3

Item	N	M	SD	Missing	
				Count	%
SM1	41,812	3.55	0.71	2,444	5.5
SM2	41,618	3.66	0.62	2,638	6.0
SM3	41,663	3.78	0.60	2,593	5.9
SM4	41,786	4.30	0.82	2,470	5.6
SM5	41,707	4.46	0.84	2,549	5.8
SM6	41,682	4.54	0.87	2,574	5.8
SM7	41,657	4.63	0.70	2,599	5.9
TS1	41,622	3.37	0.76	2,634	6.0
TS2	41,234	3.49	0.69	3,022	6.8
TS3	41,405	3.22	0.94	2,851	6.4
TS5	41,562	3.61	0.66	2,694	6.1
TS6	41,420	3.32	0.79	2,836	6.4
TS7	41,325	3.14	0.84	2,931	6.6
TS8	41,380	3.47	0.74	2,876	6.5
PC1	21,646	2.79	0.79	22,610	51.1
PC2	21,719	2.56	0.84	22,537	50.9
PC3	21,687	2.38	0.80	22,569	51.0
PC4	21,699	2.04	0.70	22,557	51.0
PC5	21,704	2.63	0.80	22,552	51.0
AP1	43,169	3.20	1.04	1,087	2.5
AP2	42,307	3.20	1.05	1,949	4.4
AP3	41,583	3.09	1.02	2,673	6.0
AP4	40,862	3.13	0.89	3,394	7.7
AP5	42,370	3.23	1.05	1,886	4.3
MEL	21,924	3.370	1.19	22,332	50.5
FEL	21,706	3.00	1.29	22,550	51.0
Gender	44,237	1.48	0.50	19	0.0
Grade level	44,256	6.46	1.73	0	0.0

Note. T2 data (2017). Full information maximum likelihood estimation was applied to reduce bias on missing data. In general, the level of missing data was very low (0–7%), except for parents (50–51%). SM = Social Marginalization; TS = Teacher Support; PC = Parental Community; AP = Academic Performance; MEL = Mother's educational level; FEL; Father's educational level.

Little's MCAR test = $p < .001$.

Table D3 Missing value analysis: Paper 4

Item	N	M	SD	Missing	
				Count	%
CI2	25,065	3.63	0.71	1,619	6.1
CI3	25,035	3.48	0.83	1,649	6.2
CI4	25,024	3.61	0.68	1,660	6.2
ASN1	25,711	2.90	0.91	973	3.6
ASN2	25,705	2.92	0.83	979	3.7
ASN3	25,717	2.64	0.91	967	3.6
ASN4	25,706	2.97	0.81	978	3.7
ASN5	25,713	2.56	0.91	971	3.6
ASN7	25,701	3.12	0.76	983	3.7
AP1	25,461	3.26	1.01	1,223	4.6
AP2	25,044	3.29	0.96	1,640	6.1
AP3	21,132	3.07	0.90	5,552	20.8
AP5	22,487	3.20	1.11	4,197	15.7
PC1	9,193	3.04	0.66	17,491	65.5
PC2	9,227	2.96	0.73	17,457	65.4
PC3	9,188	2.67	0.75	17,496	65.6
PC5	9,194	2.83	0.69	17,490	65.5
MEL	9,396	2.77	0.80	17,288	64.8
Grade level	26,684	1.57	1.12	0	0.0
Gender	26,684	1.49	0.50	0	0.0
SL	28,084	3.56	0.73	2,879	9.3

Note. T3 data (2019). Full information maximum likelihood estimation was applied to minimize bias. In general, missingness was very low on student responses (0–9%) and highest for parents (around 65%). Not all questions were relevant for the youngest students, which lowered the response rate of class teachers (5–20%) on academic performance. To offset the weak response rate of parents in 2019, a multigroup SEM analysis was conducted to include data from 2015 and 2017 thus cross validate the results. CI = Classroom Inclusion; ASN: Adaption to School Norms; AP = Academic Performance; PC = Parental Community; ME = Mother's educational level; SL = School liking.

Little's MCAR test = $p < .001$.

Appendix E: clarification regarding the sample size

This appendix sheds light on the complexity of reporting the exact number of participants in this dissertation's studies. Since this dissertation presents multivariate analyses containing either one, two, or three respondent groups, across one or three measurement points (see Figure 1.2), the exact number of cases was reported but not the exact number of participants.

First, the number of participants *varied* between the measurement points, and all student responses were anonymized, which is why it was not possible to identify individual students who participated across multiple surveys (e.g., in 4th, 6th, and 8th grade). Therefore, the total number of individual students who participated in the surveys is unknown (see Papers 1 and 4).

Second, several instruments were used in combination with various ways of gathering data: Class teachers rated each student's academic performance at each grade level, which is why the number of responses from class teachers was *not* equal to the number of participants (see Nordahl, 2018, p. 24). The number of class teachers who participated is unknown as only their anonymized responses were collected and analyzed (see Papers 3 and 4).

Lastly, FIML was applied as a technique to treat missing values in the SEM analyses (Papers 2–4), which uses all the available data and transforms incomplete and partial cases into complete cases to avoid unnecessary data loss, meaning that some responses were estimated (Newman, 2014).

Still, each paper contains a full description of the number of responses and cases. The data firm Conexus merged responses into unique cases and anonymized the PLM dataset before it was made available for analysis.[84]

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[84] http://laeringsledelse.dk/wp-content/uploads/2021/11/Supplerende-information-til-foraeldre_kortlaegning-2021.pdf

SUMMARY

Empirical research suggests that children who experience social marginaliza-tion in school (i.e., feel left out, excluded, or that they simply do not belong) generally experience lower well-being and have lower-quality relationships with both teachers and peers. Unfortunately, there is scant knowledge on the complex patterns of marginalization, making it difficult to develop gen-eral strategies to tackle the issue. To fill this knowledge gap, this disserta-tion presents four quantitative studies that utilize survey data from Program for Learning Management (PLM; 2015–2019), which to date is the largest school development program in Danish educational history. By conducting state-of-the-art multivariate analyses (incl. structural equation modeling), an instrument for measuring the construct is developed, resulting in quan-titative knowledge on the intricate patterns of marginalization. As a result, this dissertation points to some key mechanisms underlying social margin-alization. In addition, it provides theoretical and methodological directions for future research.