School of Health, Care and Social Welfare

ENGAGEMENT AND DISENGAGEMENT IN SCHOOL

A quantitative study examining behavioural and emotional engagement and disengagement in school among 6th graders in Sweden

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ABSTRACT

Education affects both the health and personal development of an individual, and higher levels of education are associated with better health and higher socioeconomic status. There are gender differences in school performance in Sweden, with girls performing better than boys. Engagement can influence positive school performance, whereas disengagement can lead to alienation and indifference toward school and affect school performance negatively. The aim of the study was to examine the associations between behavioural and emotional engagement and disengagement, and if there are gender differences in engagement and disengagement, among children in 6th grade in Sweden. The study was conducted through quantitative method using secondary cross-sectional data. The result showed a positive association between behavioural engagement and emotional engagement (*rho*=0.84, $p<0.001$) and between behavioural and emotional disengagement (*rho*= 0.74, $p<0.001$). Girls had statistically significant higher behavioural and emotional engagement than boys, whereas boys had higher behavioural and emotional disengagement than girls. In conclusion, the levels of behavioural and emotional engagement are associated, as are the levels of behavioural and emotional disengagement. There are gender differences, where girls are more likely to be engaged in school compared to boys and boys are more likely to be disengaged in school compared to girls.

Keywords: children, primary school, public health, school achievement, school engagement

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1 INTRODUCTION

Education is an important determinant for an individual's personal development and health, as according to Baker et al. (2011), an individual that has graduated from school is more likely to obtain a job and have higher socioeconomic status. Education can also influence the lifestyle habits of an individual, for example, lower alcohol consumption, healthier dietary choices, and lower tendency to smoke among those with a completed education (Baker et al., 2011). The education gradient, according to Mirowsky and Ross (2015), highlights the association between education and health, with higher levels of education being associated with better health and development of an individual. Whereas lower levels of education can decrease the chances of a job and lead to a higher risk of health problems (Mirowsky & Ross, 2015).

There are gender differences in compulsory education in Sweden, with more girls graduating compulsory school with complete grades compared to boys (Skolverket, 2020). The difference can be explained, according to Spinath et al. (2014), by variance in maturation and personalities in the children. Girls in primary school tend to have higher levels of motivation and engagement compared to boys. This can lead to health differences as the children reach adolescence and young adulthood (Spinath et al., 2014). According to Ladd and Dinella (2009) school engagement is important in order for a child's school achievement. Engagement in school activities can help a child to thrive in school and achieve better grades and personal development (Ladd & Dinella, 2009). The child's behavioural and emotional involvement in school activities and with their peers highlights their school engagement according to Skinner et al. (2009). It is important to encourage children's engagement in school in order for them to cope with the challenges and tasks they encounter in school.

Education has an important part in society and in an individual's life, as education levels can affect the health and socioeconomic status of the individual. Thus, education is a significant public health determinant and as gender differences in education are still ever present, focus on the problem is necessary. As school engagement can help explain how and why a child is thriving or failing in school, it is essential to examine this further. By examining gender differences in school engagement, it can help increase the understanding of the problem and what measures need to be taken to prevent it. From a public health perspective, it is imperative to prevent education related health problems and work to toward promoting school engagement and motivation to ensure both the children's health and school achievement are thriving. If children graduate from compulsory school with complete grades and engagement, their prospect for thriving in adulthood can improve, which would be beneficial on an individual and societal level.

2 BACKGROUND

Education plays an imperative role in determining the health and future of an individual. The United Nation (UN, 2015) formed the sustainable development goals called Agenda 2030 to create global sustainable development. Focus is on three dimensions of sustainability; environmental, economic, and social, in order for present and future generations to be able to satisfy their needs. There are 17 goals through which this shall be achieved, for example, gender equality, female empowerment, good health, and well-being and eradicate hunger. Goal number four is focused on education, as through fair education for all, learning opportunities can lead to sustainable development and a sustainable health for all children (UN, 2015). In Sweden, education is regulated through law: *Skollagen*, which aims to promote children's learning and development whilst conveying democratic values and human rights. All children have equal right to education regardless of gender, age, ethnicity, sexual orientation, religion, or disability. Thereby, schools in Sweden are required by law to provide equal education from the individual's prerequisites and needs (SFS 2010:800).

2.1 School achievement and health effects

According to Baker et al. (2011) education has an impact on the social development and economy as individuals with a completed education tends to have better socioeconomic status than individuals with an incomplete education. Education is associated with lifestyle habits, such as smoking, alcohol consumption and dietary habits. Obtaining and completing an education can have a positive effect on health and lead to a healthier population, as individuals with higher education levels tend to make healthier lifestyle choices (Baker et al., 2011). This is supported by Mirowsky and Ross (2015), who argue that education in relation to health can be seen as a gradient, where the higher level of education an individual obtains, the better the health of the individual. A higher level of education can lead to a better salary, a more satisfying job with a higher sense of coherence. Whilst a lower level of education can result in a less paid job with lower chances of personal development and control. Individuals with a completed education tend to rate their subjective mental health as good to a greater extent than individuals with an incomplete education (Mirowsky & Ross, 2015).

The education gradient, according to Cutler and Lleras-Muney (2010), indicate that a higher level of education is associated with lower levels of alcohol consumption and smoking, as well as lower levels of overweight and obesity compared to individuals with lower levels of education. This indicates that individuals with higher levels of education make informed, sensible lifestyle choices whilst utilising the preventative care that is available to them. Education can also affect the development of cognitive abilities which are imperative in making choices regarding lifestyle and personal health (Cutler & Lleras-Muney, 2010).

2.2 Gender differences in school achievement

Through education the individual can develop necessary skills to take control of its life and make informed choices regarding health and lifestyle. There are, however, disparities in the levels of completed education in Sweden based on gender, which may result in health inequalities in adulthood. Sveriges Kommuner och Landsting (2019) report that girls in compulsory primary school in Sweden perform better in general than boys. The pattern is seen throughout primary school, from grade 1 in primary school to grade 9 in high school. Girls that are underperforming in grade 1 tend to improve their school achievement by the time they graduate from grade 9. However, boys that are underperforming early on tend not to improve but continue to underperform throughout primary school. As a result, girls tend to graduate with complete grades in more subjects than boys. The main differences in performance between gender are visible in subjects related to language, social sciences and reading comprehension (Sveriges Kommuner och Landsting, 2019).

This is confirmed by Skolverket (2020) report that 77.5% of the girls in grade 6 obtained grades in all subjects, compared to 70% of the boys in Sweden. There were 20% of boys in grade 6 that failed two or more subjects, compared to 14% of girls (Skolverket, 2020). According to Spinath et al. (2014) the disparities between gender can be seen in the cognitive abilities, motivation, and skills which are connected to the individual's personality and maturation. Girls develop the necessary abilities and skills linked to school achievement earlier than boys prior to puberty, thereafter the differences may decrease. Girls in primary school tend to adapt to the school environment and rules better, as well as having higher levels of intrinsic values, such as motivation, engagement, and self-discipline, than boys (Spinath et al., 2014). This is confirmed by Golsteyn and Schils (2014) who report that boys are utilising their instrumental skills in primary school, whereas girls tend to use their social skills to a greater extent. This could be an explanation as to the disparities in school achievement where girls tend to perform better at subjects involving languages and reading, while boys tend to perform better in maths and similar subjects (Golsteyn & Schils, 2014).

2.3 Engagement in school

Intrinsic values of the individual have an imperative role in school achievement, with motivation and engagement being key factors. According to Upadyaya and Salmela-Aro (2013), school engagement is important for the individual's school experiences. Motivation and attentiveness towards school activities are attributes that can improve the individual's engagement and help toward a prosperous individual growth (Upadyaya & Salmela-Aro, 2013). Engagement in school is, according to Skinner et al. (2009) related to participating in school activities with both behavioural and emotional involvement. This entails the child displaying an interest, as well as showing enjoyment for school activities, which is related to the emotional engagement. The behavioural engagement can be seen through the effort and attention that the child devotes to the tasks and activities in school. The persistence of not giving up if a task is difficult or tedious is also connected the child's behavioural engagement. However, if the child displays a lack of attention or persistence, with passivity and a tendency

of indifference towards the school activities or its classmates, this would be considered disengagement, rather than a lack of engagement (Skinner et al., 2009).

Ladd and Dinella (2009) argue that in order for children to gain something from their education there must be a level of engagement within them. Children that display an interest in the school activities are more likely to perform better in school and have a continuous educational development throughout their school years (Ladd & Dinella, 2009). This is supported by Wang et al. (2011) who argue that children with school engagement are more likely to achieve better results in school. School engagement is also related to the child's adherence to school rules and values, which is connected to how well the child adapts to the school environment. The adherence and active engagement will allow for the child to develop necessary skills and capabilities to manage well in school, and thrive (Wang et al., 2011).

Children that are engaged in school have a higher motivation to succeed and experience more support from teachers and a feeling of fulfilment. Emotional and behavioural engagement can act as protective factors against school-related stress and difficulties as engagement strengthens the child. Disengaged children experience, as a contrast, less support from teachers and parents. Children who are disengaged tend to detach themselves from the school activities and their peers as they experience a lack of persistence and enthusiasm towards tasks and activities. Therefore, disengagement can be a risk factor for underachievement and early school drop-out. The development of skills and competencies that children with engagement experience, will be affected among disengaged children, as they tend to feel alienated from the teachers and their peers (Wang & Fredricks, 2014; Wang et al., 2019).

According to González et al. (2015), there is an association in children's behavioural engagement and emotional engagement, as children who tend to be persistent and make an effort with school tasks, are also more interested and find enjoyment in the tasks and activities. The association between behavioural and emotional engagement is also connected to lower levels of disengagement (González et al., 2015). This is supported by Morrison Gutman and Schoon (2018), who argue that children with higher levels of behavioural and emotional engagement were also having higher motivation and aspirations to achieve complete school grades. There were, however, a difference in gender where boys were more inclined to lower motivation and aspirations towards school than girls, with lower levels of engagement as a result (Morrison Gutman & Schoon, 2018). Further, Rautanen et al. (2020) argue that girls tend to be more engaged in school than boys, which can be an explanation to the difference in school achievement, where boys have incomplete grades to a greater extent than girls. Girls tend to be involved in school activities and with peers, and they also experienced more support from teachers and peers to a greater extent than the boys (Rautanen et al., 2020).

Apart from gender influencing the levels of engagement and disengagement in school, according to Ladd and Dinella (2009), engagement and disengagement can be influence by what support the children experience from their parents and also how safe they feel in the school environment. Children with supportive parents tend to feel safer in school and also

have higher engagement than disengagement. Further, the level of support children feel they receive from their teacher can also affect their engagement levels (Ladd & Dinella, 2009).

According to Skinner and Belmont (1993), measuring both behavioural and emotional engagement can be done through observations in the classroom. By observing how the child is interested in the activities that take place within the school and if the child is actively involved with peers and tasks, it is possible to identify patterns. Thereby, it can be possible to estimate the child's behavioural and emotional engagement or disengagement (Skinner & Belmont, 1993). Azevedo (2015) argue that it may be a precarious task to measure engagement as it is based on teachers' perceptions of the children. However, by categorising engagement in to behavioural and emotional engagement and disengagement it can be easier for teachers to identify and report on how the children perform and interact in school activities (Azevedo, 2015). Skinner et al. (2009) claim that teachers have a perception of the children's interest, enthusiasm, and motivation for school activities, as such, the teachers are reliable to report on the engagement levels of the children. Engagement and disengagement are thereby considered visible and observable and it possible to collect ratings and observations that accentuate the engagement or disengagement in a child (Skinner et al., 2009).

2.4 Theoretical perspective

Engagement and an interest in school and school-related activities are connected to the motivation within an individual. The Self-Determination Theory [SDT] by Ryan and Deci (2000) is a theoretical framework that focuses on the human disposition to either have engagement and be active or to be withdrawn, passive and disengaged. In order for the individual to be active and engaged there need to be a conscious act of effort to take on a challenge or a task, for which the individual requires motivation. The individual's ability for personal development forms the base for motivation to engage in activities and tasks. The self-determination framework is based on the assumption that the individual's behaviour is self-motivated, and a sense of autonomy, connection and competence will increase the individual's motivation and thereby increase engagement and interest in activities. However, if the individual is not experiencing a sense of autonomy or connection, this can decrease the motivation and thereby render the individual passive and disengaged. Therefore, the factors within the individual that can reinforce motivation can also reduce it (Ryan & Deci, 2000).

2.4.1 Cognitive evaluation theory

Within the six sub-theories of the self-determination theory, the cognitive evaluation theory is focused on the intrinsic motivation which is a key factor for the individual's ability to grow and learn. Deci and Ryan (1985) argue that intrinsic motivation is the inherent ability within the individual to evolve given the condition that the individual experience an interest and have the energy and persistence to handle challenges and tasks. Intrinsic motivation shares the same required conditions as engagement, where interest, persistence and attention are key factors to develop and maintain motivation. Intrinsic motivation is important in order to

learn new knowledge and develop skills and abilities for individual growth. An example of intrinsic motivation can be seen in young children who have interest and curiosity in its surroundings and therefore play and explore new things. However, motivation needs to be maintained or else the individual is at risk of falling into disinterest and passivity. Furthermore, social environments can affect the intrinsic motivation, where support and encouragement act as a protective factor for motivation levels within the individual. This means for example, in school where the teachers can encourage and support the children's intrinsic motivation (Deci & Ryan, 1985).

This is supported by Taylor et al. (2014) who argue that teachers have an important role in enabling the children to develop and maintain a strong intrinsic motivation. Children are more likely to reach goals and complete tasks in school if they possess intrinsic motivation (Taylor et al., 2014). Furthermore, Froiland and Worrell (2016) state that intrinsic motivation can be seen as imperative for obtaining school engagement and school success, as there is an association between the three factors. Therefore, it is beneficial for the child's development to receive support and encouragement in maintaining motivation. Intrinsic motivation can not only encourage children's ability to achieve goals, it can also encourage sustainable knowledge and creativity that is essential for academic growth (Froiland & Worrell, 2016). As there is an association with intrinsic motivation and school engagement and achievement, there may be valuable benefits from increasing teacher's motivational strategies to promote intrinsic motivation among children.

2.5 Problem formulation

Previous research indicates that there are gender differences in both school achievement and school engagement, where boys tend to be performing worse than girls, whilst also experiencing less engagement towards school activities and tasks. As the number of children in Sweden leaving compulsory school without grades in all subjects is consistently high, it is becoming an urgent public health problem. As high levels of school engagement tend to increase achievement and grades, there may be a need for measures to be taken to raise the levels of engagement in schools, in order to ensure children will obtain complete grades in all subjects and improve the health of the children. As engagement in school can be a protective factor for school drop-out, underachievement and school-related stressors, it would be beneficial for the children to receive skills and tools to increase their motivation and engagement. Disengagement in school can affect the children's motivation and school achievement as they can feel indifferent and passive towards school activities, causing them to alienate themselves from school. It would therefore also be important to focus on measures to decrease the levels of disengagement in school, in order to raise the children's effort and motivation for school activities.

There appears to be a lack of research on primary school children's engagement and disengagement levels and how this effects their health, as well as gender differences in engagement and disengagement in Sweden. Therefore, it is of interest to examine the engagement and disengagement levels to see if behavioural engagement is associated with

emotional engagement, and if behavioural disengagement is associated with emotional disengagement, as knowledge on these associations is necessary in order to increase engagement and decrease disengagement. As behavioural and emotional engagement and disengagement include different factors, it is important to examine each of these, as to get a comprehensive view of the complexity that engagement and disengagement entails. It is also of interest to examine whether or not there are gender differences in engagement and disengagement among primary school children, to obtain knowledge if girls and boys have different levels of engagement and disengagement, which can be used in schools for the benefit of children's health.

3 AIM

The aim is to examine the associations between behavioural and emotional engagement and disengagement, and if there are gender differences in engagement and disengagement, among children in 6th grade in Sweden.

3.1 Research questions

Is there an association between behavioural and emotional engagement?

Is there an association between behavioural and emotional disengagement?

Are there gender differences in engagement and disengagement?

4 METHOD

The present study was conducted using secondary data from a research project by Jönköpings University in collaboration with Mälardalens and Linköping Universities. The aim of the project is to examine children's school grades in grade three and six, in relation to their engagement in school in Sweden. The project is a longitudinal study following up on TUTI (early detection, early intervention, in Swedish: Tidig Upptäckt, Tidig Insats) study from 2012-2014, where engagement and behaviour were examined in preschool children. The study population in the TUTI study was selected through a convenience sampling process on municipality level where six municipalities in Sweden with similar population distributions were selected (Sjöman, 2018).

4.1 Sample

The study population in the follow-up studies in 2019-2020 consisted of 185 TUTI participants. There was an external loss of TUTI participants of 136, as principals or class teachers at the schools declined to partake in the study. Therefore, the sample in the present study (figure 1) was 49 TUTI participants together with their 330 classmates, who had not previously participated, making the total sample 379. The participants attended grade six in primary school in four different Swedish municipalities. The municipalities were three middle-sized (50,000-200,000 residents) and one small (<50,000 residents) with similar population distributions. The internal loss of participants was 18, due to gender not being reported in the questionnaires. The final sample in the present study was n=361, of which 49.6% (n=179) were girls and 50.4% (n=182) were boys.

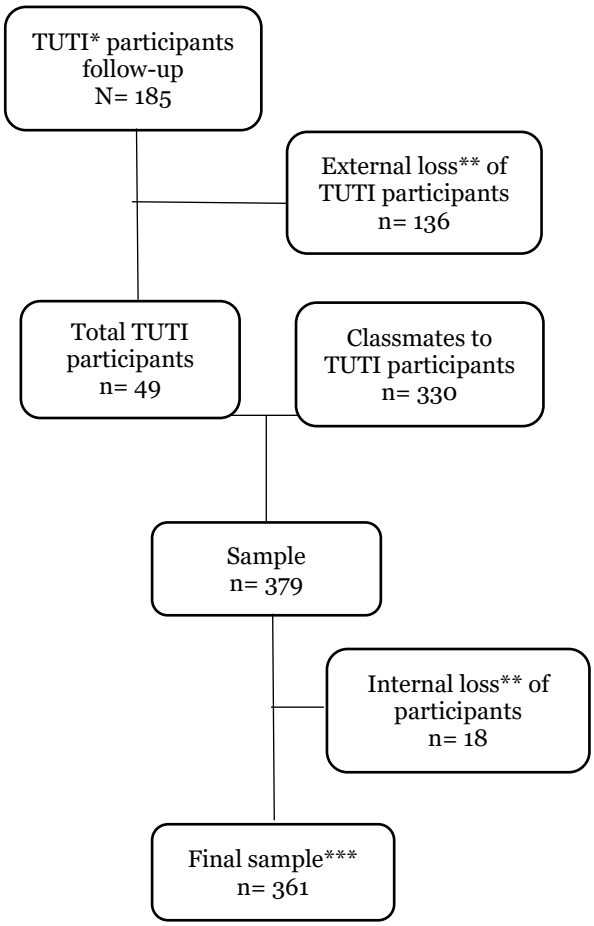

*Figure 1. Flow chart of study sample. *TUTI= early detection, early intervention, (in Swedish: Tidig Upptäckt, Tidig Insats). **External loss due to principals or teachers declining to participate and internal loss due to gender not being reported in questionnaire. ***sample from four Swedish municipalities*

4.2 Data material

The present study was conducted using cross-sectional data from the follow-up study on behavioural and emotional engagement and disengagement in children attending grade six in 2019 and 2020. The data was collected through questionnaires where class teachers of the TUTI participants answered questions on their perceptions of all children in their classroom's

engagement and disengagement levels. The principals of the schools where the children from the TUTI study attended, were asked if they allowed for contact to be made with the responsible class teachers. Once permission was granted from the principals, the teachers were asked if they wished to participate in answering questionnaires for the children in their classroom. If the teachers accepted the request to participate, the guardians of the children in the class were asked to give their consent to the teachers answering questions on the children's engagement. Thereafter, the questionnaires were distributed to the teachers. The questionnaires were distributed at one point in time, thus, only associations and not causality was measured.

The questionnaire, based on Skinner et al. (2009) teacher report on student engagement and disengagement questionnaire, consisted of 25 questions. The questions were divided in four sections: Behavioural engagement, Emotional engagement, Behavioural disengagement, and Emotional disengagement. The questions regarding behavioural engagement were designed to measure the child's perseverance, attention, and the effort they put into schoolwork. The emotional engagement questions measured the child's involvement in activities and their motivation towards learning. Further, behavioural disengagement was designed to measure the child's disconnection and lack of effort in schoolwork. Lastly, the emotional disengagement questions measured the child's motivations to withdraw from schoolwork and alienation in school environment (Skinner et al., 2009).

4.3 Variables

The questions from the questionnaire selected for the data analyses are presented beneath and in Appendix A.

The variables behavioural and emotional engagement and behavioural and emotional disengagement were included in the analyses. The four variables consisted of several multiple-choice questions for each variable, with each question having four response options: 1= almost never, 2= sometimes, 3= fairly often and 4= very often (Appendix A).

Behavioural engagement, emotional engagement and behavioural disengagement were individually measured in five questions (Skinner et al., 2009). An index was created for each variable, consisting of the five questions as items, with a value range between 5 and 20. The emotional disengagement index consisted of ten questions in the questionnaire by Skinner et al., 2009, and the questions were included as items in the index which had a value range between 10 and 40. The variables were on an ordinal scale and were treated as such in the analyses.

A Cronbach's alpha test was performed for each variable index to measure reliability of the questions. The Cronbach's alpha test, presented in table 1, indicated that each of the dependent variable had a very good internal consistency (Ursachi et al., 2015), with values over 0.9 for all variables.

Table 1. Cronbach's Alpha (α) values for each index

Index*	α**
Behavioural Engagement (5 items)	0.93
Emotional Engagement (5 items)	0.92
Behavioural Disengagement (5 items)	0.92
Emotional Disengagement (10 items)	0.90

**Skinner et al., 2009. **Values 0.7= acceptable, 0.8= good, 0.8-0.95=very good (Ursachi et al., 2015).*

Furthermore, gender was included as a variable. The response options for gender in the questionnaire were boy or girl, making it a binary variable.

4.4 Analyses

The data analyses were performed in the statistical analysis program IBM SPSS Statistics (version 26, IBM Corp. Armonk, NY, USA). P-values of less than 0.05 were considered statistically significant. Descriptive statistics for girls and boys were calculated and presented in median and interquartile range. Prior to performing analyses, a data distribution test was carried out to identify whether the variables used in the analyses were normally distributed or skewed. The Shapiro-Wilk test has, according to Field (2018), power to identify if data deviate from a normal distribution and thereby is skewed. A non-significant Shapiro-Wilk test indicate normal distribution. A significant test indicates that the data deviates from the normal distribution and is therefore considered non-parametric (Field, 2018).

The Shapiro-Wilk test of normality, presented in table 2, identified all four variable indexes as statistically significant which indicated the data deviated from normality. Hence, the data was considered skewed and non-parametric tests were chosen for the analyses.

Table 2. Shapiro-Wilk test of normality (W) on four variable indexes

Index*	*W*	*Df*	Sig.
Behavioural Engagement (5 items)	0.913	377	<0.001**
Emotional Engagement (5 items)	0.920	379	<0.001**
Behavioural Disengagement (5 items)	0.818	378	<0.001**
Emotional Disengagement (10 items)	0.791	378	<0.001**

**Skinner et al., 2009. **p-value significant at p<0.001*

4.4.1 Correlation analyses

To examine associations between behavioural and emotional engagement, and behavioural and emotional disengagement, two separate correlation analyses were performed using the four variable indexes. As the variables were skewed, a non-parametric test was chosen, with Spearman's rho correlation as the most appropriate test to examine the associations. The Spearman's rho correlation is presented with a value between -1 and +1, with 0 indicating no correlation. Field (2018) presents levels of strengths in the correlation; *very weak*: 0.00 - 0.19, *weak*: 0.20 - 0.39, *moderate*: 0.40 - 0.59, *strong*: 0.60 - 0.79 and *very strong*: 0.80 - 1.0. The value also indicates the direction of the association, with either a positive or a negative correlation (Field, 2018).

4.4.2 Difference analyses

To examine gender differences the non-parametric test of Mann Whitney U was selected, as the test makes it possible to test two independent groups on a dependent variable. The dependent variable can be ordinal or continuous, with the independent variable being categorical. The Mann Whitney ranks the data to make comparison, thus a statistically significant result indicates a difference between the independent groups (Field, 2018). Gender was included in the analyses as the independent variable when examining gender differences. The variable was binary and thereby categorical. The dependent variables consisted of the four indexes on engagement and disengagement, all four on an ordinal scale.

4.5 Ethical considerations

The original TUTI study had ethical approval (Dnr 181-2012-458) from Linköping ethics review board to collect personal information on the participants in TUTI study, for which the guardians of the children gave active consent as the children were under the age of 15. For the follow-up study, a new ethical approval (Dnr 2018/189-31) was obtained from the Linköping ethics review board. In the follow-up study no personal information was collected, hence a passive consent from the guardians of the children was collected. The study met the ethical research principles from the Declaration of Helsinki. As the present study used secondary data, in accordance with ethical principles the data was accessible for authorised personnel in the research team only, with the data being stored securely with password protected access only. The present study's aim was to examine engagement in school children, which is in accordance with the purpose of the research project. Therefore, data was considered used for research purposes which was in accordance with the ethical principles. Lastly, no personal information or possibility to identify any participant is presented in the present study, as to protect the anonymity and confidentiality of the participants.

5 RESULTS

The results from the statistical analyses are presented below. The descriptive statistics for girls and boys are presented in tables 3 and 4, respectively.

Table 3. Descriptive statistics for girls (N=179) in each index.

Index*	n	Md	Q1	IQR	Q3	Range
Behavioural engagement	178	17	14	17	20	5-20
Emotional engagement	179	17	14	17	19	5-20
Behavioural disengagement	178	6	5	6	9	5-20
Emotional disengagement	179	12	10	12	15	10-40

**Skinner et al., 2009, Behavioural and emotional engagement and behavioural disengagement indexes consisted of 5 items each, emotional disengagement consisted of 10 items. Md= Median, Q1= First quartile, IQR= Interquartile range, Q3= Third quartile*

Table 4. Descriptive statistics for boys (N=182) in each index.

Index*	n	Md	Q1	IQR	Q3	Range
Behavioural engagement	181	14	10	14	18	5-20
Emotional engagement	182	15	12	15	18	5-20
Behavioural disengagement	182	8	6	8	13	5-20
Emotional disengagement	181	13	10.5	13	18	10-40

**Skinner et al., 2009, Behavioural and emotional engagement and behavioural disengagement indexes consisted of 5 items each, emotional disengagement consisted of 10 items. Md= Median, Q1= First quartile, IQR= Interquartile range, Q3= Third quartile*

5.1 Associations between behavioural and emotional engagement and behavioural and emotional disengagement

To examine the association between behavioural engagement and emotional engagement, and behavioural and emotional disengagement, two Spearman's Rho correlations tests were performed.

The analyses indicated a statistically significant, positive association (*rho*= 0.84, $p<0.001$) between behavioural and emotional engagement. This indicates a very strong association between the two variables.

The analyses also indicated a statistically significant, positive association (*rho*= 0.74, $p<0.001$) between behavioural and emotional disengagement. This indicates a strong association between the two variables.

5.2 Gender differences in engagement and disengagement

To examine gender differences in behavioural and emotional engagement and disengagement, Mann Whitney U tests were performed, and the result is presented in table 5.

Table 5. Gender differences in behavioural and emotional engagement and disengagement indexes analysed through Mann Whitney (U) tests

Index*	*U*	*z*	Sig.
Behavioural Engagement	10431	-5.82	<0.001***
Emotional Engagement	12756	-3.59	<0.001***
Behavioural Disengagement	11185	-5.19	<0.001***
Emotional Disengagement	13720	-2.55	0.011**

**Skinner et al., 2009, Behavioural and emotional engagement and behavioural disengagement indexes consisted of 5 items each, emotional disengagement consisted of 10 items. **p-value significant at p<0.05, ***p-value significant at p<0.001.*

The analysis for behavioural engagement was statistically significant, with girls (Md=17) having a higher level compared to boys (Md=14). This also applied to emotional engagement which indicated statistically significant difference, with girls (Md=17) having a higher level compared to boys (Md=15).

The analysis for behavioural disengagement was statistically significant, with boys (Md=8) having higher levels, in comparison to girls (Md=6). The analyses showed that in emotional disengagement, the difference was statistically significant with boys (Md=13) having higher levels than girls (Md=12).

6 DISCUSSION

The aim of the study was to examine if there was an association between the two types of engagement and the two types of disengagement. The aim was also to examine if there were gender differences in engagement and disengagement.

The main findings in the study were:

There was a very strong positive association between behavioural and emotional engagement.

There was a strong positive association between behavioural and emotional disengagement.

Girls had higher behavioural and emotional engagement compared to boys. It was also shown that boys had higher behavioural and emotional disengagement compared to girls.

6.1 Methodological discussion

The study used secondary data from a research project on school children's school achievement and engagement. As the data collection was conducted by the research team, the author of the present study was not able to influence the process on how the questionnaire was constructed or how the data collection was conducted. This could be seen a limitation as to ensuring the validity and reliability of the data. However, as the questionnaire was based on validated questions by Skinner et al. (2009) the internal validity was strengthened. Skinner et al. (2009) argue that the teacher report questionnaire consisting of four sections: behavioural engagement, emotional engagement, behavioural disengagement, and emotional disengagement, does measure what it is intended to measure (Skinner et al., 2009).

Skinner et al. (2009) does, however, state that some of the items included in the behavioural and emotional engagement section indicate they could be measuring further dimensions of engagement that has not been extensively measured in order to be detected (Skinner et al., 2009). This would indicate that the composition of the questions in the questionnaires is not optimal and further validation could be required if including the questionnaire in further research. The reliability of the questionnaire could have been tested through test-retest to ensure its consistency and accuracy as a measurement, though this is not possible when using secondary data. A Cronbach's alpha test of internal consistency was performed as to get an indication of the consistency of the questions. Each of the four sections scored a very good Cronbach's alpha, as according to Ursachi et al. (2015), values between 0.8 and 0.95 indicate very good internal consistency (Ursachi et al., 2015). Therefore, the reliability of the measurement in the study can be considered a strength as the items included in the four sections had a high consistency.

A questionnaire based on self-reported assessment can be limiting as to ensuring the true values are actually reported and thus a representative result is achieved. In the data used for this study, teachers reported based on their perceptions of the children's engagement and

disengagement levels. Thus, the answers in the questionnaires are based on teachers' observations of the children in the classroom. Azevedo (2015) argue that it is precarious to measure engagement in children due to this fact (Azevedo., 2015). However, as engagement and disengagement are considered visible and observable, teachers are considered suitable to report reliably and accurately on engagement levels in the classroom (Skinner & Belmont, 1993; Skinner et al., 2009). Thereby, the levels of engagement reported by the teachers should be considered trustworthy.

A small proportion of the sample consisted of participants from the previous TUTI study, who were followed up in grade six. The majority of the sample consisted of classmates of the TUTI participants. Therefore, the number of total participants was dependent on how many follow-up participants were included in the study, as their classmates were included together with them. There was a large external loss of TUTI participants as principals and class teachers declined participating in the study, which meant that the classmates of those TUTI participants were also excluded from the study. However, it is not possible to calculate the total external loss of participants as there was no information on how many children were in each class of the TUTI participants that did not participate. The representativeness of the study can be seen as a limitation, as the sample is based on the original study with a municipality-level convenience sample and included participants from four municipalities only. The municipalities were three middle-sized and one small which indicate that they are not representative for the other municipalities in Sweden. Children from, for example, larger cities or rural towns may not have similar engagement and disengagement. However, it may be a possibility to generalise the result to children in municipalities in Sweden with similar population distributions as the participating municipalities.

For the data analyses there was a limitation in what variables were available for inclusion. The questionnaire which the data was collected from did not have any questions regarding the participants' background or personal information, as it was the teachers that answered the questions. The selected questions from the questionnaire consisted of the engagement and disengagement question only, together with the gender question, this entailed no covariates being measured. Therefore, it was not possible to include any confounders in the analysis. If confounders, for example parents support, family socioeconomic status or teacher support, had been controlled for in the analysis, they may have affected the association between the dependent and independent variables.

Prior to performing the analyses, a distribution test was carried out to verify the data distribution. According to Field (2018) it is important to control if the data is normally distributed or skewed, as it is important to choose the correct analysis to achieve a significant result. For which Shapiro-Wilk is recommended as it is more reliable to detect smaller variances in the distribution (Field, 2018). As the Shapiro-Wilk test indicated that the variables were skewed, non-parametric tests were chosen for the analyses. Therefore, Spearman Rho correlation analyses were performed to examine the association between the indexes and Mann Whitney U test were performed to examine the gender differences. As the dependent variables were on an ordinal scale, it was also deemed appropriate to use the non-parametric test as analysis is made on the median, rather than the mean. According to Field (2018) the non-parametric tests also control for outliers in the data (Field, 2018), thus the

choice of non-parametric test was considered to minimise the risk of bias. The selected analyses were deemed appropriate for the present study as it was possible to answer aim and research questions through the analyses.

6.1.1 Ethical considerations

When conducting any type of research, the research ethical guidelines should be observed, as to protect the integrity of the participants. Using secondary data limits the possibilities to influence how the ethical guidelines are met. However, as the research project the data came from had obtained ethical approval and was open and clear on how the project was conducted, the data was deemed too been collected in an appropriate and respectful manner. In the present study, ethical considerations were regarded in each decision in the handling of the data. It is imperative to maintain anonymity of the participants and to write the result in such manner that no participant can be identified. The data was stored in a secure location, with password protected access only, as to ensure the access of unauthorised persons was non-existent.

6.2 Result discussion

6.2.1 Associations between behavioural and emotional engagement and disengagement

The result in the correlation analyses showed that there was a very strong positive association between behavioural and emotional engagement. This entails that if a child's level of behavioural engagement is high, their emotional engagement levels are also high. In the same way, low levels of behavioural engagement are associated with low levels of emotional engagement. The association was very strong, which is agreement with Gonzáles et al. (2015) who state that children's levels of behavioural engagement are associated with their emotional engagement levels. Thereby, children who are determined and resourceful also tend to be more interested in school tasks (González et al., 2015). Children with both behavioural and emotional engagement are more likely to be enjoying the school environment and interacting with their peers according to Skinner et al. (2009). If an individual applies themselves to the tasks they are faced with and can endure difficulties and challenges related to the tasks, their behavioural engagement levels are thought to be high. If they also show a keen interest in the tasks and a motivation to succeed with the tasks, they are thought to have emotional engagement (Skinner et al., 2009).

Possessing school engagement is important, not only for the child's personal development, also for their school achievement. As the association between behavioural and emotional engagement was very strong in the present study, it indicates the participating children are more likely to perform better in school, which is supported by Wang and Fredricks (2014). Behavioural and emotional engagement in school can be protective against school-related stress, which can help the child's motivation and success in school. Upadyaya and Salmela-

Aro (2013) argue that motivation is a key factor in increasing a child's school engagement (Upadyaya & Salmela-Aro, 2013). This is in line with the theoretical perspective of cognitive evaluation theory from Deci and Ryan (1985) who argue that intrinsic motivation involves possessing persistence, interest and making an effort to take on challenges and tasks (Deci & Ryan, 1985). As motivation plays a part in developing engagement, and the concepts share key factors, an increase in motivational and engagement levels could help the child develop valuable tools to handle challenges as well as the child's personal development.

The analyses also showed a strong positive association between behavioural and emotional disengagement, which indicate that children displaying a behavioural disengagement are more likely to have emotional disengagement or children with low behavioural disengagement are likely to have low emotional disengagement. As disengagement is not the same as low engagement, it may be possible for an individual to have both engagement and disengagement to some extent. However, as the result indicate an association between behavioural and emotional disengagement, it means, according to Skinner et al. (2009) that an individual with passive tendencies is more likely to lack the persistence to handle tasks and challenges in school (Skinner et al., 2009).

In contrast to engagement as protective factor against school-related stress and achievement, disengagement can be, according to Wang et al. (2019) a risk factor for underachievement and alienation (Wang et al., 2019). Children with disengagement have a tendency to distance themselves from school activities and peers, which can lead to a lack in skills and competencies (Wang & Fredricks, 2014). Without the necessary skills and school achievement that is related to school engagement, the individuals with high behavioural and emotional disengagement are at risk of poor health as, according to Cutler and Lleras-Muney (2010) individuals with lower levels of education are more likely to have poor lifestyle habits and limited personal development (Cutler & Lleras-Muney, 2010). According to Morrison Gutman and Schoon (2018), motivation is also related to disengagement, as a disengagement is an indicator that the individual is lacking motivation and ambition to succeed (Morrison Gutman & Schoon, 2018). Ryan and Deci (2000) argue that intrinsic motivation can decrease if the individual does not possess some level of engagement and interest in activities (Ryan & Deci, 2000). Thus, if the children have high levels of behavioural and emotional disengagement, their intrinsic motivation may also be low, which can have a negative effect on the child's personal development and school achievement.

6.2.2 Gender differences in engagement and disengagement

The results in the analyses for gender differences were statistically significant, which indicate that how girls and boys are involved and engaged in school differs. Girls had a higher median than boys in behavioural engagement, which would indicate that girls have a higher tendency to be attentive and making an effort in school activities, compared to boys. Girls also had a higher median in emotional engagement, compared to boys, which would indicate that girls having an interest to learn and experiencing enjoyment in the school activities. This is in agreement with Rautanen et al. (2020) who found that girls have a tendency to be more involved in school activities and display more interest and attention in school, compared to

boys (Rautanen et al., 2020). The differences in gender in engagement could lead to girls getting better results in school, as Ladd and Dinella (2009) observed that children who are interested and engaged in school, are more likely to perform better in school (Ladd & Dinella, 2009). The analyses were also statistically significant in gender differences in behavioural and emotional disengagement, which indicate that the median for boys in behavioural disengagement and emotional disengagement was higher than girls in behavioural and emotional disengagement. The result is in accordance with Spinath et al. (2014) who found that boys tend to have higher levels of disengagement compared to girls, due to girls maturing earlier than boys in general. With maturation comes an ability to adapt to the school environment as well as developing skills that are important for school performance. As such, boys tend to fall behind due to these factors (Spinath et al., 2014).

This is supported by Morrison Gutman and Schoon (2018) who found that boys are more likely to be disengaged and have lower motivation in schools than girls (Morrison Gutman & Schoon, 2018). As disengagement can lead to an indifference toward school tasks, boys are more at risk of failing in school and falling behind when graduating from school. Froiland and Worrell (2016) argues that if intrinsic motivation is not maintained during school, the decreasing motivation can lead to disengagement in the individual (Froiland & Worrell, 2016). As school engagement and school achievement are thought to be connected, it may be necessary to strengthen the intrinsic motivation in children, as to promote engagement and decrease the risk of disengagement. However, as there are gender differences in both engagement and disengagement it may be imperative to examine how girls and boys are motivated and how this affects their engagement in school.

6.3 Relevance for public health

The present study highlights that behavioural and emotional engagement in school are positively associated with each other, and so are behavioural and emotional disengagement in school. As the result also showed gender differences in engagement and disengagement, it indicates that there may be a need for further research on how engagement and disengagement affect girls and boys separately. By gaining knowledge on how engagement and disengagement are different between girls and boys it may be possible to, through further research, develop strategies on how to decrease the gender differences in school engagement. Thus, the present study could be used as a starting point for other studies, where engagement and gender differences could be examined more in-depth. Intrinsic values, as engagement, may be possible to influence through health promotional actions. Therefore, it may be of interest to develop strategies for teachers to work with towards increasing children's engagement levels. This could have a positive impact on the public health, if increased school engagement led to improved school performance and grades in both boys and girls. The more children who graduate with complete grades, the better prospects for both individual and society.

7 CONCLUSIONS

Children that have behavioural engagement in school are also likely to have emotional engagement in school. Likewise, children that have behavioural disengagement in school are likely to have emotional disengagement in school.

There are gender differences in both engagement and disengagement. Girls are more likely to have higher behavioural and emotional engagement in school compared to boys. Whereas boys are more likely to have higher behavioural and emotional disengagement in school compared to girls.

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APPENDIX A; SELECTED QUESTIONS FROM QUESTIONNAIRE

Gender: Boy Girl

Response options: 1= Almost never, 2= Sometimes, 3= Fairly often, 4= Very often

Behavioural Engagement	1	2	3	4
1. In my classroom this student works as hard as they can				
2. When we are working on classwork in my class, this student appears involved				
3. When I explain new material, this student listens carefully				
4. In my class this student does more than they are required				
5. When this student does not do well, they work harder				

Emotional Engagement	1	2	3	4
6. In my class this student is enthusiastic				
7. In the classroom this student appears happy				
8. When we start something new in the classroom, this student is interested				
9. When we are working on classwork this student seems to enjoy it				
10. This student seems to enjoy learning				

Behavioural Disengagement	1	2	3	4
11. When we start something new in class, this student thinks about other things				
12. In my classroom, this student comes unprepared				
13. When faced with a difficult task, this student does not even try				
14. In my class, this student does not do more than necessary to get by				
15. When we start something new in class, this student does not pay attention				

Emotional Disengagement 1 2 3 4

16. When we are working on something in the classroom, this student appears to be bored

17. During school work in class, this student looks bored

18. When we are working on something in the classroom, this student seems worried

19. In my classroom, this student is anxious

20. In classroom, this student seems unhappy

21. In my classroom, this student appears to be depressed

22. In my classroom, this student is angry

23. During school work in class, this student appears frustrated

24. When I explain new material, this student does not seem to care

25. When we are working on classwork in my class, this student seems uninterested

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