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Understanding Academic Achievement through Social and Cultural Lenses in Swedish Upper Secondary Schools

Jón Víðir Þorvaldsson

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Abstract

Social factors within educational settings have been repeatedly highlighted as a key determinant of students' academic achievements and school success. This thesis investigates the interplay between peer relations, social belonging, cultural identity, school culture, and academic outcomes in Swedish upper secondary schools. Utilizing survey data gathered in 2013 from students across eleven upper secondary schools in Malmö, the study employs an exploratory quantitative design to assess how these social variables influence academic performance. The research highlights the significance of student's identity and a positive school culture in enhancing academic outcomes. Notably, it identifies the complex role of social belonging, which varies based on the school's cultural environment. The findings emphasize that cultural identity and teacher support are critical modifiers of the relationship between social factors and academic success. The study contributes to the literature by offering a nuanced understanding of the social dimensions of educational environments, particularly within a multicultural context. This research underscores the importance of fostering inclusive and supportive school cultures to improve educational equity and student achievement.

Keywords: Education policy, Swedish education system, educational equality, class structures.

Table of contents

<u>1. Introduction</u>	<u>3</u>
<u>2. The Swedish Education System</u>	<u>6</u>
<u>3. Determinants of Academic Performance</u>	<u>9</u>
<u>4. Peer Relations</u>	<u>11</u>
<u>5. Social Belonging</u>	<u>15</u>
<u>6. Cultural Identity</u>	<u>19</u>
<u>7. School Culture</u>	<u>21</u>
<u>8. Teacher Support</u>	<u>24</u>
<u>9. Methodology</u>	<u>27</u>
<u>9.1 Research Design</u>	<u>27</u>
9.2 Ethical considerations	28
<u>9.3 Operationalization of key concepts</u>	<u>29</u>
<u>9.4 Background variables</u>	<u>33</u>
<u>10. Analysis</u>	<u>35</u>
<u>10.1 Analytical Techniques</u>	<u>35</u>
<u>10.2 Model Building</u>	<u>36</u>
<u>11. Results</u>	<u>39</u>
<u>11.1 Descriptive Statistics</u>	<u>39</u>
11.2 Regression Models	43
<u>11.3 Model Diagnostics & VIF</u>	<u>52</u>
<u>12. Discussions</u>	<u>54</u>
<u>12.1 Limitations</u>	<u>59</u>
<u>12.2 Concluding Remarks & Wider Context</u>	<u>61</u>
References	63

1. Introduction

Education is a pivotal foundation for individual success and societal advancement, with social interactions within educational settings playing a crucial role in shaping academic outcomes (Hossain et al., 2022; Masland and Lease, 2013). This thesis explores the complex relationships between peer relations, social belonging, academic performance, and the influence of cultural identity and school culture within upper secondary schools in Malmö, Sweden. Sweden's educational system, known for its egalitarian principles and inclusivity, provides a unique context for investigating these social factors, particularly given recent demographic shifts toward a more multicultural student population (Nylund, 2012). Despite policies aimed at equitable outcomes, disparities persist (Erikson & Rudolphi, 2010). The relationship between academic performance and broader life outcomes, such as delinquency rates, underscores its multifaceted significance. Maguin and Loeber's seminal work in 1996 indicated that academic prowess not only correlates with educational attainment but also serves as a predictor for delinquent behavior, particularly among certain demographics. Their findings advocate for developmentally sensitive interventions targeting self-regulation, social competencies, and parental involvement to foster positive academic and behavioral outcomes (Marguin & Loeber, 1996). This research aims to contribute to discussions on educational equity by examining the social dimensions of learning environments and their impact on academic success.

Literature highlights the critical role of peer relations and social belonging in student learning and well-being, correlating positively with academic achievement and motivation (Brown & Larson, 2009; Goodenow, 1993; Mahar et al., 2013). Cultural identity affects student engagement and academic outcomes by influencing their sense of integration within the school community (Phinney, 1990; Karjalainen, 2020). Additionally, school culture, defined by its norms, values, and expectations, and teacher support significantly shape the educational climate and student performance (Wang & Degol, 2016). Previous research indicates that peer relations consistently enhance academic performance, reinforcing the importance of supportive peer networks. However, the impact of social belonging varies, often influenced by the school's cultural environment. Notably, school culture and teacher support appear as critical modifiers in the relationship between social variables and academic outcomes, suggesting that a positive educational environment substantially strengthens the effects of peer support and a sense of belonging. Cultural identity also emerges as pivotal,

with students whose identities resonate with the culture of their country of residence typically achieving better academic results (Zajda, 2020).

Building upon this foundation, this thesis examines how peer relations, social belonging, cultural identity, school culture, and teacher support collectively impact academic performance in Swedish upper secondary schools. With Sweden's educational system rooted in egalitarian principles and inclusivity, this study is well-positioned to unravel how these social factors interplay within a multicultural student population (Erixon Arreman & Dovemark, 2018).

The focus of this research is on how social variables affect academic outcomes and their potential interaction effects. The hypothesis posits that while peer relations and social belonging directly impact academic achievement, their influence is significantly modulated by the broader cultural context of the school, the specific cultural identities, and the backgrounds of the students. The research employs a quantitative design, leveraging survey data from students across various upper secondary schools in Malmö, Sweden. This data includes measures of peer relations, social belonging, cultural identity, and perceptions of school culture and teacher support, gathered using scales validated by previous educational research. Multiple regression analyses explore how these variables correlate with students' self-reported academic performance and the interactions between these social factors.

This research aims to bridge gaps in the existing literature on academic performance in upper secondary schools by dissecting the nuanced interplay of social factors in a multicultural environment. While previous studies have examined the effects of variables like peer relations or school culture, this study explores their effects in conjunction with social belonging and cultural identity. This approach is relatively novel, especially within the increasingly multicultural Swedish educational context.

By examining cultural identity, this study aims to quantify the effects of identifying with the host country's culture, as well as the consequences of not doing so. This analysis provides insights into how students with foreign backgrounds navigate their identification with Swedish culture, and whether there are differences between those who embrace Swedish cultural identity and those who do not. The study then explores whether these differences manifest similarly among native Swedish students with no foreign background. Additionally,

the study analyzes how these identity dynamics interact with peer relations and social belonging to influence academic outcomes, providing a comprehensive view of the social fabric that supports or hinders student achievement.

Furthermore, the study evaluates how overarching school culture can modify the influences of peer relations and social belonging. It examines whether a positive, inclusive school culture can amplify the benefits of strong peer relations and a sense of belonging, and conversely, how a negative or indifferent school culture might diminish these benefits. Simultaneously, it distinguishes between school culture and teacher support to further evaluate the distinct effects of each on academic performance. This analysis is essential for understanding the mechanisms through which school environments can either facilitate or impede academic success, especially for students from diverse backgrounds.

Through its design, this research offers a sophisticated analysis of the social dynamics within schools, highlighting the complex ways in which interpersonal relationships and individual perceptions contribute to educational outcomes. The current thesis aims to address the following research questions:

How do peer relations and social belonging impact students' academic performance in Swedish upper secondary schools, and how are these impacts influenced by students' backgrounds and school environments?

- *How does cultural identity interact with peer relations and social belonging to influence academic outcomes in Swedish upper secondary schools?*
- *How does school culture effect the relationship between social belonging, peer relations, and academic performance in Swedish upper secondary schools?*

By addressing these research questions, the study aims to provide a comprehensive understanding of the multifaceted social factors that influence academic performance in a multicultural educational context. The findings aim to provide actionable insights for educators and policymakers to develop strategies that foster inclusive and supportive school environments, thereby enhancing academic performance for all students, regardless of their background.

2. The Swedish Education System

The Swedish education system underwent significant transformation with the introduction of the Free School Reform in 1992. This policy allowed private entities, including businesses, to establish and operate schools with public funding on par with state schools. This reform aimed to increase competition and provide parents with more choices for their children's education. Notably, the Social Democratic party, traditionally opposed to privatization, initiated this reform as part of a broader decentralization strategy, transferring control from the central government to municipalities. The free school policy led to a substantial increase in privately run schools, with a significant number being for-profit. This reform sparked debate about its impact on educational equality, as it allowed for greater differentiation in school offerings, potentially exacerbating social inequalities. Despite these concerns, the Free School Reform has become a staple of the Swedish education system, demonstrating the unique consensus-driven political culture in Sweden that allows for such significant policy shifts (Wiborg, 2015).

Despite this, the Swedish education system is renowned with an egalitarian structure, aiming to provide equal opportunities for all students regardless of social background. From early childhood education through to higher education, the system is designed to foster an environment of inclusivity and learning. Compulsory schooling in Sweden includes nine years of primary education, after which students progress to upper secondary school, where they choose between vocational and academic tracks. This system not only prepares students for higher education but also equips those choosing vocational paths with skills relevant to the labor market. The government's commitment to education is evident in its substantial investment in the sector, ensuring that public education is free, while also providing support for students' living expenses (Nylund, 2012; Erixon Arreman & Dovemark, 2018).

Nylund (2012) delves into how the differentiation between vocational and academic tracks in Swedish upper secondary schools is intricately tied to class distinctions within the country. It argues that the division between these educational pathways not only mirrors but also reinforces existing social class structures. Vocational education is often associated with students from lower socioeconomic backgrounds, while the academic track is typically pursued by those from higher socioeconomic classes. This segregation is reflective of broader

societal values and economic structures, where academic education is perceived as leading to higher status and better-paying jobs, thereby perpetuating class divisions.

Nylund points out that the vocational track, despite providing essential skills and addressing labor market needs, is still viewed as less prestigious. This perception affects the social and economic mobility of its graduates, who may face limited opportunities compared to their peers from academic tracks. The societal undervaluation of vocational education contributes to a cycle where students from lower classes are funneled into lower-prestige educational paths, which do not offer the same opportunities for upward mobility as more academically oriented tracks.

Introductory Programmes (IPs) in Swedish post-16 education are designed to provide alternative pathways for students who do not meet the traditional academic requirements for entrance into upper-secondary programs. Initiated as part of the 2011 educational reforms, these programs aim to offer tailored educational opportunities that can lead to either vocational qualifications or further study eligibility for higher education. IPs serve a crucial role in addressing the needs of a diverse student body, including newly arrived immigrants, students with learning difficulties, and those who have underperformed in compulsory schooling. The structure of the programs is intended to be flexible, allowing for customization to meet individual educational needs and aspirations. This flexibility includes a combination of foundational academic courses, vocational training, and internships, which are meant to enhance the students' employability and academic competencies (Nilsson & Axelsson, 2013).

Despite their objectives, the implementation of IPs has faced challenges. One significant issue is the lack of a standardized curriculum across these programs, leading to inconsistencies in quality of education and student outcomes. The decentralized nature of the Swedish education system exacerbates this problem, as local authorities and schools have significant autonomy in how programs are administered. This can result in varied experiences for students, with some receiving high-quality, supportive education that leads to successful outcomes, while others may experience a lower quality of education that does not effectively prepare them for future employment or studies. Furthermore, research suggests that while IPs are intended to be inclusive, they often segregate students from mainstream education tracks, potentially stigmatizing participants and reinforcing social inequalities. This segregation can

hinder the integration of disadvantaged students into the broader educational and social fabric, impacting their long-term educational and career trajectories (Nilsson & Axelsson, 2013; Nylund, 2012).

Erikson and Rudolphi (2010) explore the changing dynamics of educational inequality in Sweden, focusing on primary and secondary effects that contribute to inequality in transitioning to academic upper secondary education. Their study utilizes longitudinal data spanning cohorts born between 1948 and 1982, examining the evolving nature of these effects. They find that both primary effects, which are the advantages children from higher social classes have due to better school performance, and secondary effects, which are the increased tendencies of these children to pursue further education given their performance, have historically contributed to educational inequality. Interestingly, the decrease in overall inequality seems linked to reductions in both these effects. The study concludes that changes in family environments, economic conditions, and educational policies over the years have played significant roles in reducing educational inequality, although the impacts of these changes vary across different social classes (Erikson & Rudolphi, 2010).

The Swedish education system is designed to provide equal opportunities for all students, with a structure that includes nine years of compulsory education followed by upper secondary school, where students choose between vocational and academic tracks. The system is supported by substantial government investment, ensuring free public education and student support. Nylund (2012) highlights how the division between vocational and academic tracks in Swedish upper secondary schools reflects and reinforces social class structures, with vocational education often perceived as less prestigious. The Free School Reform, introduced in 1992, allowed private providers to operate schools with public funding, significantly increasing the number of privately run schools. This policy aimed to increase educational choice but has also raised concerns about its impact on social equality (Wiborg, 2015). By examining the interplay between social and background variables among students, this research seeks to understand the mechanisms underlying educational inequalities in Sweden and identify strategies to foster inclusivity within the education system.

3. Determinants of Academic Performance

As previously discussed, academic performance is often hailed as a cornerstone of future success, influencing career trajectories, personal happiness, and societal contributions. The dynamics of academic performance are influenced by a myriad of factors spanning from individual characteristics to environmental contexts. Idris et al. (2020) highlights that both the mother's and father's educational levels significantly contribute to their children's academic achievements, with educated parents more likely to create an environment conducive to learning, which includes strong vocabulary use and structured educational support at home. The findings show that children of educated parents perform substantially better academically compared to those with less educated parents. This relationship is further evidenced by the higher educational aspirations and support mechanisms instilled by parents with high education themselves, which are directly linked to better academic outcomes in their children (Idris et al., 2020). When parents actively engage in their children's educational processes, they reinforce these secure attachments, which are critical for children's social and emotional development. Such engagement, ranging from involvement in homework to attendance at school functions, provides children with the assurance and motivation needed to explore their environment and engage deeply with academic content. Studies corroborate that children with securely attached relationships are more likely to possess higher academic self-confidence and perform better at school due to the continuous support and structured environment their parents provide (Hossain et al., 2022). Moral-García et al. (2020) found that parental support plays a significant role in enhancing adolescents' academic performance. Adolescents who receive higher levels of parental support exhibit better academic outcomes. This support included various forms of involvement, such as encouraging healthy habits, participating in school-related activities, and fostering a positive attitude towards education. The findings indicate that parental involvement not only boosts students' motivation but also directly contributes to their academic success, highlighting the importance of a supportive home environment in promoting educational achievements (Moral-García et al., 2020).

The findings from Clark et. al. (2019) further underscores the significant role of perceived social support in enhancing adolescents' grit, particularly in the context of academic achievement. Importantly, their research reveals that social support from parents and classmates is crucial, significantly correlating with higher levels of perseverance and passion for long-term goals, indicative of better academic performance. These associations suggest

that adolescents are likely influenced by the behaviors of their parents and peers, which could include emotional encouragement, the sharing of goal-directed strategies, and the creation of a supportive environment that fosters resilience and sustained effort towards achieving long-term objectives (Clark et. al, 2019).

In addition to external influences, personal and psychological factors play a significant role in academic achievement. Bailey and Phillips (2016) dig into the concept of adaptation, emphasizing its multidimensional nature encompassing academic, social, emotional, and personal domains. Effective adaptation to the academic rigors of university life correlates with improved academic performance and subjective well-being, highlighting the importance of holistic student support initiatives. Understanding the multifaceted nature of academic performance predictors, Brew et al. (2021) further explore the role of student adaptation in academic settings. Their research emphasizes the critical importance of adaptation across academic, social, emotional, and personal dimensions. Effective adaptation enables students to navigate the challenges of educational environments, fostering both academic success and personal growth. Moreover, personality traits and emotional experiences significantly shape academic outcomes, as evidenced by Duff et al. (2004) and Camacho-Morles et al. (2022). Personality dimensions like conscientiousness and emotional experiences such as enjoyment and boredom exhibit notable correlations with academic performance.

Furthermore, self-efficacy emerges as a crucial mediator between school climate, psychological well-being, and academic performance, as demonstrated by Zysberg and Schwabsky (2021). A positive school climate, characterized by supportive relationships and a sense of belonging, fosters students' academic self-efficacy, which in turn influences their academic success. This underscores the importance of creating inclusive and supportive educational environments that empower students to believe in their capabilities.

Gender also emerges as a big influence when it comes to academic achievement. The meta-analysis conducted by Voyer and Voyer (2014) revealed a consistent female advantage in teacher-assigned school marks across various subjects, with a mean effect size of 0.225, indicating that girls generally receive higher grades than boys. This advantage was found to be most pronounced in language courses and least in math courses, with significant moderators including the source of marks, nationality, and racial and gender composition of samples.

Lastly, subjective well-being emerges as a significant predictor of academic performance, as highlighted by Wu et al. (2023). Students' life satisfaction and positive emotions are not only linked to their current academic performance but also serve as indicators of their future academic success. This highlights the mutual relationship between psychological well-being and academic performance, indicating that improving students' emotional health can lead to better academic results over time.

These findings highlight the interconnectedness of various factors influencing academic performance, emphasizing the need for multifaceted interventions that address individual, familial, and environmental determinants. By recognizing the diverse array of influences on academic success, educators and policymakers can implement targeted strategies to support student flourishing across multiple domains. Thus, academic performance is influenced by a complex interplay of individual, familial, social, and psychological factors.

As discussed in this chapter, academic achievement is influenced by a variety of social, psychological, and environmental variables. This broad perspective provides a solid platform for digging into more particular areas of influence. The following chapter will look at how peer interactions influence students' academic experiences, both directly and indirectly. The dynamics of peer influence will be investigated, as will the significance of social belonging in academic contexts.

4. Peer Relations

Adolescence is a crucial period characterized by significant psychological and social transformations. Adolescents often adopt the norms, values, and behaviors of their peer groups, which play a critical role in shaping their sense of belonging and self-concept. This alignment with peer group values helps adolescents navigate the complexities of their social environments by providing a framework within which they can develop their identities (Brown & Larson, 2009). Positive peer interactions are linked with better social skills, higher self-esteem, and greater academic achievement. These interactions serve not only as a social buffer against the stresses of adolescence but also as a significant positive force encouraging educational engagement and success. On the other hand, problematic peer relations can lead to feelings of social isolation, reduced academic success, and poorer mental health,

highlighting the dual potential of peer influences during this formative period (Steinberg & Morris, 2001).

The importance of peer groups is instrumental in the broader process of identity exploration and commitment, which are key components of identity formation as outlined by Erikson's stages of psychosocial development. The peer group's influence on an adolescent's emerging identity includes reinforcing or challenging their beliefs and perceptions, which can lead to either a strengthened sense of self or increased feelings of confusion and insecurity (Erikson, 1968).

The transition to upper secondary school marks a pivotal juncture in adolescents' lives, entailing not only academic challenges but also profound shifts in their social landscapes. This period is characterized by multiple factors that prompt adolescents to navigate through complex social dynamics while establishing their identities within the new educational setting. As highlighted by Côté and Levine (2015), students undergo substantial social reorganization during this transition, requiring them to employ adaptive strategies to negotiate their positions within the social hierarchy of the school environment. One significant aspect of this transition is the heightened emphasis on academic and social hierarchies within the upper secondary educational setting. As students progress into higher grades, they encounter a more stratified social environment where academic achievement and social status become increasingly intertwined. This shift can pose significant challenges to adolescents as they grapple with issues of identity and belonging amidst new peer groups and social structures.

In response to these challenges, adolescents may employ various strategies to manage their social status and navigate the complexities of the transition process. Social mobility, for instance, involves strategic maneuvering between different peer groups in pursuit of social acceptance and status. By aligning themselves with certain peer groups or social cliques, adolescents may seek to establish a sense of belonging and identity within the new school context (Hogg, 2016). Similarly, social creativity emerges as another adaptive strategy employed by adolescents during the transition to upper secondary education. This involves the re-definition of social norms and values within peer groups, allowing individuals to assert their identities and challenge existing hierarchies. Through acts of social creativity,

adolescents may actively shape the dynamics of their social environments, thereby exerting agency in the construction of their social identities (Côté & Levine, 2015).

Central to this dynamic is the role of peer groups as influential agents of socialization. Within the context of upper secondary education, adolescents are immersed in social networks where peer interactions serve as a primary source of influence on their attitudes and behaviors toward academic engagement. The norms and values upheld within these peer groups shape students' perceptions of academic success and exert a tangible impact on their levels of motivation and commitment to learning (Steinberg & Morris, 2001).

The influence of peer groups during adolescence is multifaceted, impacting both psychological well-being and academic trajectories. As adolescents seek acceptance and affirmation from their peers, they are more likely to conform to the group norms that offer them social validation. This conformity can significantly influence their academic motivation and engagement. For instance, adolescents who associate with peers who value academic achievement are likely to adopt similar priorities, which can enhance their motivation to excel academically. Conversely, affiliations with peer groups that are indifferent or even negative towards academic pursuits can undermine academic engagement, leading to poorer school performance (Brown & Larson, 2009). By modifying their social behaviors to conform to the norms of their peer groups, adolescents may experience shifts in their academic motivation and engagement. This process of social adjustment reflects the reciprocal relationship between social identity and peer relations, wherein students' perceptions of themselves within the social context are intimately intertwined with their interactions and affiliations with peers (Steinberg & Morris, 2001).

Thus, peer relations are key determinants of students' social and emotional well-being, influencing their sense of belonging, self-esteem, and motivation to perform academically. Positive relationships with peers provide crucial sources of support, validation, and social connectedness, essential for navigating the challenges associated with educational transitions. A positive school environment, characterized by supportive relationships with peers and a sense of belonging, has been shown to foster students' overall well-being, thereby creating conducive conditions for academic success. Conversely, negative experiences within the school context, such as social exclusion or interpersonal conflicts, can impede students' academic progress and undermine their overall school satisfaction (Kiuru et al., 2020). Age

also seems to matter when it comes to the effect of peer relations on academic achievement. Masland and Lease's (2013) study sheds light on how these dynamics manifest across different age groups, emphasizing the interplay between individual experiences and group dynamics in shaping academic behaviours.

The relationship between peer relations and academic achievement seems to be a two-way street. Adolescents who are intrinsically motivated toward academic success often seek out peer groups that share similar academic values and aspirations. Within these peer groups, the presence of strong academic norms catalyzes positive academic behaviours, fostering an environment where academic achievement is valued and rewarded. Importantly, adolescents who may not inherently value academics can be influenced by the academic norms upheld within their peer groups. This suggests that the alignment between individual preferences and group dynamics plays a crucial role in determining the extent to which adolescents conform to positive academic behaviours (Masland and Lease, 2013).

But the nature of one's peer group doesn't seem to be the only important factor. Recent studies have shown that adolescents who experience higher levels of acceptance within their peer groups are more likely to excel academically. This relationship speaks to the significance of social integration and belongingness in fostering positive academic outcomes. Importantly, the influence of peer acceptance on academic achievement is mediated by perceived academic competence. In other words, when adolescents feel accepted by their peers, they are more likely to develop a sense of confidence in their academic abilities, which in turn bolsters their academic performance. Furthermore, these results highlight the positive correlation between the number of friends and life satisfaction. While this association does not necessarily extend to academic achievement, it underscores the importance of peer relationships in promoting emotional well-being. Having a larger social network provides adolescents with opportunities for social support, companionship, and emotional validation, all of which contribute to greater life satisfaction (Țepordei et al., 2023).

It is evident that the positive influence of peer relations on academic achievement is a multifaceted phenomenon worthy of deeper investigation. While existing research illuminates the importance of peer interactions in shaping academic motivation and engagement, it prompts to question the underlying mechanisms at play. What is it about peer relations that fosters this positive effect? Is it merely the opportunity for students to be in frequent contact

with their peers, or does it encompass a deeper sense of belonging? Diving into peer relations' impact on academic outcomes, a comprehensive examination of the role of social belonging in shaping students' educational experiences and achievements presents itself as a promising avenue for further investigation.

5. Social Belonging

As previously discussed, academic achievement is shaped by numerous factors that extend far beyond cognitive abilities or intellectual talents. Current research increasingly highlights the significance of social and psychological dimensions in determining academic outcomes, especially among adolescents. A fundamental aspect of human psychology that influences academic performance is the concept of social belonging—a sense of being valued and accepted within a social context. This chapter explores the critical role of social belonging and its impact on students' motivation, emotional well-being, and engagement, both academically and socially.

Social belonging transcends simple physical presence or passive membership in a group. It encapsulates a qualitative, deeply subjective experience that individuals undergo in various social contexts. As Mahar, Cobigo, and Stuart (2013) articulate, social belonging emerges from reciprocal relationships with an external referent, rooted in shared experiences, beliefs, or personal characteristics. This dynamic gives rise to feelings of being valued and respected, which are crucial for fostering engagement and participation in educational settings. The sense of belonging significantly impacts students' motivation and overall academic performance, highlighting its pivotal role in educational success (Mahar, Cobigo, & Stuart, 2013).

Social belonging varies greatly between individuals and is influenced by personal interactions within a group. It requires a referent, such as a social group or community, to which an individual feels an intrinsic connection. This connection is not merely about being part of the group but feeling a meaningful, valued part of it. The reciprocal nature of social belonging emphasizes active participation and mutual exchanges, which strengthen one's sense of belonging. Moreover, belonging is dynamic and can evolve with changing relationships, contexts, and personal development, reflecting the shifting landscapes of social interactions (Baumeister & Leary, 1995).

Understanding and fostering social belonging within educational environments can lead to profound improvements in student outcomes. Students who perceive a strong sense of belonging are more likely to display positive attitudes towards learning, engage more actively, and show increased academic motivation. Conversely, a lack of belonging can result in disengagement, diminished motivation, and poorer academic performance. The detrimental effects of feeling misunderstood, undervalued, or excluded can severely impact students' mental health and academic achievements (Purdie-Vaughns & Eibach, 2008).

Cohen (2022) further explores the psychological and neurological foundations of social belonging, drawing parallels between the emotional pain of social exclusion and physical pain. Such insights underscore the profound impact of social belonging—or its absence—on an individual's life, influencing behaviors, perceptions, and interactions within educational settings and beyond. Cohen advocates for educational strategies that enhance social belonging, arguing that such approaches can significantly improve educational outcomes and foster more inclusive, supportive learning environments (Cohen, 2022).

Shnabel et al. (2013) discusses how social belonging can buffer against identity threats in academic settings, particularly for students from negatively stereotyped backgrounds. They demonstrate that values-affirmation interventions focused on personal values related to social belonging can mitigate the adverse effects of stereotype threats, thereby enhancing academic performance. This approach highlights the potential of social and psychological interventions to harness the power of social belonging, supporting the educational success of minority students and reducing achievement gaps (Shnabel et al., 2013).

Korpershoek et al. (2020) further elucidate the crucial link between social belonging and various academic outcomes in secondary education. Their analysis highlights that a robust sense of belonging correlates positively not only with enhanced academic achievement but also with improved motivation, emotional well being, and behavioral outcomes. This relationship is consistent across various student demographics, including different grade levels and socioeconomic statuses, underscoring the universal importance of social belonging in educational settings. Particularly, they found that students' sense of belonging in school was associated with higher levels of motivation, better self-concepts, and more positive engagement in school, which in turn contributed to higher academic achievement. These

findings support the notion that interventions aimed at enhancing social belonging can be a significant lever in improving educational outcomes, particularly for students from negatively stereotyped backgrounds, as discussed by Shnabel et al. (2013). Social belonging has also been found to have a mediating effect on the negative effects of school bullying on academic performance, indicating its importance in fostering a supportive school environment and enhancing students' academic outcomes (Chen, Sakyi & Cui, 2021).

Edwards et al. (2021) researched the relationship between social belonging and academic performance within general chemistry courses at the university level. They identify two distinct aspects of social belonging: 'sense of belonging' and 'belonging uncertainty,' examining how these factors interact dynamically with academic performance. Their findings underscore the significance of a student's initial sense of belonging on their subsequent academic results, supporting the notion that social belonging serves as a vital mediator within educational settings. The study further expands on this by illustrating that social belonging not only enhances general well-being but also has a direct impact on academic performance in STEM (science, technology, engineering, and mathematics) disciplines. The research suggests that targeted interventions aimed at boosting students' sense of belonging could be particularly effective in improving academic outcomes and retaining students in STEM fields. This highlights the importance of fostering inclusive educational environments that make all students, especially those from underrepresented or marginalized groups, feel valued and respected in their academic communities. Additionally, Edwards et al. (2021) explore how background variables like gender and age influence the dynamics between social belonging and academic performance in STEM courses. The study reveals that gender significantly affects the experience of social belonging, with female students reporting lower levels of belonging and higher uncertainty than their male peers. This discrepancy is linked to varying academic performances, accentuating the prevalent gender gap within STEM fields. Moreover, the research indicates that older students generally report a stronger sense of belonging, possibly due to their greater life experience and confidence in managing social interactions. This increased sense of belonging is associated with better academic performance, suggesting that maturity related to age can positively influence academic engagement and success. These insights emphasize the need for educational strategies that address the unique challenges and needs of diverse student demographics to ensure equitable academic experiences and outcomes (Edwards et al. 2021).

But social belonging can be nurtured and guided in the right path to the student's benefit. In exploring the relationship between transition interventions and student success in higher education, the study by van Herpen et al. (2020) emphasizes the role of fostering interaction and a sense of belonging to enhance academic performance. These interventions aim to facilitate a smoother transition from secondary school to university by supporting students in developing effective learning behaviors, enhancing their interaction with peers and faculty, and fostering a sense of belonging within the university community. Their research underscores the substantial impact that pre-academic programs can have, particularly in supporting first-year students during the vulnerable encounter phase of transitioning to university life. The intervention, designed to modify students' perceptions of effective learning behavior, led to increased interaction with peers and faculty, though it did not significantly enhance the overall sense of belonging among participants. Significantly, the study demonstrates that structured interventions can improve both formal and informal interactions between students and faculty, and among peers, which are crucial for student integration and success in higher education settings. Despite the lack of change in perceived belonging, the program notably improved academic outcomes, such as GPA and first-course grades, suggesting that even limited enhancements in social interaction can have tangible benefits on academic performance (van Herpen et al., 2020).

The study by Patterson Silver Wolf et al. (2017) further evaluates the impact of a social-belonging intervention aimed at improving retention among college students. The quasi-experimental pilot study focused on community college students, particularly examining the effects of an intervention designed to enhance students' feelings of belonging within the college environment. The intervention included exposure to a video that addressed common fears and feelings experienced by new college students, aiming to normalize these experiences and foster a sense of belonging. Results from the study indicate that while the intervention did not significantly increase retention rates, it was associated with a statistically significant improvement in students' GPA. This finding suggests that enhancing social belonging may indirectly benefit academic performance, highlighting the potential of belonging interventions to support student success in higher education settings. The study underscores the need for further research to explore the comprehensive impacts of social belonging interventions, particularly among racial minority and stigmatized groups in community colleges. This contributes to the understanding of how targeted transition programs can mitigate the challenges faced by new university students, providing them with a

‘head start’ that manifests in improved academic achievements. This aligns with broader educational strategies aiming to reduce dropout rates and improve student retention by addressing both social and academic integration from the onset of university education (van Herpen et al., 2020).

Simply addressing pupils' concerns about belonging has been shown to be a viable strategy for reducing inequality. As demonstrated by Walton et. al, (2023) where a 30-minute online social-belonging intervention, conducted before college, boosted the rate at which students completed their first year as full-time students, particularly among students in groups with a historically worse academic progression rate. This had previously been studied in a similar context by Walton and Cohen (2011) where college freshmen’s social belonging was measured in a randomized control trial. The findings over a three-year period were significant, a brief intervention not only improved the GPA of African-American students compared to multiple control groups but also halved the achievement gap between minority and other student groups. The positive outcomes of the intervention included not only academic improvements but also enhanced health and well-being among African-American students, who reported fewer doctor visits three years after the intervention. Interestingly, surveys conducted in the senior year revealed that participants were unaware of the intervention’s impact on their academic and health outcomes.

Given the observed variation in the need for interventions among student groups to foster belonging and peer relationships, the significance of cultural identity emerges. By examining and making clear distinctions between peer relations, social belonging, cultural identity, and their effects on academic achievement, this research endeavors to explore the mechanisms contributing to student success. This framework is adopted with the primary aim of understanding these complex social dynamics to improve academic outcomes. Additionally, the insights gained from this research can inform strategies aimed at cultivating inclusivity and equity within educational environments.

6. Cultural Identity

Cultural Identity involves the identification or association with a specific cultural group, and is shaped by shared characteristics such as language, traditions, behaviors, beliefs, and values. This provides a framework through which individuals interpret their experiences and

interact with the world. In multicultural educational settings, cultural identity plays a critical role in how students relate to their peers, participate in learning, and navigate the school environment (Phinney, 1990).

The results of the study discussed by Karjalainen (2020) emphasize the dynamic and complex nature of cultural identity in multicultural settings, particularly in organizational contexts. It highlights how cultural identity is not a static attribute but evolves through interactions within diverse cultural environments. Karjalainen (2020) points out that individuals develop a cultural identity that incorporates elements from multiple cultures, which can influence their behavior and relationships within an educational or organizational setting. This multidimensional nature of cultural identity is crucial for understanding how individuals navigate and contribute to multicultural environments, impacting both their personal growth and the broader organizational culture. The findings suggest that a deeper appreciation and management of these diverse cultural identities can enhance interpersonal understanding and organizational effectiveness in multicultural settings (Karjalainen, 2020).

Zhou Zheng and Siti Maziha Mustappa's (2022) review highlights the impact of a foreign background on educational achievement, pointing out that students from diverse backgrounds face unique challenges and opportunities in higher education settings. The study underscores that while foreign students often bring a rich array of perspectives to the academic environment, they may also encounter significant obstacles, such as cultural adjustment difficulties, language barriers, and different educational backgrounds, which can affect their academic performance. Thus, building a new cultural identity in the host country while maintaining a connection to their original culture is crucial. This dual identity facilitates better integration and adaptation to the new environment, enhancing personal and professional opportunities. Simultaneously, maintaining a connection to their original culture helps preserve self-esteem and mental health by sustaining a sense of continuity and belonging. This balance supports a more holistic development and allows individuals to function effectively across different cultural settings, benefiting both themselves and the broader society (Zajda, 2020). Cultural identity significantly impacts educational performance through its influence on learners' motivation, engagement, and interaction within the educational system. Students with a strong sense of identity are more likely to value and engage actively in their education if they perceive it as relevant to their cultural

context. Conversely, educational settings that disregard or undermine students' cultural identities can lead to disengagement and lower academic achievement (Zajda, 2020).

Factors such as friendships and participation in extracurricular activities have been shown to significantly enhance social adjustment, which in turn indirectly supports academic success. Cultural factors are particularly crucial; proficiency in the local language and openness to the local culture are vital for the cultural adaptation of students with foreign backgrounds. These skills enable students to forge stronger peer relationships, which facilitate their academic integration, engagement, and lead to positive academic outcomes. By highlighting this, Son and Cho (2020) emphasize that improving educational quality and peer relationships is essential for boosting academic satisfaction and success among international students in a globalized educational setting.

After examining the roles of peer relations, social belonging and cultural identity in effecting academic performance, it becomes imperative to broaden the analytical scope to investigate school culture. This is crucial since school culture forms the overarching environment that shapes and is shaped by the interactions of students' social dynamics within the educational setting. Delving into school culture allows for the understanding of systemic, institutional factors that facilitate or hinder the positive effects of strong peer relations, student's sense of belonging and cultural identities.

7. School Culture

School culture, defined as the shared values, beliefs, and norms within an educational environment, significantly impacts academic achievement and student development. Research has consistently demonstrated that a positive school culture enhances not only teacher performance but also directly influences student outcomes by creating a supportive and motivating environment (Amtu et al., 2020). Given that peer relations and social belonging are central to this study, it is fitting to also examine school culture. The relationship between peer relations and academic achievement appears to be a two-way street, where intrinsically motivated adolescents often seek peer groups with similar academic values, fostering an environment where academic achievement is valued and rewarded (Masland and Lease, 2013). Importantly, peer relations and a sense of belonging within the school are critical components that affect students' academic engagement and overall school

experience (Rudolf & Lee, 2023). However, if these peer groups do not value education, the positive effects of peer relations on academic performance may be diminished. Therefore, understanding the broader context of school culture, which encompasses these peer dynamics, is crucial for a comprehensive analysis of the factors influencing academic success.

The study by Amtu, Makulua, Matital, and Pattiruhu (2020) emphasizes the pivotal role of school culture in influencing academic achievement within educational settings. School culture collectively fosters an environment conducive to academic success. The study demonstrates that a robust school culture significantly enhances teacher performance, which in turn directly affects student learning outcomes. Positive school culture is marked by attributes such as a commitment to student progress, a sense of ownership among staff, and positive relationships within the school community, all integral for fostering an educational climate that values academic achievement (Amtu et al., 2020).

The study by Rudolf and Lee (2023) uses PISA 2018 data to examine the impact of school culture, particularly levels of competition and cooperation, on academic performance and well-being among Korean adolescents. Their analysis reveals that a competitive school culture, while enhancing academic performance across subjects like mathematics, reading, and science, also significantly decreases individual life satisfaction. This trade-off highlights the negative psychological impacts of competition, such as increased anxiety and reduced happiness. In contrast, higher levels of cooperation within schools correlate positively with life satisfaction but do not significantly affect academic performance. This suggests that while cooperative environments enhance well-being, they do not detract from educational outcomes, making them a potentially valuable focus for educational policy aimed at improving both student well-being and academic success (Rudolf & Lee, 2023).

The study by Aldridge et al. (2015) delves into how various aspects of school culture influence students' well-being, resilience, and sense of identity, including both moral and ethnic dimensions. The research identifies six key dimensions of school culture—teacher support, peer connectedness, school connectedness, affirming diversity, rule clarity, and reporting and seeking help—measured across a sample of 2202 students in six public high schools in Perth, Western Australia. Structural equation modeling (SEM) analysis revealed that a supportive school culture, particularly in terms of teacher support and peer

connectedness, directly enhances student well-being and resilience. Interestingly, while aspects like affirming diversity and rule clarity indirectly support well-being through their impact on students' sense of identity, they also presented challenges that could diminish resilience when not managed effectively. This underscores the complex interplay between school culture factors and student outcomes, suggesting that a holistic approach is necessary to cultivate an environment that supports all aspects of student development (Aldridge et al., 2015).

The study by Daily et al. (2020) examines the longitudinal relationships between school culture and academic performance among middle school students transitioning to high school, highlighting the significant impact a positive school culture has on both sustained academic achievement and student well-being. The research, based on data from 2604 students across three years, found that students experiencing a positive and academically engaging school culture, were more likely to maintain high grades and improve if they initially had lower grades. This effect was attributed to increased school connectedness and improved relationships with teachers, which not only support academic success but also contribute to the students' overall life satisfaction and engagement in school activities. The study underscores the importance of fostering a supportive school environment as a means of educational intervention that benefits academic and health outcomes, effectively bridging the gap in educational achievement (Daily et al., 2020). MacNeil, Prater, and Busch (2009) further explore how school culture and climate significantly impact student achievement. Their research suggests that the overall atmosphere within a school, encompassing factors like goal focus, cohesiveness, and adaptability, plays a crucial role in enhancing student performance, enforcing the idea that school leaders should focus on fostering a supportive and healthy school culture to boost academic outcomes (MacNeil et al., 2009).

These studies underscore the critical role of school culture in shaping educational outcomes, highlighting the need for educational research to comprehensively account for this factor. As shown, aspects of school culture such as peer relations, social belonging, and the overall climate do not just influence academic performance but are integral to the holistic development of students (Daily et al., 2020). When students perceive their school environment as supportive and connected, they are more likely to achieve academically and report higher satisfaction and well-being. Therefore, including measurements of school culture in research focused on peer relations and social belonging is essential, as these

elements are interdependent. If a student feels a sense of belonging in a school culture that does not value educational attainment, the positive impacts of social belonging or peer relations might be negated (MacNeil et al., 2009).

8. Teacher Support

The integral role of teachers in supporting students and shaping school culture cannot be overstated. As highlighted in the recent literature, teachers are central to fostering a positive educational environment that nurtures student development and academic achievement (Darling-Hammond & DePaoli, 2020). This connection between teacher support and school culture serves as a gateway to understanding the broader implications of educational dynamics. Supporting teacher-student relationships and a nurturing atmosphere, is foundational for students' academic success and emotional well-being. Teachers play a pivotal role in this process by establishing a classroom environment that promotes safety, belonging, and mutual respect. The ability of teachers to create such an environment is critical, as it not only enhances academic achievement but also mitigates the negative effects of external stressors on students (Darling-Hammond & DePaoli, 2020).

Looking into the foundational role of teachers in supporting students and shaping school culture, the study by Klem and Connell (2004) emphasizes the critical role of teacher support in enhancing student engagement and academic achievement. Their research, grounded in the Self-System Process Model, illustrates how students' perceptions of teacher involvement, autonomy support, and structured environment significantly influence their academic engagement and subsequent performance. The study provides robust evidence that students who feel supported by their teachers are more likely to report higher levels of engagement, which is directly linked to improved academic outcomes such as higher grades and test scores. Further, the research demonstrates that teacher support not only fosters better academic performance but also acts as a protective factor against disengagement, particularly as students progress through more advanced grades. The presence of caring, supportive, and fair teacher interactions creates an educational environment conducive to higher levels of student engagement. This engagement, in turn, leads to lower dropout rates and improved academic success, underscoring the importance of teacher support as a pivotal element of effective educational practices. The findings highlight that creating a supportive school environment through teacher-student relationships is as crucial as academic rigor in fostering

student success, providing a compelling case for integrating supportive teacher interactions as a standard practice in educational reform efforts (Klem & Connell, 2004).

This has been further emphasized by Tao, Meng, Gao, and Yang (2022) that substantiate the significant role of perceived teacher support in student academic achievement. Their comprehensive study confirms the positive correlation between teacher support and academic success, noting a small to medium effect size. Importantly, the analysis delineates the varying impacts of different types of support—emotional, autonomy, and academic—with emotional support emerging as having the most substantial influence on student achievement. Additionally, the research looks into the mechanisms through which teacher support affects academic achievement by examining the mediating role of student engagement. The findings reveal that general student engagement partially mediates the relationship between teacher support and academic outcomes. This suggests that the benefits of teacher support extend beyond direct instructional interactions to encompass the creation of a supportive and engaging learning environment. This layered understanding reinforces the notion that teacher support not only directly influences academic achievement but also enhances student engagement, which in turn fosters improved academic performance (Tao et al., 2022).

Dr Gouri Sharma (2006) further clarifies that school location and the perception of teacher support independently affect academic outcomes. Intriguingly, students from rural schools outperformed their urban counterparts, a result that counters typical expectations of urban educational advantages. This suggests that the quality of teacher support—characterized by assistance, concern, and personal relationship building—plays a crucial role in cultivating an effective learning environment that can significantly enhance academic performance. These observations emphasize the importance of robust teacher-student relationships and illustrate that effective teacher support can transcend traditional barriers such as urban-rural divides, impacting student success across different settings (Sharma, 2016). This nuanced understanding of the differential effects of teacher support across various educational locales invites further exploration into how teacher behaviors and relationship-building strategies might be tailored to meet the distinct needs of students in diverse educational settings, fostering an inclusive and supportive academic environment.

The longitudinal study by Affuso et al. (2021) further explores how teacher support influences academic performance over three years, mediated through mechanisms such as

self-determined motivation and academic self-efficacy. The research underscores the critical role of teacher support in enhancing students' self-efficacy and motivation, which are essential for academic success. Notably, teacher support—characterized by warmth, structure, and autonomy support—was found to significantly boost both motivation and self-efficacy, leading to improved academic performance. This enhancement suggests that the manner in which teachers interact with students, through providing encouragement, structured feedback, and a supportive learning environment, directly influences students' academic engagement and achievement (Affuso et al., 2021). Furthering this exploration, the study by Hoferichter et al. (2022) examines the effects of teacher and peer support on students' stress management and academic achievement, utilizing a multilevel analysis to assess both individual and classroom impacts. The findings reveal that on an individual level, teacher support significantly mitigates perceived helplessness and bolsters students' ability to manage stress, in line with the conservation of resources theory which views social support as a vital resource in navigating and overcoming stressors. This perceived teacher support is directly associated with enhanced academic outcomes and improved stress management, indicating that students who feel supported by their teachers are more adept at handling academic pressures and achieving higher academic performance (Hoferichter et al., 2022).

The evidence presented throughout this discussion vividly highlights the critical role of teacher support in cultivating a school culture that not only propels academic success but also enriches students' social interactions. Teachers are instrumental in creating an environment that fosters student engagement, motivation, and self-efficacy—key factors that contribute significantly to academic and social flourishing. By offering supportive, empathetic interactions, teachers enhance students' sense of belonging and community within the school, which is crucial for promoting both educational achievements and robust social relationships (Affuso et al., 2021; Hoferichter et al., 2022).

A supportive school culture, underpinned by strong teacher-student relationships, ensures that students feel valued and understood, effectively reducing stress and helplessness especially during challenging periods (Hoferichter et al., 2022). This nurturing environment not only aids students in achieving high academic standards but also helps them develop crucial social skills and emotional resilience. Such an integrated approach to education, where academic and social development are seen as interconnected and mutually reinforcing, emphasizes the

importance of teacher support in creating a holistic educational experience (Darling-Hammond & DePaoli, 2020).

Consequently, the incorporation of comprehensive teacher support into the school culture is indispensable. It is essential for fostering an educational environment where students can excel academically and thrive socially, underscoring the vital role of teachers in shaping successful, harmonious school communities. This perspective aligns with current educational research advocating for environments that support the 'whole student', highlighting the profound impact of teacher support on both individual and collective student success (Darling-Hammond & DePaoli, 2020).

9. Methodology

9.1 Research Design

This study employs a cross-sectional design to examine the impact of various social and educational factors on students' expected grades. Cross-sectional studies observe specific phenomena at a single point in time, distinguishing them from longitudinal studies which analyze changes over multiple periods. Such a design is apt for identifying associations between variables at a given moment, allowing for the analysis of multiple variables simultaneously without the need for extended observation periods (Gerring & Christenson, 2017).

However, the cross-sectional design also brings challenges, notably the difficulty of inferring causality. Since data is collected at one point, determining the direction of relationships between variables is complex. This limitation necessitates careful interpretation of results, where associations are noted without assuming a cause-effect relationship (Aneshensel, 2017). The method also assumes that the conditions during the point of data collection are representative of other times, which may not always hold true, potentially leading to biases in the findings.

While this design limits the exploration of changes over time, its ability to provide a comprehensive snapshot of data at a particular point makes it a valuable tool in the initial exploration of theoretical associations within the educational context. This approach is

particularly relevant in the educational sector, where numerous variables can interact in complex ways to influence academic outcomes,

The dataset used to conduct this analysis was gathered with two surveys conducted at eleven upper secondary schools in Malmö. The previous survey took place in 2011, where 925 first year students responded to the survey, corresponding to 79% of the total number of students at these schools. The second survey took place in 2013, where the same students as in the 2011 study were in their third and final year. 780 students responded to the second survey. By analyzing the data from 2013, on the student's final year of their studies, this design allows for the efficient assessment of multiple variables, such as Peer Relations, Social Belonging, Cultural Identity, and School Culture, and their correlation with students' academic performance as represented by their expected grades.

Cross-sectional studies are particularly advantageous for educational research due to their ability to provide a snapshot of multiple influences across a diverse student population. This approach is ideal for exploratory research that aims to identify relationships and trends that may warrant further investigation. This study is fundamentally cross-sectional in nature, as it concentrates on data from the study from 2013. For this study, the choice of a cross-sectional design is driven by its ability to examine a broad spectrum of variables to determine their immediate associations with academic outcomes with the objective to test specific hypotheses regarding social dynamics on academic perceptions and outcomes.

9.2 Ethical considerations

Conducting research, especially involving human participants, necessitates rigorous adherence to ethical standards to ensure the integrity of the study and the protection of participants. This study, examining the social and cultural factors influencing academic performance in Swedish upper secondary schools, follows several ethical guidelines to maintain ethical rigor.

When the data was originally gathered, all participants involved in the study provided informed consent prior to their participation. Participants were made aware that their participation was voluntary and that they could withdraw from the study at any time without any negative consequences. The research process was conducted with transparency and honesty. Participants were provided with accurate information about the study's aims and

procedures. Using pre-existing data requires strict adherence to ethical guidelines to protect the privacy and confidentiality of respondents. This includes ensuring that data is anonymized and that any findings do not inadvertently reveal sensitive information about individuals.

9.3 Operationalization of key concepts

Academic performance was measured using students' self-reported expected grades. Students rated their expected grades on a scale from highest to lowest possible grades, allowing for an analysis of how social variables influence academic outcomes. Expected grades are commonly utilized as a proxy for academic performance in research where access to official grade transcripts is not feasible. While relying on self-reported data can introduce potential biases, students might overestimate or underestimate their performance due to various factors as discussed by Kuncel, Credé, and Thomas (2005), the validity of self-reported grades is generally a reliable indicator when used cautiously. They stress that although discrepancies can occur, particularly among students with lower academic achievements, self-reported grades typically correlate with official transcripts. Given the constraints and the context of this research, expected grades were utilized as a practical alternative to official academic records. It is important to acknowledge that while this method may not capture the full accuracy of officially documented grades, it still provides valuable insights into students' academic self-perceptions and outcomes. As such, expected grades are a valid tool for assessing academic performance, especially when supplemented with robust study design and careful interpretation to mitigate potential biases. For the variable on expected grade, students could pick 7 categories, ranging from “mest MVG”, or mostly the highest grade, to “bara IG/i stort bara IG”, or only/mostly the worst grade. There was also an 8th choice for students who didn't know, which was removed from the analysis since it would only distort the results. So the remaining 7 categories were transformed into a factor variable with ordered levels. This recoding was essential to use this variable in ordinal logistic regression models, providing a structured way to analyze the impact of social variables on perceived academic outcomes. The values were also flipped, so a higher value would indicate a higher expected grade.

Four indexes were created, for peer relations, social belonging, school culture and teacher support. For each index, multiple questions from the survey were combined into one variable measuring the same topic. Cronbach's Alpha is commonly used in social sciences to measure the internal consistency, or reliability, of a set of scale or test items. In the context of

constructing indexes from survey data, Cronbach's Alpha provides an essential measure of the cohesiveness of the items within an index, indicating how well the items group together to form a scale that reliably measures an underlying construct. Cronbach's Alpha evaluates how closely related a set of items are as a group. A high Cronbach's Alpha, typically above 0.7, suggests that the items included in the index are good at measuring the same underlying concept. This is crucial for research validity as it ensures that the scale operates consistently across different observations and is robust against measurement errors. Calculating Cronbach's Alpha for the indexes ensured that the items chosen were consistently measuring the intended constructs. This was crucial for the subsequent analysis phases, where these indexes served as key variables in regression models and other tests. A reliable index, as evidenced by a satisfactory Cronbach's Alpha, increases confidence in the results and conclusions drawn from the statistical analysis, ensuring that these results are based on solid, internally consistent measures.

In this study, peer relations are operationalized through the development of an index based on a composite score derived from survey questions, addressing the quality of peer interactions. This approach not only aligns with theoretical frameworks from the literature, which emphasize the multifaceted nature of peer effects on learning and development (Crosnoe, Johnson, & Elder, 2004), but also ensures that the measure encompasses a broad spectrum of peer relations, from adversarial to supportive. This method follows recommended practices in educational research for quantifying relational dynamics, which suggest combining multiple indicators to obtain a comprehensive measure of peer social climate (Wentzel & Wigfield 1998).

The index on peer relation is constructed from four survey questions regarding students' perceptions of their peer interactions. "My friends encourage me to do my best at school", "My friends support me when I find school difficult", "I get along very well with my friends", "I have at least one close friend I can talk to about most things". The variables selected for this index were chosen to provide a comprehensive measure of the supportive and relational aspects of peer interactions. By capturing both the academic and emotional dimensions of peer support, this index offers insights into the multifaceted role of peers in shaping educational experiences. Each item contributes uniquely to understanding how peers influence one another's academic and personal development, thus providing a holistic view of peer relations in the school setting. This index captures the quality of peer relationships,

which is crucial for understanding social dynamics within schools. The index has a cronbach's alpha value of 0.76.

In this research, social belonging is measured through the development of an index comprising five survey items designed to capture students' perceptions of acceptance and integration within their school environment. These items evaluate various dimensions of belonging, including the perceived warmth and openness of peer interactions, the inclusivity of the school's social climate, and the extent to which students feel supported by both peers and faculty. This approach is informed by the work of Walton and Cohen (2011), who emphasize the significance of perceived social connectedness in educational persistence and satisfaction. Five variables were combined in an index for social belonging. "At school, I feel seen and respected", "In my class, I can relax and be myself", "At school, the students get along well", "At school, everyone is equally valuable", "In my class, other students respect me for who I am". Social belonging is a critical determinant of both academic engagement and personal development in adolescents. It impacts students' motivation, emotional state, and interaction within the learning environment, making it a vital variable for assessing educational outcomes. These variables were selected to encapsulate the nuanced aspects of inclusion and acceptance within the school community. By assessing both the perceived respect and interpersonal relationships among students, this index illuminates the multifaceted nature of social belonging in educational environments. Each variable distinctively contributes to understanding how students experience their integration into the school setting, thus offering a comprehensive view of the social dynamics that significantly impact their academic engagement and emotional well-being. While some variables related to interactions and perceptions might overlap conceptually with elements of school culture, they were specifically included in the Social Belonging index since they address the individual's internalized feelings and subjective experiences rather than the broader institutional practices or climates. This distinction is crucial as the Social Belonging index aims to capture the psychological and emotional aspects of student experiences. The index has a cronbach's alpha of 0.77.

Cultural identity, pivotal in understanding how students navigate their educational environments, pertains to the identification with or belonging to a specific cultural group. Drawing from Phinney (1990), cultural identity is assessed by exploring students' feelings of affiliation with Swedish culture. Students are categorized based on their responses to items

measuring the extent of their identification as "completely Swedish," "mostly Swedish," "partly Swedish," or "not Swedish at all" (Karjalainen, 2020). This measurement aims to discern the nuanced ways cultural identity impacts educational experiences and outcomes, particularly in a multicultural setting like Sweden. Cultural identity was measured with a dummy variable. In the survey, students could answer if they felt "completely Swedish", "mostly Swedish", "partly as Swedish but mostly as a part of another culture" or "not Swedish at all". Those answering "completely Swedish" or "mostly Swedish" were merged into one group and got the value 1, those answering one of the other two options were grouped together with the value 0.

School culture reflects the collective norms, values, and expectations that characterize an educational setting and influence student behavior and performance. As highlighted by Wang and Degol (2016), a positive school culture fosters academic motivation and reduces dropout rates. This study will operationalize school culture by employing indices that measure perceived teacher support and the student's perceived emphasis on academic success in the classroom, as these factors are integral to fostering an environment that supports learning (MacNeil et al., 2009). Emphasis on academic success captures the school's commitment to educational excellence, which can drive student achievement and set high expectations. An index was created to assess the school culture, incorporating seven variables that capture different aspects of the supportive nature of the school environment and the overall learning atmosphere. These variables encompass a range of dimensions including "In school, there is a strong expectation to study", "The school has a calm and secure study environment", "At school, students treat each other well", "At school, students support each other in their schoolwork", "At school, students say that they attend a good school", and "At school, the students feel safe". The index's separation from the Social Belonging index is justified by its emphasis on the structural and communal aspects of the school environment, contrasting with the personal feelings of acceptance and respect measured in the Social Belonging index. With a Cronbach's alpha coefficient of 0.82, indicating high internal consistency, the index demonstrates robust reliability in capturing the construct of school culture.

Perceived teacher support reflects the degree to which students feel encouraged, understood, and academically guided by their teachers. It is a crucial element that influences student engagement, academic success, and the development of a supportive educational environment. As highlighted by Klem and Connell (2004), effective teacher support enhances

students' sense of belonging and motivation, which are key predictors of academic achievement and overall student well-being. Operationalizing teacher support in this study involves quantifying the level of encouragement, feedback, respect, and academic guidance students perceive they receive from their teachers. The index on teacher support comprises nine variables that assess various aspects of teacher-student interaction, encouragement, and fairness within the classroom. These variables include "The teachers are good at explaining", "The teachers help me if I do not understand", "The teachers respect me for who I am", "The teachers encourage me in my studies", "The teachers care about how I feel", "The teachers are fair", "The teachers clearly state what I need to learn to achieve different grades", "The teachers want to know how I experience the teaching", and "The teachers encourage us to say what we think and feel". The index was validated using Cronbach's alpha coefficient, resulting in a value of 0.89, indicating strong internal consistency and reliability in measuring teacher support within the educational setting.

9.4 Background variables

Foreign background refers to the objective fact of being born in or having parents from another country, which may come with specific educational, linguistic, or cultural challenges (Crul et al., 2017). Cultural identity, however, deals with subjective feelings of belonging as a part of a particular culture, in this case Swedish, which may affect how students perceive and interact with their school environment (Zhou Zheng & Siti Maziha Mustapha, 2022). Incorporating both cultural identity and foreign background as distinct but possibly interrelated variables in educational research offers a nuanced understanding of the multifaceted influences on academic performance. Studies have consistently shown that students with a foreign background often experience lower academic achievement compared to their peers (Crul et al., 2017). This disparity is frequently attributed to a complex interplay of factors including socioeconomic challenges, language barriers, and discrimination. However, cultural identity can further compound or alleviate these challenges. Cultural identity significantly impacts a student's sense of belonging and integration within the country they reside in. Research by Walton and Cohen (2007) illustrates how interventions that enhance social belonging can mitigate the negative effects of acute belonging uncertainty, which often affects students from minority or stigmatized groups. These interventions are particularly effective in improving academic outcomes, suggesting that the perception of belonging can influence academic engagement and performance. Conversely, students who experience a conflict between their cultural identity and the prevailing culture

of the institution may face additional stressors that can detract from their academic focus and success (Purdie-Vaughns & Eibach, 2008). Therefore, examining both foreign background and cultural identity allows researchers to differentiate between the structural barriers faced by students and the personal, psychological experiences that influence their academic trajectories. This dual approach provides a more comprehensive analysis of how external conditions and internal self-concept interact to affect educational outcomes. A dummy variable for foreign background was created, where students who were born in Sweden with at least one parent also born in Sweden fall into the category “Swedish background” and get the value 0. Others get the value 1 and fall into the category “foreign background”.

The inclusion of gender as a dummy variable in the regression model is important for capturing the influence of gender on academic outcomes. By coding female students as 0 and male students as 1, the model can assess the potential differences in academic performance between genders. Including gender as a background variable ensures that the analysis accounts for any inherent gender-based differences that might impact students' academic achievements, providing a more comprehensive understanding of the factors influencing educational success.

The inclusion of the type of study program as a dummy variable in the regression model is useful for understanding the broader social dynamics within the Swedish education system. As discussed by Nylund (2012), the differentiation between vocational and academic tracks in Swedish upper secondary schools is deeply intertwined with social class distinctions. This division not only reflects but also perpetuates existing socioeconomic disparities, with vocational education often being pursued by students from lower socioeconomic backgrounds and academic tracks by those from higher socioeconomic classes. By including the study program type (0 for vocational, 1 for academic) as a background variable, the model can account for these inherent class-based divisions and their impact on academic outcomes.

Parent education, often a proxy for socioeconomic status, has been shown to significantly influence educational outcomes. Students with parents who have attained higher levels of education have been shown to perform better academically (Davis-Kean, 2005). In this study, parent education is measured by survey questions asking students about the highest level of education completed by their parents, allowing for analysis of its impact on students' educational expected achievements. A dummy variable was created for parent education,

where if at least one parent has a higher education, they get the value 1 indicating that the student has at least one highly educated parent, others get the value 0.

10. Analysis

10.1 Analytical Techniques

In addition to descriptive statistics, ordinal regression models were constructed to analyse expected academic performance. The models were built stepwise, beginning with background variables and then progressively adding scales for peer relations, social belonging, cultural identity, school culture and teacher support. By including these variables in stages, the analysis aimed to uncover the distinct and combined effects of these factors on students' academic outcomes. In the last two models, interaction effects were included to provide further insights into the dynamics of academic performance. Specifically, the interactions between peer relations and cultural identity, as well as between social belonging and cultural identity, were explored to understand their combined influence on academic outcomes. Additionally, interactions involving foreign background, school culture, and teacher support were examined to capture the complexities and interdependencies among these variables.

The analysis conducted in this research utilized the R statistical environment, renowned for its extensive and flexible statistical capabilities. Key packages in R facilitated various tasks essential to the study: 'dplyr' for data manipulation, 'ggplot2' for creating visualizations, 'lme4' and 'lmerTest' for linear and logistic regressions, 'MASS' for robust statistical testing, 'mediation' for mediation analysis, 'ordinal' for ordinal logistic regression, 'psych' for reliability assessment, and 'mice' for handling missing data through multiple imputation. Missing values, often denoted by codes such as "9," were systematically replaced with NA (Not Available) to accurately reflect the absence of data for relevant variables. These tools were crucial in preparing the dataset and ensuring the robustness of the analysis in addition to standard, built-in R packages used to derive measures such as mean, median, and standard deviations. This approach enhanced the reliability and depth of the findings, providing a clear understanding of the data's structure and the relationships within it.

In linear regression models, the traditional R^2 value indicates the proportion of variance in the dependent variable explained by the independent variables. However, ordinal regression models, which deal with ordinal dependent variables, require different methods for assessing

model fit. Pseudo- R^2 values, such as McFadden's R^2 , are used in these cases because they are designed for non-linear models with categorical and ordered dependent variables. Unlike traditional R^2 , McFadden's R^2 evaluates goodness-of-fit by comparing the likelihood of the fitted model to that of a null model. This measure provides insight into how well the model with predictors explains the variation in the outcome relative to a model without predictors. Although the values of McFadden's R^2 are typically lower than those of traditional R^2 , values between 0.2 and 0.4 are considered indicative of excellent model fit in logistic and ordinal regression contexts. Pseudo- R^2 values also allow for meaningful comparisons between models within the same study, helping researchers assess incremental improvements in model fit as additional variables and interaction terms are included. Therefore, while traditional R^2 values are suitable for linear regression models with continuous dependent variables, pseudo- R^2 values like McFadden's R^2 provide a more appropriate measure of model fit for ordinal regression models, facilitating a better understanding of how well these models explain variations in ordered categorical outcomes.

10.2 Model Building

The model building process involved a stepwise inclusion of variables to assess their individual and combined effects on academic performance. This approach allows for a comprehensive understanding of how different social factors influence student outcomes. The rationale behind this incremental model development is to ensure robustness and interpretability, aligning with methodological recommendations from Hair et al. (2010).

The first model includes basic demographic variables such as gender, parental education, foreign background, and program type. Gender differences in academic outcomes are well-documented, with substantial research indicating that females often outperform males (Voyer & Voyer, 2014). Parental education is a strong predictor of student success, reflecting socioeconomic status and access to educational resources (Davis-Kean, 2005). Including foreign background addresses the disparities in academic performance between native and immigrant students, which is critical given Sweden's multicultural student population (Nylund, 2012). Program type (academic vs. vocational) is included to account for the structural differences in educational pathways and their respective impacts on student achievement.

In Model 2, cultural identity is introduced to examine its influence on academic performance. Cultural identity reflects the degree to which students identify with the Swedish culture versus their original cultural backgrounds. Including this variable allows for exploring the role of cultural identity in academic success and to further investigate the effects of having a foreign background.

Model 3 extends the analysis by including peer relations and social belonging. Peer relations are crucial for academic and social development, as supportive peer networks can enhance student engagement and achievement (Brown & Larson, 2009). Social belonging, or the sense of being accepted and valued within the school community, is another critical factor that influences academic outcomes (Goodenow, 1993). By adding these variables, the aim is to capture the broader social dynamics within the school environment and their cumulative impact on student performance.

The fourth model incorporates school culture and teacher support to explore their effects on the relationships established in previous models. School culture encompasses the overall climate and ethos of the school, which can significantly impact student motivation and learning (Amtu et al., 2020). Teacher support, defined as the degree of academic and emotional support provided by teachers, is included to assess its role in fostering a positive learning environment (Darling-Hammond & DePaoli, 2020). These variables are critical for understanding how institutional factors influence the effectiveness of background variables, peer relations and social belonging on academic outcomes.

The fifth model aims to answer the first sub-research question: How does cultural identity interact with peer relations and social belonging to influence academic outcomes in Swedish upper secondary schools? This model investigates the interactions between Peer Relations and Cultural Identity, Social Belonging and Cultural Identity, and Foreign Background and Cultural Identity, and their combined effects on expected grades. To achieve this, interaction terms were added to the regression model. The interaction term for Peer Relations and Cultural Identity was included to explore whether the impact of peer relations on academic performance varies based on the student's cultural identity. Similarly, the interaction term for Social Belonging and Cultural Identity was added to examine if the sense of social belonging has different implications for academic outcomes depending on the student's cultural identification. Additionally, the interaction term for Foreign Background and Cultural

Identity was incorporated to assess how having a foreign background and a strong cultural identity together influence academic performance.

The rationale behind incorporating these interaction terms stems from the need to understand the nuanced ways in which cultural identity may modify the effects of social factors on academic performance. For example, previous research by Zhou and Bankston (1998) has shown that strong community ties within one's ethnic group can buffer against the challenges of navigating a new cultural environment. By including these interaction terms, the model seeks to capture whether similar dynamics are at play in the Swedish educational context, where cultural identity and social relationships may interact to influence student outcomes

The sixth model aims to answer the second sub-research question: How does school culture affect the relationship between social belonging, peer relations, and academic performance across different student demographics in Swedish upper secondary schools? This model investigates the interactions between Peer Relations and School Culture, as well as Social Belonging and School Culture, to understand their combined effects on expected grades. To achieve this, interaction terms were added to the regression model. The interaction term for Peer Relations and School Culture was included to explore whether the impact of peer relations on academic performance varies based on the school culture. Similarly, the interaction term for Social Belonging and School Culture was added to examine if the sense of social belonging has different implications for academic outcomes depending on the overall school culture.

Incorporating these interaction terms is motivated by the need to understand the complex ways in which the broader school environment can influence the effects of social factors on academic performance. Previous research, such as the work by Thapa, Cohen, Guffey, and Higgins-D'Alessandro (2013), has highlighted that a positive school culture facilitates better alignment between students' social needs and educational goals, thereby improving academic achievement. By including these interaction terms, the model aims to capture whether similar dynamics exist within the Swedish educational context, where the school culture may enhance or mitigate the effects of peer relations and social belonging on student outcomes.

11. Results 11.1 Descriptive Statistics

Image 1

Distribution of expected grades

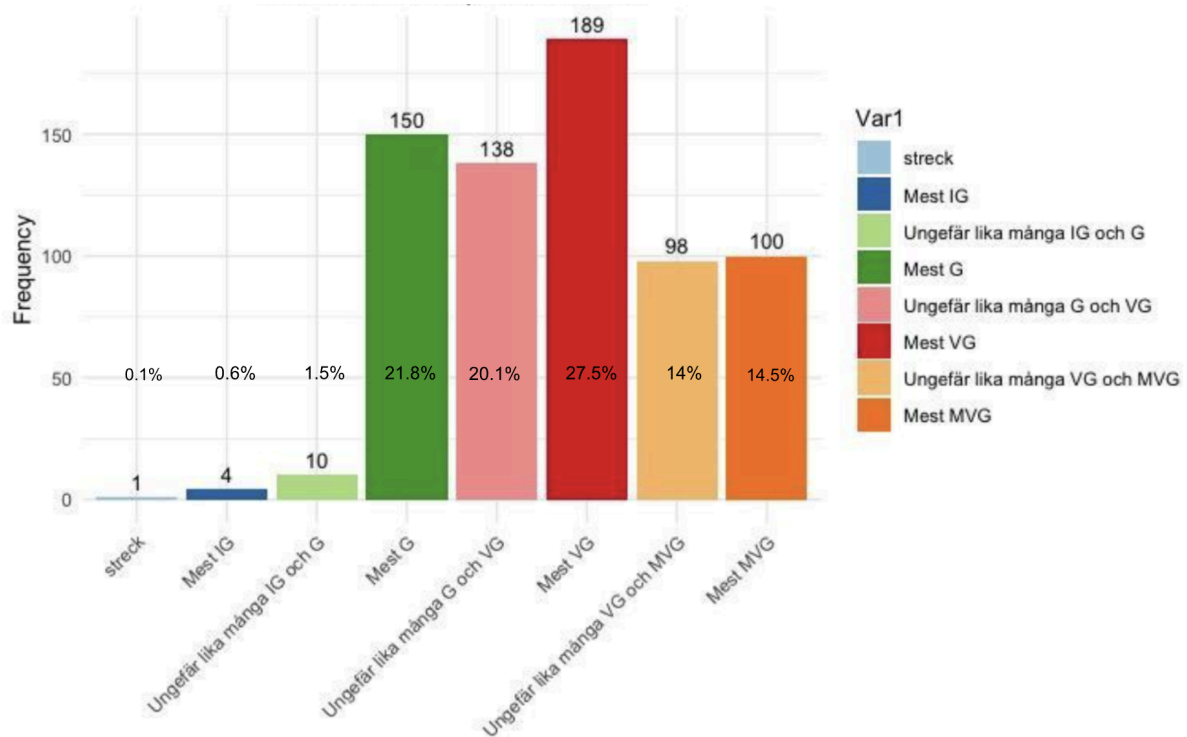


Image 1 illustrates the distribution of expected grades among the surveyed respondents. The x-axis represents different categories of expected grades, ranging from "streck" (no passing grades in most subjects) to "Mest MVG" (most grades of the highest level). The y-axis indicates the frequency of respondents falling into each category. The plot shows that the majority of respondents expect to achieve "Mest G" (most passing grades) or "Mest VG" (most high passing grades), with fewer respondents expecting lower or higher grades.

Table 1

Distribution of gender

Gender	Frequency
Female	514 (51.4 %)
Male	486 (48.6 %)

Table 1 shows the frequency and percentage of male and female respondents. Specifically, out of the total respondents, 514 (51.4%) are female, while 486 (48.6%) are male. This indicates a nearly even distribution of gender, with a slight majority of female respondents. This balanced representation helps ensure that the findings of the study are reflective of both genders.

Table 2

Average values for indexes

Index Variable	Average
Peer Relations	2.49
Social Belonging	2.52
School Culture	2.48
Teacher Support	2.53

Table 2 provides an overview of the average scores for various social variables measured on a scale from 1 to 4, reflecting participants' experiences and perceptions regarding peer relations, social belonging, school culture, and teacher support. Specifically, the average score for peer relations is 2.49, indicating a mid-range level of positive peer interactions among students. The average score for social belonging is 2.52, suggesting a positive sense of belonging and community within the school environment. School culture has an average score of 2.48, reflecting an average perception of the overall school culture. Lastly, the average score for teacher support is 2.53, demonstrating a moderate level of support perceived from teachers.

Table 3

Crosstabulation for parental education and type of educational track

	Parental education		Total
	No university degree	University degree	
Academic track	184 (48.6%)	195 (51.4%)	379
Vocational track	141 (66.2%)	72 (33.8%)	213
Total	325 (54.9%)	267 (45.1%)	592

As seen in Table 3, out of the 213 students pursuing a vocational degree, 141, or 66.2% have parents that don't have a university degree. In contrast, for students with at least one parent with a university degree, 184, or 48.6% are pursuing a vocational program, and 195, or 51.4% are pursuing an academic one. This reflects the interplay between educational pathways and social stratification within the Swedish education system, as discussed in the literature. The division between vocational and academic tracks, as highlighted by Nylund (2012), not only mirrors but also perpetuates existing class distinctions. This underscores the societal and economic structures that influence educational choices and opportunities. Vocational education, while essential for addressing labor market needs, remains less prestigious and is often chosen by students from lower socioeconomic backgrounds. Conversely, the academic track, which is perceived to lead to higher status and better-paying jobs, attracts students from more affluent and educated families, reinforcing class distinctions and limiting social and economic mobility for vocational students.

Table 4

Crosstabulation for foreign background & Cultural identity

	Cultural Identity = 0	Cultural Identity = 1	Total
No foreign background	27 (6.8%)	370 (93.2%)	397
Foreign background	202 (64.9%)	109 (35.1%)	311
Total	229 (38.7%)	479 (61.3%)	708

As seen on table 4, students with no foreign background (invandr = 0), the majority (370 out of 397, or approximately 93%) identify as Swedish (Cultural_Identity_2013 = 1), while only a small proportion (27 out of 397, or approximately 7%) identify as non-Swedish.

Conversely, for individuals with a foreign background (= 1), the majority (202 out of 311, or approximately 65%) identify as non-Swedish, while a smaller proportion (109 out of 311, or approximately 35%) identify as Swedish.

This confirms that there is a strong association between background and cultural identity. Specifically, individuals with a foreign background are more likely to identify as non-Swedish, while those without a foreign background are overwhelmingly likely to identify

as Swedish. These findings may reflect patterns of cultural assimilation or retention among immigrants and native-born individuals within the population studied. It is still interesting to look into how grades are distributed between these groups.

Image 2

Average expected grades by foreign background and cultural identity

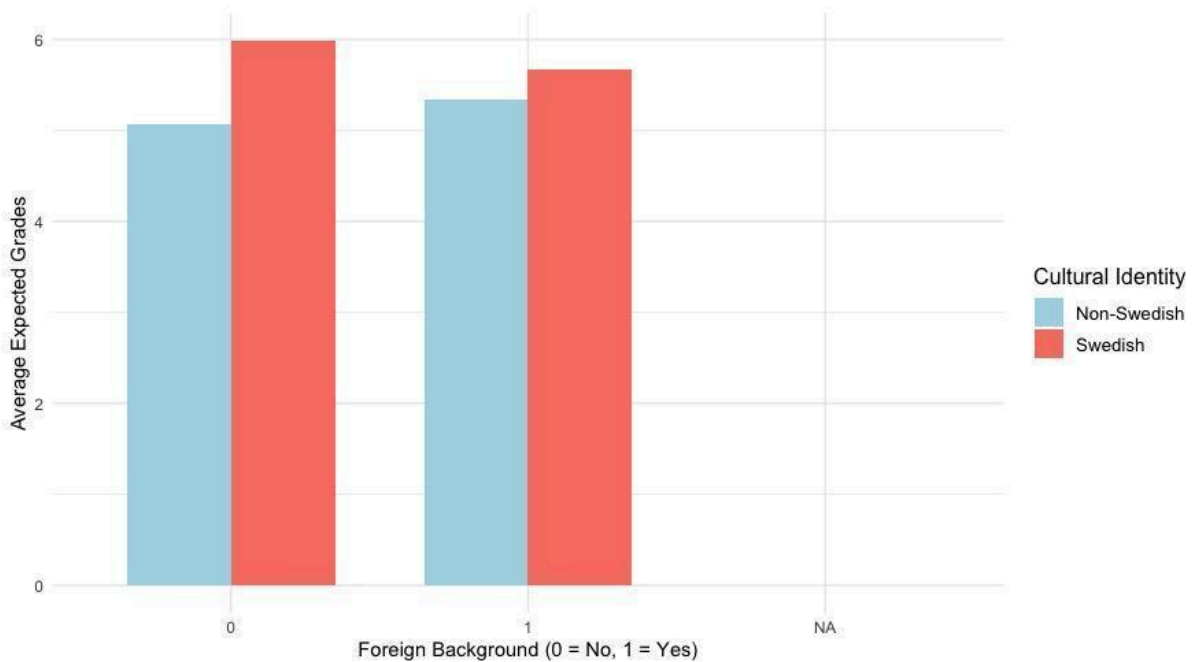


Image 2 illustrates the average expected grades based on foreign background and cultural identity among students. It differentiates between students with and without a foreign background (coded as 0 for "No" and 1 for "Yes") and further breaks down the data by cultural identity, categorized as Swedish or Non-Swedish. As previously discussed, expected grades are measured on a 1-8 categorical scale. Students without a foreign background who identify as Swedish have the highest average expected grades, or 6. Similarly, students with a foreign background who identify as Swedish also show an average expected grade slightly below 6. In contrast, students who do not identify as Swedish, regardless of their foreign background, have lower average expected grades. Specifically, those without a foreign background have an average expected grade just below 5, while those with a foreign background have slightly higher average. This reveals a noticeable difference in the average expected grades between students identifying as Swedish and Non-Swedish, with the former group performing better on average.

11.2 Regression Models

Table 5

Ordinal regression models for expected academic performance

Variable	Model 1 Value (SE, t-value)	Model 2 Value (SE, t-value)	Model 3 Value (SE, t-value)	Model 4 Value (SE, t-value)	Model 5 Value (SE, t-value)	Model 6 Value (SE, t-value)
Gender (0=female)	-0.49 (0.17, -2.87)*	-0.48 (0.17, -2.83)*	-0.45 (0.17, -2.55)*	-0.43 (0.18, -2.42)*	-0.42 (0.18, -2.39)*	-0.44 (0.18, -2.51)*
Parent Education (0=none)	0.38 (0.18, 2.15)*	0.33 (0.18, 1.86)	0.36 (0.18, 1.97)*	0.31 (0.18, 1.69)	0.31 (0.18, 1.71)	0.31 (0.18, 1.67)
Foreign Background (0=no)	-0.72 (0.17, -4.15)*	-0.36 (0.22, -1.65)	-0.34 (0.22, -1.52)	-0.35 (0.22, -1.58)	-0.33 (0.22, -1.48)	-0.25 (0.52, -0.49)
ProgramType (0=Vocational)	1.25 (0.19, 6.59)*	1.31 (0.19, 6.83)*	1.25 (0.20, 6.41)*	1.12 (0.20, 5.51)*	1.12 (0.21, 5.45)*	1.11 (0.20, 5.42)*
Cultural Identity	-	0.63 (0.24, 2.61)*	0.64 (0.24, 2.64)*	0.55 (0.24, 2.29)*	-0.77 (1.39, -0.56)	0.64 (0.51, 1.25)
Peer Relations (1-4)	-	-	0.23 (0.16, 1.48)	0.18 (0.16, 1.11)	-0.11 (0.28, -0.40)	0.55 (0.64, 0.85)
Social Belonging (1-4)	-	-	0.40 (0.17, 2.27)*	-0.11 (0.24, -0.48)	-0.09 (0.33, -0.28)	-1.17 (0.69, -1.69)
School Culture (1-4)	-	-	-	0.46 (0.20, 2.31)*	0.46 (0.20, 2.29)*	-0.29 (0.83, -0.35)
Teacher Support (1-4)	-	-	-	0.35 (0.16, 2.16)*	0.35 (0.17, 2.14)*	0.36 (0.17, 2.15)*
Peer Relations x Cultural Identity	-	-	-	-	0.42 (0.34, 1.26)	-
Social Belonging x Cultural Identity	-	-	-	-	-0.03 (0.37, -0.08)	-
Foreign background x Cultural Identity	-	-	-	-	-0.09 (0.58, -0.16)	-
Peer Relations x School Culture	-	-	-	-	-	-0.13 (0.22, -0.59)
Social Belonging x School Culture	-	-	-	-	-	0.38 (0.23, 1.64)

Model 1: Residual Deviance = 1431.40, AIC = 1453.40, Pseudo-R²=0.058

Model 2: Residual Deviance = 1424.575, AIC = 1448.575, Pseudo-R²=0.062

Model 3: Residual Deviance = 1413.825, AIC = 1441.825, Pseudo-R²=0.069

Model 4: Residual Deviance = 1399.126, AIC = 1431.126, Pseudo-R²=0.077

Model 5: Residual Deviance = 1397.461, AIC = 1433.461, Pseudo-R²=0.078

Model 6: Residual Deviance = 1396.403, AIC = 1434.403, Pseudo-R²=0.079

** = Significant (t-value > 1.96)*

Table 6*Intercepts for regression models*

Threshold	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
streck Mest IG	-10.94 (19.60)	-9.26 (7.22)	-7.95 (10.44)	-8.16 (3.87)	-7.78 (7.05)	-9.84 (7.01)
Mest IG Ungefär lika många IG och G	-4.88 (0.61)	-4.31 (0.64)	-2.24 (0.90)	-1.84 (0.91)	-2.73 (1.30)	-3.79 (2.40)
Ungefär lika många IG och G Mest G	-3.65 (0.37)	-3.07 (0.42)	-1.01 (0.77)	-0.59 (0.79)	-1.49 (1.21)	-2.54 (2.36)
Mest G Ungefär lika många G och VG	-0.95 (0.21)	-0.36 (0.31)	1.72 (0.72)	2.15 (0.74)	1.24 (1.18)	0.20 (2.34)
Ungefär lika många G och VG Mest VG	0.13 (0.21)	0.74 (0.31)	2.83 (0.72)	3.27 (0.75)	2.37 (1.19)	1.32 (2.35)
Mest VG Ungefär lika många VG och MVG	1.43 (0.22)	2.05 (0.32)	4.16 (0.73)	4.63 (0.77)	3.73 (1.19)	2.68 (2.35)
Ungefär lika många VG och MVG Mest MVG	2.39 (0.24)	3.01 (0.34)	5.14 (0.75)	5.63 (0.78)	4.74 (1.20)	3.69 (2.35)

Each threshold indicates the value on the latent variable at which the probability of being in one category versus the next category changes.

Model 1 includes background variables such as gender, parent education, foreign background, and the type of study program (vocational vs. academic). The intercepts in ordinal regression such as this indicate the thresholds between different levels of the outcome variable, which in this case are categories of expected grades. The transition from lower to higher grade categories has varying thresholds, with significant t-values for most, reflecting substantial distinctions in the likelihood of expecting higher grades based on the influence of the predictors.

The negative coefficient for gender suggests that being male (=1) is associated with a lower likelihood of reporting higher grades compared to females. This effect is statistically significant, implying a consistent difference in academic outcomes by gender. This could reflect differences in educational engagement, learning styles, or external societal factors that differentially impact males and females in the educational setting.

For the dummy variable on parent education, we can see a positive coefficient of 0.38 indicating that students with at least one parent that has completed higher levels of education are likely to expect higher grades. The significance of this coefficient suggests that a parent's educational background plays a crucial role in students' academic performance.

The significantly negative coefficient of -0.72 for students with a foreign background indicates that these students are less likely to expect higher academic grades compared to their native counterparts. This might reflect challenges such as language barriers, cultural differences in educational practices, or less access to educational support both in and out of school.

The positive and significant coefficient of 1.25 for students in academic programs (versus vocational) strongly suggests that students in academic tracks are more likely to expect higher grades. This finding underscores the role of program type in academic achievement, more academically oriented students seem to choose academic programs.

The intercepts in table 6 indicate the thresholds between different categories of expected grades. Each intercept represents the point on the underlying latent scale where the probability of transitioning from one grade category to the next changes. For example, for model 1, the intercept of -10.94 (19.59) separates the lowest category (“streck”) from “Mest IG”, indicating that students need a latent score higher than -10.94 to move out of the “streck” category. Similarly, the threshold of -4.87 (0.60) differentiates “Mest IG” from “Ungefär lika många IG och G”, while -3.64 (0.36) marks the boundary between “Ungefär lika många IG och G” and “Mest G”. Higher thresholds, such as 1.43 (0.22) and 2.38 (0.24), represent the transitions to the top grade categories “Ungefär lika många VG och MVG” and “Mest MVG”, respectively. These intercepts provide critical points on the latent scale, highlighting the levels of the latent variable needed to achieve higher expected grades, thus offering a detailed view of the distribution of students' expected academic performance.

In the first model, the threshold between the lowest grade category ("streck") and the next ("Mest IG") is significantly low (-10.94), indicating that a very low latent score is required to move out of the "streck" category. This suggests that the background variables (gender, parent education, foreign background, and study program type) create a substantial barrier for students to expect higher grades. The subsequent thresholds follow a similar pattern, with relatively large negative values indicating difficulty in progressing to higher grade categories.

Model 2 extends the analysis from by incorporating an additional predictor, cultural identity. This addition allows for a more nuanced understanding of how students' cultural identity

influences their academic expectations and outcomes. This model retains the original variables: gender, parent education, foreign background, and program type.

The coefficient for gender remains negative and statistically significant, slightly less so than in Model 1. There is a decrease in both the coefficient and its statistical significance for Parent education compared to Model 1, where the coefficient was more robust (0.38, t-value = 2.15). This reduction indicates that cultural identity might interact with or partially explain the influence of parent education on academic outcomes, suggesting that cultural factors might mediate the relationship between parent education and student performance.

For foreign background, there is a notable decrease in both the magnitude and significance of the coefficient from Model 1, in Model 2 the coefficient is -0.36 with a t-value of 2.83 where it previously had a coefficient of -0.72 and a t-value of -4.14 in Model 1. So having a Swedish identity is a significant predictor for expecting higher grades, and the change between Model 1 & Model 2 implies that cultural identity plays a role in moderating the impact of having a foreign background on expected grades, potentially buffering some of the challenges faced by these students. The coefficient for program type increases slightly in Model 2, to 1.30, along with its significance, indicating that when accounting for cultural identity, being in an academic program compared to a vocational one remains a strong predictor of higher academic achievement.

The effect of the dummy variable cultural identity is significant with a coefficient of 0.63, suggesting that a Swedish cultural identity enhances students' likelihood of higher expected grades. This effect highlights the importance of a supportive and inclusive school culture that respects and integrates diverse cultural backgrounds, which can positively influence academic performance. As discussed in the previous section, 35%, or 109 out of the 311 students with a foreign background, identify as Swedish.

The inclusion of Cultural Identity in Model 2 provides significant insights into how students' perceptions of their cultural identity within the school environment affect their expected grades. The changes in coefficients for existing variables upon the addition of cultural identity highlight the interplay between cultural factors and traditional predictors of academic achievement, most notably the negative effect of a foreign background becomes considerably smaller, from -0.72 to -0.36, and loses its' significance. This suggests that initiatives aimed at

enhancing cultural inclusivity and support in schools could not only improve the academic experiences of culturally diverse students but also potentially mitigate some of the disadvantages associated with foreign backgrounds.

With the inclusion of cultural identity, there is a noticeable shift in thresholds in Table 6, particularly the threshold between "streck" and "Mest IG," which increases to -9.26. This suggests that cultural identity slightly alleviates the low expectations associated with the baseline variables, making it easier for students to transition to higher grades. The thresholds for other categories also increase, though the magnitude of change is smaller, indicating a moderate impact of cultural identity on academic expectations.

Model 3 extends the analysis from Model 2 by incorporating additional predictors: Peer Relations and Social Belonging. This inclusion provides a deeper understanding of how students' relationships and sense of belonging within the school context influence their academic outcomes.

The coefficient for gender remains negative and statistically significant, slightly less so than in Model 2, suggesting that while gender differences persist in academic outcomes, the inclusion of peer and social factors further accounts for some of these differences.

Parent education sees a slight increase in its coefficient from Model 2 (0.33, t-value = 1.85) to 0.35 in Model 3, with a t-value of 1.97. This slight increase might suggest that the added dimensions of peer relations and social belonging slightly enhance the influence of parent education on academic outcomes, possibly reflecting the broader socio-educational environment's impact on how parental influence manifests in student performance.

For foreign background, there is a further decrease in both the magnitude and significance of the coefficient compared to Model 2 (coefficient = -0.36, t-value = -1.64), in Model 3 the coefficient is -0.34. This decrease indicates that peer relations and social belonging play roles in moderating the negative impacts of having a foreign background on expected, potentially providing social support mechanisms that buffer against educational challenges faced by these students.

The coefficient for program type (coefficient = 1.25, t-value = 6.41 in Model 3) remains significant but its effect is slightly decreased compared to Model 2 (coefficient = 1.31, t-value = 6.83). This change implies that the inclusion of social variables slightly adjusts but does not fundamentally alter the strong positive impact of being in an academic program on expected grades.

The impact of cultural identity increases between models, where the coefficient goes from 0.63 in Model two, up to 0.64, meaning that when the added variables of peer relations and social belonging are held constant, identifying as Swedish has a stronger impact on predicting student's expected grades and conversely, the effect of not identifying as Swedish is more negative when these variables are held constant. This allows for the inference that these two variables are responsible for mitigating some of the negative effects that not identifying as Swedish has on expected grades.

The impact of the recently incorporated variables, Peer Relations and Social Belonging, is evident with both showing positive coefficients while just social belonging shows significant results. Peer Relations has a coefficient of 0.23, while Social Belonging has a significant coefficient of 0.39. It's important to highlight that these variables are measured on a scale of 1 to 4. This means that for each incremental increase in these variables, there's an estimated increase in expected grades. For instance, an individual scoring the highest possible value of 4 in these variables can expect a four-fold increase in estimated grades as indicated by these coefficients. These social factors contribute positively to students' educational experiences, suggesting that fostering supportive peer networks and promoting a sense of community within schools could further enhance student academic outcomes.

Looking at Table 6, the addition of peer relations and social belonging further elevates the thresholds, particularly in the middle categories. The threshold for moving from "Ungefär lika många IG och G" to "Mest G" shifts dramatically from -3.07 in Model 2 to -1.01 in Model 3, indicating that the inclusion of social factors makes it significantly easier for students to anticipate higher grades.

Model 4 further broadens the scope of the analysis by including additional predictors, School Culture and Teacher Support, alongside previously examined variables. The coefficient for gender remains negative (-0.43) and statistically significant, demonstrating a slight reduction

from the previous model. This trend suggests that while gender disparities in academic outcomes are still evident, the broader educational context, including enhanced teacher support and a nurturing school culture, may help alleviate some of these disparities.

Parent education continues to show a relatively stable and positive influence on academic outcomes, with a slight adjustment in this model to 0.34 (t-value = 1.88). Though not significant, this still indicates that parental education consistently contributes to shaping students' academic success, underscoring its fundamental role irrespective of the complex dynamics introduced by school and teacher factors.

The coefficient for foreign background decreases slightly (-0.32), compared to Model 3 (-0.34), suggesting that additional support mechanisms provided by school culture and teacher support might help relieve some of the challenges encountered from having a foreign background.

The coefficient for program type (1.29) shows a minor reduction but remains highly significant (t-value = 6.49), reinforcing the continued trend of academic programs in fostering higher academic achievement, even when considering the influence of supportive school and teacher dynamics.

Newly added variables, School Culture (0.38) and Teacher Support (0.75), both show positive effects, with Teacher Support demonstrating a significant impact (t-value = 2.29). These findings showcase the essential roles that a supportive school environment and proactive teacher engagement play in enhancing student outcomes. The substantial influence of Teacher Support, in particular, highlights the critical importance of direct teacher-student interactions in promoting academic achievement.

Introducing school culture and teacher support leads to even higher thresholds in Table 6 for the upper grade categories. The transition from "Ungefär lika många G och VG" to "Mest VG" now requires a latent score of 3.27, up from 2.83 in Model 3. This indicates that a positive school culture and strong teacher support are associated with higher academic expectations, particularly in the higher grade categories. The relatively stable lower thresholds suggest that these factors primarily benefit students who are already closer to the higher end of the academic performance spectrum.

By integrating these additional dimensions, Model 4 illustrates how systemic elements such as school culture and teacher support have an effect on academic outcomes alongside individual factors like gender and foreign background. The inclusion of School Culture and Teacher Support implies that strategies aimed at improving these areas could be crucial in boosting overall student performance.

In Model 5, the exploration of interaction effects between peer relations and cultural identity, as well as between social belonging and cultural identity, provides further insights into the dynamics of academic performance. The coefficient for gender remains negative and significant at -0.42 ($SE = 0.18$, $t\text{-value} = -2.39$), highlighting persistent gender disparities. The effect of parent education shows a marginally significant coefficient of 0.31 ($SE = 0.18$, $t\text{-value} = 1.71$), indicating a modest positive influence on academic outcomes.

The coefficient for foreign background is not significant at -0.33 ($SE = 0.22$, $t\text{-value} = -1.48$), suggesting that its direct impact on academic performance diminishes when other factors are considered. The coefficient for being in an academic program remains significantly positive at 1.12 ($SE = 0.21$, $t\text{-value} = 5.45$), reinforcing the strong association between academic programs and higher academic achievement.

The coefficient for cultural identity is not significant at -0.77 ($SE = 1.39$, $t\text{-value} = -0.56$), indicating that the direct effect of identifying as Swedish or not is less pronounced when accounting for interactions with peer relations and social belonging. However, the school culture maintains a significant positive effect with a coefficient of 0.4563 ($SE = 0.19$, $t\text{-value} = 2.29$), underscoring the importance of a supportive school environment. Teacher support remains significant, with a coefficient of 0.35 ($SE = 0.17$, $t\text{-value} = 2.14$), highlighting its critical role in academic success.

The interaction between peer relations and cultural identity shows a positive but non-significant coefficient of 0.42 ($t\text{-value} = 1.26$), suggesting that while cultural identity might amplify the benefits of positive peer relations, the effect is not strong enough to be conclusive. Similarly, the interaction between social belonging and cultural identity is negative but not significant at -0.03 ($t\text{-value} = -0.08$), indicating no substantial moderation effect. These findings imply that cultural identity's role in academic performance is complex

and influenced by other interacting factors, but these interactions do not have a significant impact in this model.

When interaction effects are added, the thresholds show some fluctuations. The threshold for transitioning from "Mest IG" to "Ungefär lika många IG och G" decreases to -2.73, while the upper thresholds continue to increase. This pattern suggests that the interaction effects may be more influential for students in the middle range of academic expectations, while those at the higher end continue to benefit from the cumulative positive effects of the added predictors.

Model 6 adds interaction terms for foreign background and cultural identity, peer relations and school culture, and social belonging and school culture, providing a deeper understanding of these interactions. The coefficient for gender remains negative and significant at -0.44 (t-value = -2.51), indicating ongoing gender disparities in academic outcomes. The effect of parent education is marginally significant with a coefficient of 0.31 (t-value = 1.67), suggesting a modest positive influence.

The main effect of foreign background stays non-significant at -0.25 (t-value = -0.49), indicating that its direct impact on academic performance is not significant when other variables are included. The positive association of being in an academic program with academic performance persists, with a coefficient of 1.10.

The school culture's main effect of -0.29 is not significant with a t-value of -0.35, unlike in previous models, which suggests that its influence may be moderated by other factors. Teacher support remains a significant positive predictor with a coefficient of 0.35.

The interaction between foreign background and cultural identity is not significant, indicating no joint influence on academic performance. The interaction between peer relations and school culture is also not significant, suggesting that school culture does not significantly enhance or diminish the benefits of positive peer relations. In addition, the interaction between social belonging and school culture, while positive of 0.38 is not significant (t-value 1.64). This suggests that a supportive school culture may potentially enhance the positive effects of social belonging on academic performance, though the relationship is not statistically validated.

With the full model incorporating all interaction terms, the thresholds generally decrease slightly, particularly in the lower and middle categories. The threshold between "Ungefär lika många IG och G" and "Mest G" drops to -2.54, and the threshold for the highest category ("Mest MVG") decreases to 3.69. This suggests that while the full model offers a comprehensive view of the factors influencing academic expectations, it also reflects a slight easing of the transition across all categories, possibly due to the complex interplay of various predictors and their interactions.

11.3 Model Diagnostics & VIF

Analyzing the Variance Inflation Factor (VIF) within a linear model framework, even when the final analysis is conducted using an ordinal regression, is useful for understanding potential multicollinearity among predictors in any statistical model. Multicollinearity refers to a situation where predictor variables in a regression model are highly correlated, which can lead to inflated variances of the estimated regression coefficients. This inflation makes the model sensitive to changes in the model, reduces the precision of the estimated coefficients, and can lead to difficulties in assessing the importance of independent variables. Even though VIF does not directly translate between linear and ordinal logistic regressions due to differences in model formulation, it still serves as a valuable diagnostic tool. High VIF values identified in the linear model setup can prompt further scrutiny and adjustments in the ordinal regression model, such as re-evaluating the necessity of certain predictors, considering alternative coding for categorical variables, or potentially using dimension reduction techniques (Shrestha, 2020).

Therefore, checking VIF using a linear model is relevant as it ensures that the ordinal regression model's conclusions are robust, reliable, and not unduly influenced by the interrelationships among predictors. This step can help confirming that the model accurately reflects independent assessments of predictor impacts, thereby enhancing the validity and interpretability of the research findings in understanding the dynamics of academic performance in educational settings.

Table 7*Variance inflation factor for variables*

Variable	VIF
Gender (v157_kön)	1.08
Parent Education	1.12
Academic (Program Type)	1.13
Foreign Background	1.64
Peer Relations 2013	1.21
Social Belonging 2013	1.3
Cultural Identity 2013	1.66
School Culture 2013	1.1
Teacher Support 2013	1.18

The Variance Inflation Factor (VIF) analysis conducted on the regression model reveals important insights into the multicollinearity among the predictors used to investigate academic outcomes. Crucially, all VIF results are well below the threshold of 2 indicating no significant multicollinearity issues within the model. This outcome is crucial as it ensures that the regression coefficients are robust and can be interpreted confidently without concerns about excessive inter-correlations skewing the analysis. Specifically, the variables "Foreign Background" and "Cultural Identity 2013" register the highest VIF scores at 1.64 and 1.66, respectively. While these scores are the highest within the dataset, they remain well within acceptable limits, suggesting only a moderate overlap in the data they represent. This overlap is reasonable, considering both variables pertain to aspects of students' cultural backgrounds and their integration within the school environment. Such a relationship might indicate how these elements interact to affect students' educational experiences and outcomes.

Furthermore, the fact that all VIF scores are below 2 strongly suggests that each predictor contributes distinctively to the model. This distinct contribution underscores the reliability of the model's outputs, enabling precise interpretations of how each factor impacts student academic performance. This level of clarity in the model's structure enhances the validity of the statistical tests and the confidence in the estimated effects, supporting comprehensive and

detailed conclusions. This affirms that the model is appropriately specified concerning multicollinearity, bolstering the integrity of the conclusions drawn from the study.

12. Discussions

This research explored the dynamics between social factors such as peer relations, social belonging, cultural identity, and school culture, and their impact on academic performance in Swedish upper secondary schools. Through comprehensive analyses across multiple models, this study provides nuanced insights into how these factors interact and influence student outcomes. The findings draw significant parallels to the existing literature on educational psychology and sociology, particularly regarding the roles of social integration and cultural identity in educational settings.

The influence of peer relations and social belonging on academic performance, as indicated by Model 3 aligns well with established educational theories and prior empirical research. These findings provide quantitative backing to the works of Brown and Larson (2009) and Steinberg & Morris (2001), which emphasize the importance of supportive peer networks in enhancing academic engagement and success. The influence of peer relations on academic performance also harmonises with findings from Wentzel and Wigfield (1998), who noted that peer support plays a crucial role in promoting academic motivation and behavioral engagement. The study extends these insights by quantitatively demonstrating how peer relation mechanisms within Swedish upper secondary schools contribute to academic success. Furthermore, Eccles et al. (1993) have emphasized that peer group affiliation influences educational aspirations and engagement, which aligns with these findings showing the positive impact of peer relations on expected grades. This research supports the notion that improvements in peer relationships correlate with better academic outcomes, supporting the notion that students' social contexts are crucial for their educational success.

The impact of social belonging on academic performance can be framed within the context of Baumeister and Leary's (1995) theory of the need to belong, arguing that the need for meaningful inclusion affects mental health and cognitive processes. This study enriches this theory by showing that social belonging has a differential impact on academic outcomes depending on both cultural contexts and contexts within the school, suggesting that the quality of the social integration matters extensively. In addition, the positive impact of social

belonging found in this study resonates with the work of Goodenow (1993), who argued that students who feel a sense of belonging in school are more motivated, engaged, and ultimately perform better academically. This reinforces the argument for educational strategies that enhance social cohesion among students as a means to boost academic achievement. Walton & Cohen (2011) demonstrated the effectiveness of social-belonging interventions in improving academic outcomes. The findings of this study suggest similar interventions could be adapted to the Swedish context to enhance social belonging and academic performance.

The results from Model 2, demonstrating the positive impact of a Swedish cultural identity on academic performance, providing support to Karjalainen's (2020) discussions on the evolving nature of cultural identity in educational settings. This finding is particularly relevant in multicultural environments where diverse cultures interact. It aligns with Zajda's (2020) analysis, which proposes that identifying as Swedish can significantly enhance personal and academic development by providing a stable framework through which students navigate their educational experiences. These insights could aid in the development of culturally responsive teaching practices that acknowledge and utilize cultural diversity as a resource rather than a barrier to educational success. This study extends previous findings by quantifying the positive impact of cultural identity in a way that suggests even stronger effects than traditionally noted in the literature, highlighting a potential area for further investigation into the mechanisms of these influences.

Model 3 highlights that beyond individual attributes and cultural identity, the school's social environment plays a crucial role in shaping academic success. The inclusion of these variables suggests that interventions aimed at enhancing peer support and cultivating a welcoming school atmosphere could complement efforts to address cultural diversity and educational equity, thereby potentially improving academic outcomes for all students.

Results from model 4 highlight the pivotal role of positive school culture in enhancing academic outcomes, echoing Rudolf and Lee's (2023) conclusions about the impacts of school culture on both academic performance and student well-being. This study builds on the foundational work by Aldridge et al. (2015), who highlighted how supportive school culture directly contributes to improving student resilience and well-being. Wang & Degol (2016) and Aldridge et al. (2015) have shown that positive school culture influences academic performance and student well-being. Interestingly, while past studies have often

focused on the mediating role of school culture in relation to academic stressors, this study highlights its direct correlation with improved academic performance, suggesting that the school environment itself can be a direct catalyst for excelling academically. This highlights the need for educational policies and school management strategies that prioritize the cultivation of a supportive and inclusive school culture. Klem & Connell (2004) and Tao et al. (2022) emphasize the importance of teacher support in fostering student engagement and academic success. The findings align with these studies, showing that perceived teacher support directly influences academic outcomes and mitigates the negative effects of social challenges. This research also provides further evidence of the crucial role of teacher support in multicultural classrooms, where it has the potential in bridging the gap between students from different cultural backgrounds and promotes a cohesive learning environment.

An important finding from this research was the significant positive coefficient of social belonging on academic performance in Model 3, though this effect became non-significant when school culture and teacher support was included in Model 4. This suggests that the effects of social belonging on academic performance can be influenced by the broader school environment. Specifically, in schools that do not actively support academic success, the benefits of social belonging might be overshadowed by the prevailing school culture. This finding contrasts with the generally accepted view that increased social belonging universally improves academic outcomes. It resonates with the discussion by Brown & Larson (2009), which highlights how peer group affiliations that are indifferent or even negative towards academic pursuits can undermine academic engagement, leading to poorer performance. The results, being almost significant, can indicate that while social belonging is crucial, its positive impact on academic performance is contingent upon a supportive school culture. These findings challenge traditional assumptions and call for a more nuanced understanding of how social dynamics and school environments interact to influence academic success. By emphasizing the contingent nature of social belonging's impact on academic performance and the critical interplay between peer relations and school culture, this study provides valuable insights into the complex mechanisms that shape educational outcomes.

The interaction between peer relations and cultural identity in predicting academic outcomes was not significant but still gives insights that students who both have positive peer relations, and a Swedish cultural identity tend to perform better academically. This could be explained by the dual support these students receive both socially and culturally, which aligns with the

findings from studies like those by Zhou and Bankston (1998), who found that strong community ties within one's ethnic group can buffer against the challenges of navigating a new cultural environment. This interaction gives insight to the question of how peer relations and cultural identity together influence academic outcomes, suggesting that educational strategies that encourage both strong peer connections and cultural identity affirmation could be particularly effective in boosting academic performance.

The interaction between social belonging and cultural identity in predicting academic outcomes was not significant, as indicated by a coefficient of -0.0290 (SE = 0.3687, t-value = -0.0788). Despite this lack of significance, the results still offer some insights. Students who feel a strong sense of social belonging and identify with Swedish cultural identity may experience a more supportive and inclusive school environment, which could positively influence their academic performance. This aligns with previous research, such as Phinney (1990), who highlighted that a strong sense of belonging within a supportive cultural context can enhance academic motivation and achievement. These findings suggest that fostering a sense of social belonging and cultural identity affirmation within schools could potentially improve academic outcomes. Although the interaction was not statistically significant, it underscores the importance of creating an educational environment that promotes both social integration and cultural identity, which may collectively enhance students' academic experiences and performance. Educational strategies focusing on social belonging and cultural identity could be particularly beneficial for students from diverse backgrounds, helping to bridge the gap in academic performance and promoting overall educational equity.

The interaction between foreign background and cultural identity in influencing academic performance offers interesting insights. As seen on Image 2, students with a foreign background who also identify strongly with Swedish culture experience better academic outcomes than those who do not identify with Swedish culture. This aligns with Berry's (1997) acculturation model, which suggests that integration—maintaining one's cultural identity while engaging with the host culture—leads to better adaptation outcomes than separation or marginalization. Even though the interaction effect between these variables was not significant in Model 6, this speaks directly to the research question about how cultural identity and foreign background influence academic outcomes. This suggests that the integration of one's native cultural identity with the dominant school culture may mitigate

some of the challenges associated with having a foreign background, potentially leading to improved academic performance.

The interaction between peer relations and school culture in predicting academic performance, though not statistically significant with a coefficient of -0.1304 , still provides meaningful insights. A positive school culture can potentially moderate the influence of peer relations on academic outcomes, suggesting that a supportive school environment may enhance the benefits of positive peer interactions. This concept is reinforced by research from Wentzel and Watkins (2002), who found that a positive school climate fosters better peer relationships, which in turn contribute to higher academic achievement. Although the interaction was not significant, these findings indicate that fostering a positive school culture could enhance the positive effects of strong peer relations on academic performance. Addressing the interplay between peer relations and school culture highlights the importance of a holistic approach to educational strategies. Enhancing school culture can create an environment where positive peer interactions flourish, thereby supporting academic success. This approach is particularly beneficial for students from diverse backgrounds, as a positive school culture can mitigate potential social challenges and promote an inclusive, supportive atmosphere conducive to academic achievement.

The moderating role of school culture in the relationship between social belonging and academic performance had a coefficient of 0.3751 but was not significant. These results still give insights into the complexity of educational dynamics. A positive school culture not only enhances general student well-being but also amplifies the positive effects of social belonging on academic outcomes. This finding is supported by Thapa, Cohen, Guffey, and Higgins-D'Alessandro's (2013) research, which highlights that a positive school culture facilitates better alignment between students' social needs and educational goals, thereby improving academic achievement. These results address how school culture affects the relationship between social belonging and academic performance across different student demographics. It suggests that interventions aimed at improving school culture could enhance the academic benefits of social belonging.

12.1 Limitations

The study relied on self-reported data from students regarding their academic performance and social experiences. While self-reported data is valuable, it is susceptible to biases such as

social desirability bias and inaccuracies in self-assessment. Future research could benefit from triangulating self-reported data with objective measures such as official academic records and teacher evaluations to enhance validity. The use of a cross-sectional design limits the ability to infer causality between the studied variables. Although significant correlations were found, establishing causal relationships requires longitudinal studies that can track changes over time and better capture the dynamics of these topics, like peer relations, social belonging, and academic performance. Future research could benefit from tracking changes across the entire span of secondary education. Expanding the demographic variables to include more nuanced categories of cultural background and socio-economic status could also provide a clearer picture of how these factors interact with school culture and peer dynamics.

Conducting research with pre-existing data presents unique challenges, particularly when the original data collection was not tailored to the specific research questions of the current study. One of the primary challenges is the potential mismatch between the constructs the original questionnaire was designed to measure and the constructs of interest in the current study. For instance, variables such as peer relations, social belonging, and cultural identity may not have been explicitly or adequately operationalized in the original data collection. This necessitates finding proxy variables that approximate the constructs of interest, which can lead to issues of validity and reliability. Additionally, the pre-existing data might lack the necessary granularity or specificity required to thoroughly address the research questions.

The quality of data can be inconsistent, with issues such as incomplete responses, misinterpretations of questions, or varying levels of engagement from respondents. These inconsistencies can compromise the integrity of the data and complicate the analysis process. Moreover, pre-existing datasets often contain missing values, which can pose significant challenges for analysis. Employing methods such as multiple imputation to address missing data is necessary, but these methods also add complexity to the analysis and interpretation of results.

Since the researcher did not design the original survey, there may be limitations in how questions were framed or the response options provided. This can limit the ability to capture respondents' true attitudes or experiences accurately. Furthermore, the timing and context in which the original data was collected may differ from the current study's needs. Changes in

societal, educational, or institutional contexts since the data was collected can affect the relevance and applicability of the findings.

When direct measures of the constructs of interest are not available, researchers must rely on proxy measures. This can lead to issues of construct validity, as the proxy measures may not fully capture the intended constructs, potentially leading to biased or incomplete findings. Additionally, the use of pre-existing data limits the researcher's ability to explore new or emerging variables that may be relevant to the research questions. The analysis is constrained by the variables and measures already included in the dataset.

Qualitative data through interviews or focus groups could enrich the quantitative findings, offering deeper insights into the subjective experiences of students regarding peer relationships, social belonging, and cultural identity within their educational contexts. While quantitative data can highlight patterns and correlations, it often fails to capture the nuanced, personal perspectives that qualitative data can provide. Conducting interviews or focus groups allows researchers to explore the reasons behind students' feelings of belonging or alienation, the impact of cultural identity on their school experience, and the subtleties of peer interactions that numbers alone cannot convey. This mixed-methods approach can provide a more holistic understanding of the factors influencing academic outcomes and help to contextualize the quantitative data within the lived experiences of students.

While utilizing pre-existing data can offer significant advantages, such as saving time and resources, it also presents considerable challenges that must be carefully managed. The need to critically assess the alignment of the data with the research objectives, addressing issues of data quality and completeness, and navigating ethical considerations is instrumental.

12.2 Concluding Remarks & Wider Context

This research has delved deeply into the dynamics between peer relations, social belonging, cultural identity, school culture and teacher support, and their collective impact on academic performance in Swedish upper secondary schools. By conducting a comprehensive analysis and examining these variables through various models, the study not only provides empirical results supporting theoretical frameworks in educational sociology but also offers insights into the nuanced ways these factors interact within the educational landscape.

The influence of peer relations on academic performance emphasizes the need for educational policies that foster positive peer interactions. Schools should implement structured peer mentoring programs and collaborative learning initiatives that promote supportive peer networks. These programs can help mitigate the negative effects of poor peer relations and enhance students' academic engagement and success, as suggested by Masland and Lease (2013), who highlighted the critical role of academic norms within peer groups.

Improving social belonging within schools is another crucial policy area. Schools should adopt inclusive practices that create a sense of community and belonging for all students. This can be achieved through initiatives such as diversity training for staff and students, extracurricular activities that promote social integration, and the establishment of student support groups. The work of Rudolf and Lee (2023) underscores the importance of social belonging in affecting students' academic engagement and overall school experience.

The positive correlation between a well-integrated Swedish cultural identity and academic performance suggests that culturally responsive teaching practices are essential. Schools should incorporate curricula that reflect cultural diversity and promote an understanding and appreciation of different cultural backgrounds. This approach not only supports students from diverse backgrounds but also enriches the learning experience for all students, aligning with Phinney's (1990) findings on the importance of ethnic identity in adolescents.

Enhancing school culture to create an inclusive and supportive environment is critical. Schools should focus on building a positive school culture that values each student's unique contributions and provides a safe and nurturing environment. This can be achieved through policies that promote student voice, celebrate diversity, and ensure that school practices are equitable and inclusive. The research by Erikson and Rudolphi (2010) on educational inequality highlights the importance of school culture in promoting equal opportunities for all students.

Teacher support is another pivotal factor influencing academic outcomes. Professional development programs for teachers should emphasize the importance of building strong, supportive relationships with students. Teachers should be equipped with the skills to recognize and address the diverse needs of their students, fostering an environment where all students feel supported and valued. This approach is supported by the findings of Nylund

(2012), who stressed the role of supportive educational environments in addressing social inequalities.

Despite the comprehensive analysis provided, the study acknowledges the limitations inherent in a cross-sectional design and suggests areas for future research. Longitudinal studies would be invaluable in tracking the evolution of these social dynamics over time and their prolonged effects on academic outcomes. Additionally, expanding research to include qualitative data from interviews or focus groups could enrich the understanding of the subjective experiences of students, providing a more detailed narrative of how these factors interact in their daily educational experiences. Moreover, examining the interaction of intrinsic and extrinsic motivations with these social factors could further elucidate the complex pathways through which these dynamics influence academic performance.

This study contributes significantly to the broader discourse on educational equality and excellence. By providing a clearer understanding of how various social factors interplay to affect academic outcomes, it offers a pathway toward more effective educational strategies that are sensitive to the social, cultural, and institutional contexts in which students operate. This research not only reinforces the importance of a supportive educational environment but also highlights the dynamic interplay of individual and collective factors in shaping educational outcomes. As such, it serves as a foundational piece for ongoing discussions about how best to structure educational environments to support all students, particularly in increasingly multicultural settings.

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