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# **Introverted but socially engaged in school learning: The interaction between introversion and social engagement and its role in well-being**

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Tiivistelmä - Referat - Abstract <p>The aim of this study was to examine the validity and reliability of the social engagement scale among students at Finnish comprehensive schools. Another aim was to examine the interaction effect of social engagement and introversion on self-esteem, schoolwork engagement and burnout. The purpose of this was to understand how introverts with higher social engagement perform in terms of their self-esteem, schoolwork engagement and burnout in comparison to introverts with lower social engagement.</p> <p>The theory of this study focused on social engagement, which has been suggested the fourth dimension of school engagement. Social interactions help students' learning, and enhance critical thinking and problem solving. Introversion was selected for this study as introverts are usually stereotypically seen as unsocial and unwilling to work with other people.</p> <p>The data for this study were collected through questionnaires of the Mind the Gap Research Group of the University of Helsinki in 2013–2016. Sample size was 862 students. The analytical methods were confirmatory factor analysis (CFA) and hierarchical multiple regression.</p> <p>The results indicated that a two-factor model best fit the social engagement scale. These two dimensions were named the social engagement approach and social engagement avoidance. When examining self-esteem, the interactions between the social engagement approach and introversion were significant. This suggests that introverts with high social engagement have higher self-esteem than introverts with low social engagement. Interaction terms for the social engagement approach and social engagement in terms of schoolwork engagement and burnout were not found.</p>		
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Tiivistelmä - Referat - Abstract <p>Tämän tutkimuksen tarkoituksena oli tutkia suomalaisten peruskoulujen opiskelijoiden sosiaalisen sitoutumisen mittariston pätevyyttä ja luotettavuutta. Tavoitteena oli myös tutkia sosiaalisen sitoutumisen ja introversion vaikutusta itsetuntoon, kouluintoon uupumukseen. Tämän tarkoituksena oli ymmärtää, kuinka korkea sosiaalinen sitoutuminen vaikuttaa introvertin itsetuntoon, kouluintoon ja uupumukseen verrattuna niihin introverteihin, joilla sosiaalinen sitoutuminen on alhainen.</p> <p>Tutkimuksen teoria keskittyi sosiaaliseen sitoutumiseen, jonka on ehdotettu olevan yksi kouluun sitoutumisen ulottuvuuksista. Sosiaalinen sitoutuminen parantaa oppilaiden oppimista, kriittistä ajattelua sekä ongelmanratkaisukykyä. Introverttius valittiin tutkimuksen osa-alueeksi, koska introvertit nähdään yleensä stereotyyppisesti epäsosiaalisina ja ettei heitä kiinnosta muiden ihmisten kanssa työskentely.</p> <p>Tutkimuksen aineistona käytettiin Helsingin yliopiston Mind the Gap -tutkimusryhmän aineistoa, joka on kerätty kyselylomakkein vuosina 2013–2016. Näytekoko oli 862 opiskelijaa. Tutkimuskysymyksiin etsittiin vastauksia konfirmatorisella faktorianalyysillä (CFA) sekä hierarkkisella regressionanalyysillä.</p> <p>Tulokset osoittivat, että sosiaalista sitoutumista tulisi mitata mittaristolla, jossa on kaksi faktoria. Nämä nimettiin sosiaalisen sitoutumisen lähestymiseksi ja sosiaaliseen sitoutumisen välttelyksi. Kun tutkittiin itsetuntoa, sosiaalisen sitoutumisen lähestymisen ja introversion välinen vuorovaikutus oli merkittävä. Tämä viittaa siihen, että itsetunto on korkeampi niillä introverteilla, jotka ovat halukkaita toimimaan muiden oppilaiden kanssa, jakamaan omia ajatuksiaan sekä ovat kiinnostuneita muiden ajatuksista ja ovat valmiita auttamaan heitä. Kouluinnon ja uupumuksen suhteen ei löydetty merkittävää vuorovaikutusta sosiaalisen sitoutumisen introversion välillä.</p>		
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# 1 Introduction

School is a significant part of adolescents' lives and has a strong effect on their future. However, a recent report found that Finnish students' sense of school belonging is notably weakening (OECD, 2013). Studies show that if adolescents are motivated to study, engaged in learning, and feel like they belong to school they tend to have many long-term positive outcomes such as better academic performance (Fredricks, Blumenfeld, & Paris, 2004; Tuominen-Soini & Salmela-Aro, 2014) and a positive relation to well-being (Tuominen-Soini & Salmela-Aro, 2014). In contrast, if students feel disaffected by school they may gradually withdraw from school activities or start to behave disruptively and display negative attitudes towards teachers and other students (Finn & Zimmer, 2012). This all reduces the likelihood of school success (Finn & Zimmer, 2012) and can lead to dropping out (Finn & Zimmer, 2012; Reschly & Christenson, 2012).

North American school engagement research has examined students' behavioral, cognitive and emotional engagement (Appleton, Christenson, Kim, & Reschly, 2006). The present study focuses on social engagement, which has been suggested as the fourth dimension of school engagement because student-student interactions become increasingly important in shaping students' learning and achievement (Pekrun & Linnenbrink-Garcia, 2012). Vygotsky (1978) described learning as a social process in which children experience much important learning through social interaction and exchanging ideas with their classmates. This influences their development. Social interaction helps students learn from others, creates a positive working environment, provides multiple perspectives and enhances critical thinking and problem-solving skills (Hurst, Wallace, & Nixon, 2013). Students who receive support from their classmates are more active at school (Murberg, 2010).

People differ in terms of their inclinations towards the inner and outer world, known as introversion and extraversion (Jung, 1921). Of the world's population 30–75% are introverts (Cain, 2013; Helgoe, 2008; Laney, 2002). Despite the prevalence of introversion around the world, it is still perhaps one of the most frequently misunderstood personality traits. A common stereotypical view is that introverts lack social skills. However, even though introverted people prefer solitude (Burger, 1995), this is not necessarily true. Many introverts function very well in social situations, although they might prefer to avoid them (Costa & McCrae, 2006) because they can

become overwhelmed by too much social engagement (Helgoe, 2008). Social situations drain energy from introverts, even if they have good social skills. Although research has shown that introverts tend to have low social desire and to withdraw from social activity, little is known about how introversion interacts with social engagement, for example, whether introverts show good social engagement in school. This study uses the term social engagement to refer to the extent to which students interact with their peers in school learning activities. It is a broad term, mostly used in other fields such as social psychology, and has seldom been used in the educational psychology field in the way it is used in this study.

In a highly extraverted world being an introverted person can be challenging. Although a typical Finn is seen as introverted (Realo et al., 2009), the importance of good social skills is increasingly emphasized in Finland (Jokinen & Sieppi, 2018). Nowadays many school tasks include teamwork, collective learning and discussion-based activities. The new Finnish National Core Curriculum (Opetushallitus, 2016) highlights students' participation in class and conversations, different study environments, new teaching and studying strategies, self-regulation, project-based learning, collaborative learning, and group work. Although the new curriculum is supposed to strengthen equality in schools, classroom activities may benefit one type of student but put others at a significant disadvantage. Thus far, little is known about how introverted students, who prefer small groups, less stimulation, and a quiet school environment (Burruss & Kaenzig, 1999), react in this learning environment. The purpose of this study is to examine how introverts with higher social engagement perform in terms of burnout, self-esteem and schoolwork engagement compared with introverts with lower social engagement. The questions are: Do introverted students report low social engagement in their studying? Are they more prone to burnout in learning and do they have low schoolwork engagement (i.e. academic well-being) and low self-esteem (i.e. general well-being)? How does introversion interact with social engagement and affect these outcomes?

## 2 Theoretical Background

### 2.1 Social Engagement

School engagement is a multidimensional construct. Research literature mostly describes engagement as having three components: (1) behavioral (participation and behavior at school), (2) cognitive (involvement in learning and willingness to devote time and effort to it) and (3) emotional (affective relations in the classroom, as well as the attachment and value given the school) (Fredricks et al., 2004). It has been suggested that there should be a fourth dimension to social engagement because social interactions play an increasingly important role in learning (Fredricks et al., 2016).

The term social engagement is not yet well defined, and this research field has many aspects. Appleton, Christenson, Kim and Reschly (2006) pointed out that students' cognitive and psychological engagement are central to improving their learning outcomes, especially among those at high risk of educational failure. In their research they examined the psychometric properties of the Student Engagement Instrument (SEI), which was designed to measure the less overt subtypes of student engagement. Their research found support for a six-factor model of engagement and one of the factors was Peer Support for Learning (e.g. "Students at my school are there for me when I need them", "I enjoy talking to the students here" and "Students here respect what I have to say"), which is part of psychological engagement.

In their research Patrick et al. (2007) suggested that the classroom context plays a significant role in students' engagement. They examined the role of the classroom social environment and its association with early adolescents' positive beliefs about themselves and two types of adaptive engagement in math class. They found strong evidence that the classroom's social environment plays an important role in students' engagement. This means that when students' feel a sense of emotional support and encouragement from their teachers and peers, they are more likely to use self-regulatory strategies and engage in what the researchers called Task-related Interaction. This included explaining thoughts and discussing alternatives with others during small-group activities, as well as sharing ideas or providing help during individual seatwork.

Linnenbrink-Garcia et al. (2011) saw that group work requires significant social interactions that support learning and suggested that there should be a fourth dimension to engagement: Social-behavioral engagement. In their study they measured social-behavioral engagement in terms of social loafing (Karau & Williams, 1995) (e.g. "I stopped listening to what others in my group were saying" and "I did not take part in my group") and quality of group interactions (e.g. "The student in my group helped each other solve the activity" and "The students in my group listened to each other).

Finn and Zimmer (2012) used the term social engagement in their studies but slightly differently. According to them, social engagement includes the ability and willingness to follow written and unwritten classroom rules of behavior and social norms like interacting appropriately with teachers and peers and participating in learning activities. They measured it through teacher ratings of individual students on the Student Participation Questionnaire (SPQ) (Finn, Folger, & Cox, 1991), which included statements such as "Works well with other children", "Is withdrawn, uncommunicative" and "Is critical of peers who do well in school".

Fredricks et al. (2016) found in their research social indicators such as teachers and students sharing ideas and expanding on peers' ideas was indicative of engagement. To reflect these social interactions, they created a scale to assess social engagement. Previous measures of social engagement have focused primarily on social-behavioral indicators but Fredricks et al. included items that reflect social-affective (e.g. caring about others' ideas) and social-cognitive (e.g. building on others' ideas) dimensions of group interactions. When analyzing their data, they used academic literature for different conceptualizations of student engagement and disengagement.

In this study, social engagement is defined as students' willingness to collaborate and work with other students in learning. Only a few studies (Collins, 2017; Fredricks et al., 2004; Fredricks et al., 2016; Hawkins, 2018; Rimm-Kaufman, Baroody, Larsen, Curby, & Abry, 2015; Wang, Fredricks, Ye, Hofkens, & Linn, 2016) have used the term in similar way. Social engagement includes attending and responding to peer comments as well as supporting other students' learning (Linnenbrink-Garcia, Rogat, & Koskey, 2011). It includes behavioral engagement, such as engaging in discussion or listening to one's peers but it can also refer to working cohesively, respectfully and supporting other students' learning (Pekrun & Linnenbrink-Garcia, 2012). It is self-imposed activity, interaction with other students and includes social exchange, but it can also be passive

unwillingness towards collaborative learning and withdrawal from social situations. Group members support or undermine each other's participation in positive and negative ways: Active work to support fellow group members' engagement, respecting them and working cohesively or discouraging other students from participating and disrespecting them, their statements and their actions (Linnenbrink-Garcia et al., 2011).

One aim of this thesis, is to examine the use of the social engagement scale (Fredricks et al., 2004; Fredricks et al., 2016; Rimm-Kaufman et al., 2015; Wang et al., 2016) in the Finnish school context. Though this scale has been used and tested in the United States (Wang et al., 2016), so far, no study has been found that aims to validate its use in other contexts.

## 2.2 Introversion

Researchers often use the five-factor model (the Big five) traits to describe personality. The Big five has five basic dimensions: Extraversion, agreeableness, conscientiousness, neuroticism and openness to experience (McCrae & John, 1992). For example, a person who scores high in extraversion, is highly gregarious, active and excitement-seeking (John & Srivastava, 1999). The Big five traits represent a range between two extreme personality traits. Usually introversion and extraversion are viewed as opposites, but none of us are completely introverted or extroverted. One trait is usually merely more dominant than the other. Introversion and extraversion exist on a continuous dimension (Jung, 1921) at the middle of which is ambiversion (Cohen & Schmidt, 1979) (Figure 1). Introversion can be defined as low extraversion.

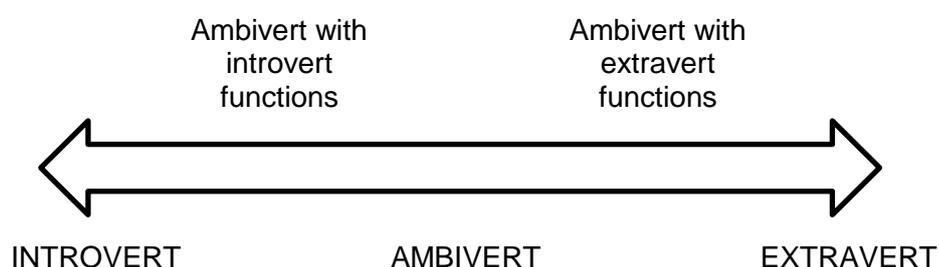


Figure 1. Introvert, ambivert and extravert

Jung (1921) wrote that introverted people are aware of external conditions, but not motivated by them. While extraverts like to be social with other people, introverts are more comfortable with their inner world of thoughts and feelings (Helgoe, 2010) and prefer solitude (Burger, 1995). Therefore, introversion and shyness are often mistaken

as being the same. Although introversion and shyness are related (Briggs, 1988; Heiser, Turner, & Beidel, 2003; Schmidt & Fox, 1995), shyness is on a different level in the hierarchy of traits (Briggs, 1988). Eysenck (1991) believed that trait extraversion-introversion includes the trait of sociability, which can be related to emotions such as interests expressed toward people or shyness. Introverts do not fear social encounters, but their social interaction may be limited because they want time alone and prefer talking with one person at a time (Helgoe, 2010), whereas shy people feel that they have no other choice than to be alone, feel awkward in conversations, withdraw from social contacts, avoid interactions and fear rejections (Cheek & Watson, 1989; Helgoe, 2010).

Like all people, introverts need social relationships. However, they are selective when it comes to building social contacts and they require more alone time to balance out their energy after social situations because they can get over-stimulated (Schmeck & Lockhart, 1983). Introverts tend to be sensitive, introspective and interested in the deeper feelings of encounters or transactions (Henjum, 1982). They are also empathetic, caring and have good listening skills, which may enable them better understand and help others (Cain, 2013). Henjum (1982) explained two different types of introverts: Type A introverts are confident, self-sufficient, self-actualizing and can interact very well with people whereas type B introverts are shy, lack communication skills, are timid and withdrawn, and have a low self-concept. Therefore, it is reasonable to expect that this trait may have a complex association with social engagement.

Nussbaum's (2002) research indicated that introverts can have good social and group working skills. He found that in group activities introverts work together to co-construct solutions to problems, they listen to one another's suggestions and are less attached to their own ideas than extraverts. Amirkhan, Risinger and Swickert (1995) in turn found in their research that when responding to some problem extraverted individuals sought help much sooner than introverts. This means that extraverts have higher sociability than introverts. Schmidt & Fox (1995) also found that students who rated themselves significantly lower in sociability also rated themselves lower in extraversion. It is therefore hypothesized that in general, individuals with higher introversion may have lower social engagement than those with lower introversion. However, as stated above, introversion may include high social engagement, which may change introverts' school experiences.

Recently some researchers have criticized the Big Five definition of introversion as solely the opposite of extraversion. Cheek, Brown & Grimes (2014) and Grimes, Cheek & Norem (2011) define introversion as a phenomenon of its own. They claim that introversion can be defined as having four kinds of dimensions; social, thinking, anxious and inhibited/restrained and that it is possible to score high or low on either of these aspects of introversion. For instance, a person could have low social introversion by preference but not be particularly anxious in the presence of people. Or a person who suffers from social anxiety may still have the desire to be highly social. Therefore, introverts may have either high or low social engagement.

### **2.3 Self-esteem**

Self-esteem can play a significant role in our lives. People with high self-esteem have an optimistic view of life and are thus able to tolerate external stress that may cause anxiousness (Epstein, 1982). Self-esteem can indicate that how much value people place on themselves (Baumeister, Campbell, Krueger, & Vohs, 2003) and has a strong relation to quality of life (Kasen, Johnson, & Cohen, 1990) and happiness (Baumeister et al., 2003). Self-esteem refers to a person's beliefs rather than reality but is important because beliefs shape people's actions in many important ways (Baumeister et al., 2003).

Self-esteem is moderately heritable, just like personality (Jang, Livesley, & Vernon, 1996; Vernon, Martin, Schermer, & Mackie, 2008), and about 30% of its variance can be explained by genetic differences (Kendler, Gardner, & Prescott, 1998). Self-esteem is strongly rooted in the basic dimensions of personality (Erdle, Gosling, & Potter, 2009; Watson, Suls, & Haig, 2002) and is positively correlated with extraversion (Amirazodi & Amirazodi, 2011), but its relations largely differ across age, sex, social class, ethnicity and nationality (Robins, Tracy, Trzesniewski, Potter, & Gosling, 2001). Self-esteem is important in various ways but when a relation between a given personality trait and self-esteem exists at the individual level, it is stronger in cultures characterized by high levels of that dimension (Fulmer et al., 2010). As it seems that in Finland extraversion is more valued (Ilmarinen, 2018), it is important to examine the relation between introversion and self-esteem in the Finnish school context.

Self-esteem is important for learning, motivation and school performance (Baumeister et al., 2003). High self-esteem creates confidence in one's abilities (Epstein, 1982) and

this may help a student succeed in school. Although high self-esteem does not actually cause any improvements in academic performance (Baumeister et al., 2003). Murberg (2010) found an association between negative perceptions of self-esteem and passivity in the classroom and that students with low self-esteem tended to say less in class and not contribute their thoughts as much as students with high self-esteem. Self-esteem has been found to be related to help seeking as students with low self-esteem tend to seek help later than students with high self-esteem (Amirkhan, Risinger, & Swickert, 1995). Whereas boys in general derive their self-esteem more from achievements, girls tend to derive theirs more from social competence (Lawrence, 2006).

Studies show that introverts have lower self-esteem than extraverts (Bown & Richek, 1969; Cheng & Furnham, 2003; Swickert, Hittner, Kitos, & Cox-Fuenzalida, 2004; Tolor, 1975). One reason for this may be that they often feel pressure to act like extraverts, but the explanation for lower self-esteem is not entirely clear. One possibility is that an introvert is more likely to withdraw in social situations and their timid behavior gives other people an indication of low self-esteem (Lawrence, 2006). Students with low self-esteem may have a lower level of social interaction and avoid social situations because of fear of failure and this may further threaten their self-esteem. Thus, the negative circle is complete (Murberg, 2010). Because introverts are often quiet, they may be mistaken as being shy or boring. Introverts may also find it difficult to communicate with other classmates, which may lead to other people not wanting to socialize with introvert students and consequently to lowering their self-esteem.

## **2.4 Schoolwork engagement and burnout**

This study examined schoolwork engagement as a multidimensional construct that mainly focuses on three dimensions: (1) energy or vigor (e.g. high level of mental resilience while studying, positive approach to schoolwork and persistence when facing difficulties), (2) dedication (e.g. a sense of significance, perceiving schoolwork as meaningful, strong involvement in one's work) and (3) absorption (e.g. concentration and working intensively, a flow-like experience) (Salmela-Aro & Upadaya, 2012; Schaufeli, Salanova, González-romá, & Bakker, 2002). Research has found schoolwork engagement to be closely related to academic performance and students' well-being (Salmela-Aro & Upadaya, 2012; Upadyaya & Salmela-Aro, 2013) and to have a positive association with self-esteem (Ma, 2003; Virtanen, Kiuru, Lerkkanen,

Poikkeus, & Kuorelahti, 2016). Finnish students have reported relatively high levels of schoolwork engagement (Kinnunen et al., 2016).

School burnout is based on the theory of work burnout (Schaufeli et al., 2002). As burnout has been identified as disengagement (Schaufeli & Salanova, 2007; Schaufeli, Leiter, & Maslach, 2009; Tuominen-Soini & Salmela-Aro, 2014), higher burnout decreases schoolwork engagement (Salmela-Aro & Upadyaya, 2014; Salmela-Aro, Kiuru, Leskinen, & Nurmi, 2009). It has been shown that if student's internal resources, school workload and personal expectations do not meet teachers or parents expectations, school burnout may occur (Kiuru, Aunola, Nurmi, Leskinen, & Salmela-Aro, 2008). Burnout can lead to amotivation and school failure among adolescents. When students feel exhausted because of school demands, they become cynical toward studying (Schaufeli, Martínez, Pinto, Salanova, & Bakker, 2002) and feel inadequate (Salmela-Aro et al., 2009), which diminishes their sense of competence, achievement and accomplishment (Tuominen-Soini & Salmela-Aro, 2014). If studying requires too much energy and a student becomes overtaxed, this may lead to exhaustion (Salmela-Aro & Upadaya, 2012) and in the worst case, the resulting cynicism and inadequacy may cause school dropout (Bask & Salmela-Aro, 2013).

Although Finland has a high-quality educational system and Finnish adolescents' educational achievements are high, their well-being is low and they face an increasing risk of school burnout (Bask & Salmela-Aro, 2013): A about 33–45% of students are at an increased risk of burnout (Kuittinen & Meriläinen, 2011; Salmela-Aro, 2009). In Finland girls experience more school burnout than boys (Kiuru et al., 2008; Salmela-Aro, Kiuru, Pietikäinen, & Jokela, 2008). Previous studies also have shown that burnout is negatively associated with self-esteem (Salmela-Aro & Upadyaya, 2014). Extraversion (Grigorescu, Cazan, Grigorescu, & Rogozea, 2018; Mills, 1995; Storm & Rothmann, 2003) and that social support from peers (Kim, Jee, Lee, An, & Lee, 2018; Peterson, Bergström, Samuelsson, Åsberg, & Nygren, 2008) is a protective factor against burnout.

### 3 Aims of the Present Study

The first aim of the present study was to examine the validity and reliability of the social engagement scale among students at Finnish comprehensive schools. The validity of social engagement was assessed by examining its associations with the participants self-reported schoolwork engagement and burnout. The second aim of the study was to examine the interaction effect of social engagement and introversion on self-esteem, schoolwork engagement and burnout (

Figure 2). The choice of moderators should be based on a specific theory (Frazier, Tix, & Barron, 2004), and social engagement was selected as a moderator because it was expected introverts have both low and high social engagement (Amirkhan et al., 1995; Cheek et al., 2014; Grimes et al., 2011; Helgoe, 2010; Henjum, 1982; Nussbaum, 2002; Schmidt & Fox, 1995), and that this would affect on their well-being.

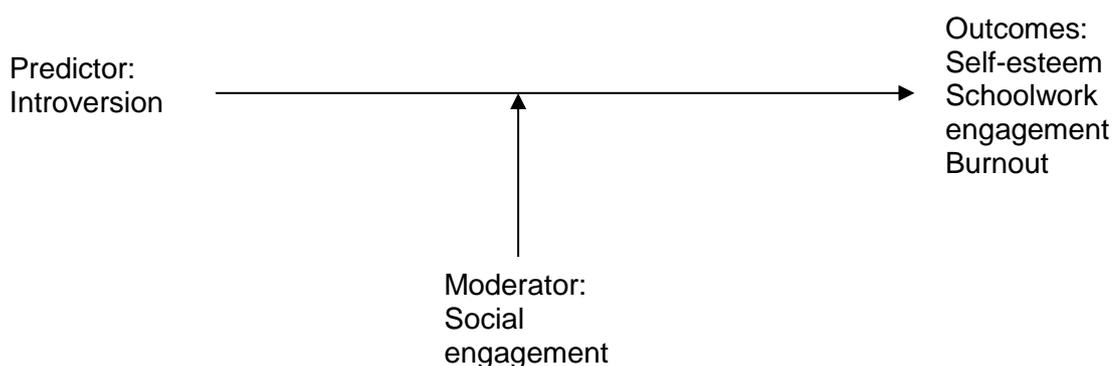


Figure 2. Study framework

The research questions addressed in this study are:

Q1. What is the construct validity of the Social Engagement Scale and how does it relate to schoolwork engagement and burnout?

H1. Social engagement will be loaded into one factor (Fredricks et al., 2016) and the scale can be validated for use in Finland. It will relate positively with schoolwork engagement (Fredricks et al., 2016; Patrick, Ryan, & Kaplan, 2007) and burnout will relate negatively (Kim et al., 2018; Peterson et al., 2008).

Q2. How does introversion relate with self-esteem, schoolwork engagement and burnout? And how does social engagement's interaction with introversion affect self-esteem, schoolwork engagement and burnout?

H2. Introversion will associate negatively with self-esteem (Amirazodi & Amirazodi, 2011; Bown & Richek, 1969; Cheng & Furnham, 2003; Swickert et al., 2004; Tolor, 1975) and schoolwork engagement (Murberg, 2010) and positively with burnout (Kim et al., 2018; Peterson et al., 2008). The author expected social engagement to moderate the relationship between introversion and self-esteem, in such a way that introverts would be more likely to have low self-esteem if their social engagement was low. The author also expected social engagement to be able to moderate the relationship between introversion and schoolwork engagement and burnout, in such a way that introverts would be more likely to have low schoolwork engagement and high burnout if their social engagement was low.

## 4 Method

### 4.1 Participants and Procedure

This study is part of the Mind the Gap between Digital Natives and Educational Practices -project (2013–2016) funded by the Academy of Finland (<http://wiredminds.fi/projects/mind-the-gap/>). The data were collected in urban comprehensive schools in Southern Finland. The students were asked to complete an electronic questionnaire during the school day. The students and their parents were informed beforehand about the study's purpose and confidential information handling.

This study's data consist of 16-year old students studying in the ninth grade at the time. In total, 862 students were included in the analysis,  $n = 509$  (59%) girls and  $n = 353$  (41%) boys.

### 4.2 Measures

All the measures used in this study were self-report questionnaires. Students were asked to indicate the extent to which they agreed with the statements.

#### 4.2.1 Social engagement

Social engagement is a subscale developed by Fredricks, Wang, Linn, Hofkens, Sung, Parr and Allerton (2016). It consists of seven items measuring social engagement (e.g. *"I build on other students' ideas"*, *"I try to work with students who can help me in"* and *"I don't like working with my classmates"*). All the items are rated on five-point Likert-type scale ranging from 1 (not like me at all) to 5 (very much like me).

#### 4.2.2 Introversion

The big five personalities (John & Srivastava, 1999; McCrae & Costa, 1987; McCrae & John, 1992) were tested by measuring extraversion, agreeableness, conscientiousness, neuroticism, openness and sensation seeking using 21 items. The subscale (4 items) that measures extraversion (e.g. *"I am reserved"* (reversed) and *"I am outgoing, sociable"*) was used in this study. The positively worded items (two items) were reversed to obtain a scale that measures introversion. The responses were rated on a five-point Likert-type scale ranging from 1 (completely disagree) to 5 (completely

agree). A sum score was calculated from all the four items to indicate the level of adolescents' introversion. Cronbach's  $\alpha$  was .63 which is considered acceptable.

### 4.2.3 Self-esteem

Self-esteem was measured using the Rosenberg self-esteem scale (1965). The original scale consists of 10 items, but the data used in this study consisted of five items (e.g. *"Sometimes I think I am no good at all"* (reversed) and *"I take a positive attitude toward myself"*) and were rated on a seven-point Likert-type scale ranging from 1 (completely disagree) to 7 (completely agree). Statements 2 (*"Sometimes I think I am no good at all"*) and 4 (*"I wish I could respect myself more"*) were reversed and a sum score was calculated from five items. Cronbach's  $\alpha$  for the sum score was .74.

### 4.2.4 Schoolwork engagement

Schoolwork engagement was assessed using the Schoolwork Engagement Inventory (Salmela-Aro & Upadaya, 2012). This scale consists of nine items measuring energy (e.g. *"At school I am bursting with energy"*), dedication (e.g. *"I am enthusiastic about my studies"*) and absorption (e.g. *"Time flies when I'm studying"*) in relation to schoolwork. The items are rated on a seven-point Likert-type scale ranging from 0 (never) to 6 (every day), so that a higher score indicated a higher level of engagement. For the analysis, the mean composite score of all the nine items was used to indicate overall schoolwork engagement, because a one-factor model has been shown to be superior for students aged under 18 (García-Ros, Pérez-González, Tomás, & Fernández, 2018; Salmela-Aro & Upadaya, 2012). Cronbach's  $\alpha$  for the sum score was .95.

### 4.2.5 School burnout

The School Burnout Inventory (Salmela-Aro et al., 2009) consists of nine items comprising emotional exhaustion (e.g. *"I feel overwhelmed by my studies"*), cynicism (e.g. *"I'm continually wondering whether my studies have any meaning"*) and inadequacy (e.g. *"I feel I have less and less to give at my studies"*). The items are rated on a six-point Likert-type scale ranging from 1 (completely disagree) to 6 (completely agree), so that the higher score indicates a higher level of burnout. Cronbach's  $\alpha$  was .91 for the calculated sum score.

### 4.3 Data Analysis

The statistical analyses were performed using IBM SPSS Statistics version 25 and MPlus 8.2. Confirmatory factor analysis (CFA) was conducted to test the structural validity of social engagement. The structure of social engagement was tested by comparing the goodness-of-fit of four alternative models (i.e., one-factor model, two-factor model, higher-order model, and bi-factor model).

Second, reliabilities (i.e. item reliability, scale reliability) of the social engagement scale were investigated. After this the discriminant and concurrent validity of the scale was investigated by examining its associations with schoolwork engagement and burnout, which were used as criterion validity indicators of social engagement. After testing the factor structure, the composite scores and Cronbach's alphas were calculated. The correlations were examined to determine the relations between social engagement and validity indicators (i.e. schoolwork engagement and burnout).

Finally, hierarchical multiple regression was used to test the moderator effects of social engagement on the relationship with introversion and well-being (i.e. with self-esteem, schoolwork engagement and burnout). Before testing the moderating effect, the predictor and moderator variables were standardized to reduce any problems related to multicollinearity between the interaction term and the main effects (Frazier et al., 2004). Product terms, which represent the interaction between the predictor and moderator, were created by multiplying the predictor and moderator variables using standardized variables. These product terms did not need to be standardized for analysis (Frazier et al., 2004). After the product terms were created hierarchical multiple regression analysis was used to test for moderator effects by entering the variables into the regression equation through a series of specified steps. The first step included standardized variables representing the predictor and the moderator variables. Product terms were entered into the regression equation after this in the second step. The interaction between introversion and well-being was visualized using simple slope analysis.

## 5 Results

### 5.1 Structure and validity of the social engagement scale

The first aim of the study was to examine the reliabilities and validities of the social engagement scale. Table 2 presents a correlation table with means and standard deviations for the observed items. Items 1 to 4 were positively correlated (>.30) and Items 5 to 7 negatively correlated.

Table 1. Descriptions of Social Engagement items

Item	1	2	3	4	5	6	7
1. I build on other students' ideas	1.00						
2. I try to understand others' students' ideas in school	.51**	1.00					
3. I try to work with students who can help me in	.37**	.43**	1.00				
4. I try to help other students who are struggling with schoolwork	.49**	.57**	.39**	1.00			
5. I don't care about other students' ideas	-.08*	-.26**	-.00	-.18**	1.00		
6. When working with other students, I don't share my ideas	-.11**	-.13**	-.02	-.06	.49**	1.00	
7. I don't like working with my classmates	-.08*	-.18**	-.02	-.12**	.52**	.55**	1.00
M	2.95	3.50	3.42	3.33	2.30	2.45	2.27
SD	1.05	1.06	1.02	1.05	1.08	1.10	1.12

\* Pearson, \*\*\*  $p < .001$ , \*\*  $p < .01$ , \*  $p < .05$

As all the items were normally distributed, confirmatory factor analysis was used to determine the structure of the social engagement. Four alternative models (Figure 3) were estimated separately a) a one-factor model, namely SE; b) a two-factor model that assumed two correlated latent factors, namely SE1 and SE2; c) a second-order model placing SE1 and SE2 as first-order factors and SE as the second-order factor which explained all covariance among first-order factors; d) a bi-factor model that estimated SE as another general factor in addition to SE1 and SE2.

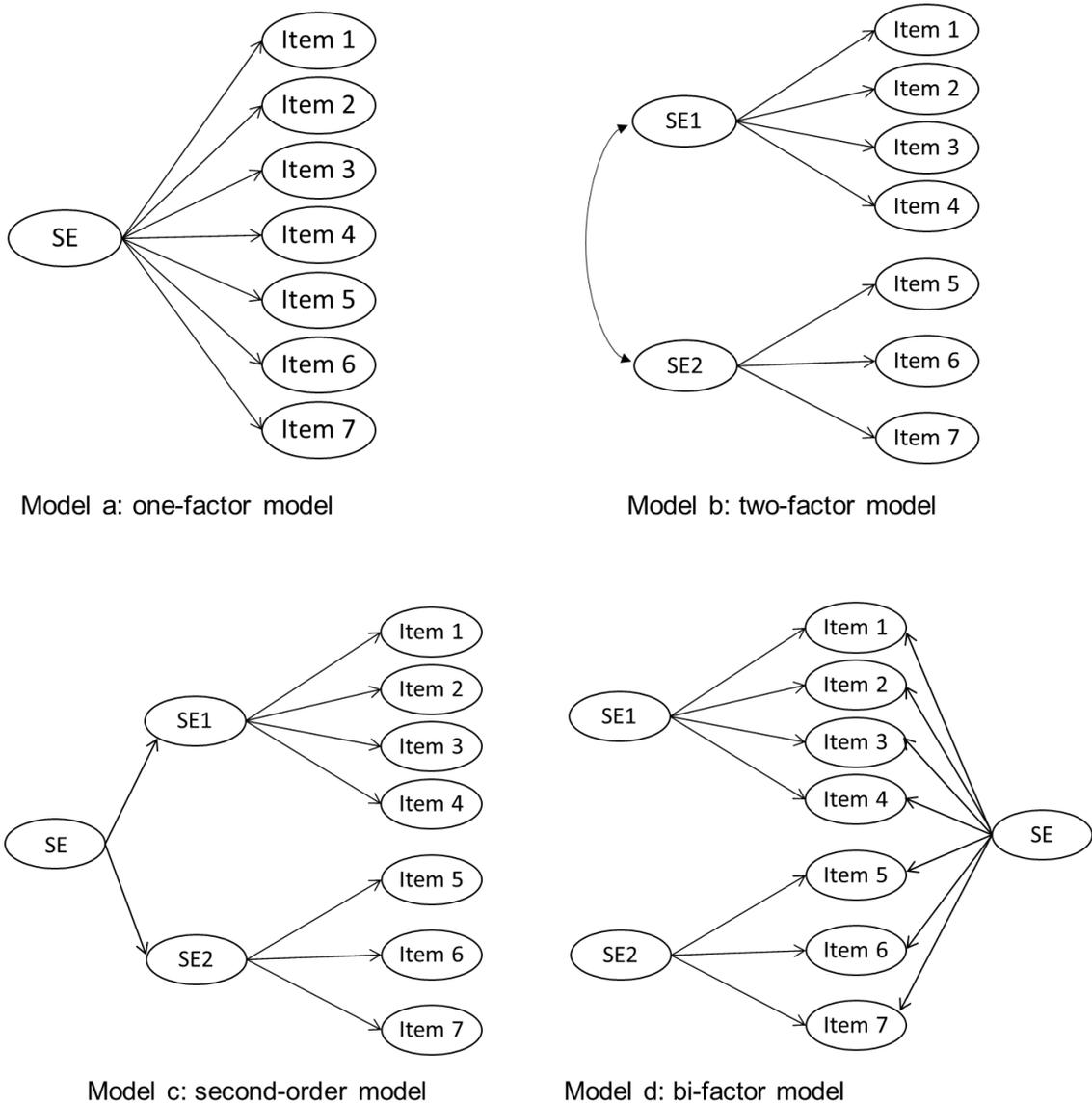


Figure 3. Four alternative models for social engagement scale

The one-factor model did not have a good fit,  $\chi^2 [14] = 499.82, p < .001$ ; CFI = 0.51; TLI = 0.27; RMSEA = 0.21; SRMR = 0.14. After this two-factor model was conducted, which had a good model fit for social engagement,  $\chi^2 [13] = 48.54, p < .001$ ; CFI = 0.96; TLI = 0.94; RMSEA = 0.06; SRMR = 0.04; thus making it superior to the one-factor model. Either the second-order model or the and bi-factor model, which thus yielded null model estimates, could not be identified. This may be due to the scale having only two factors and the testing of complex models being problematic without additional constraints. Therefore, two-factor model was chosen as the best model. Figure 4 presents the standardized validity coefficients (i.e., factor loadings) obtained.

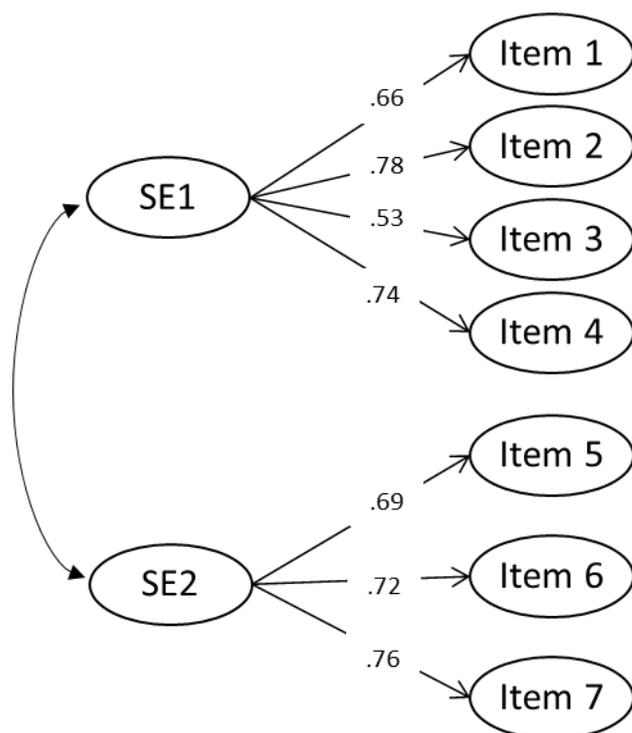


Figure 4. Final factor model for social engagement

After confirming structural validity with confirmatory factor analysis, the composite scores were calculated accordingly, as well as Cronbach's alphas. The items that clustered on the same factor were named F1 = Social Engagement Approach ( $\alpha = .77$ ) and F2 = Social Engagement Avoidance ( $\alpha = .77$ ). The social engagement approach and social engagement avoidance correlated negatively ( $r = -.18, p < .01$ ) (Table 2).

Next, the associations between social engagement, schoolwork engagement and burnout were examined to investigate the criterion validity of the social engagement scale. The results (see Table 2) showed that the social engagement approach correlated positively with schoolwork engagement ( $r = .41, p < .01$ ) but not burnout ( $r = .02, p < .10$ ). Social engagement avoidance correlated negatively with schoolwork engagement ( $r = -.10, p < .01$ ). and positively with burnout ( $r = .26, p < .01$ ).

## 5.2 Interaction between social engagement and introversion and its role in self-esteem, schoolwork engagement and burnout

The second aim of this study was to examine the effect of the interaction between social engagement and introversion on self-esteem, schoolwork engagement and

burnout. As a preliminary step, descriptive statistics and correlations were obtained from all the variables (Table 2).

Table 2. Descriptive statistics and correlations for variables

	1	2	3	4	5	6
1. Social engagement approach	1.00					
2. Social engagement avoidance	-.18**	1.00				
3. Introversion	-.13**	.26**	1.00			
4. Self-esteem	.12**	-.22**	-.31**	1.00		
5. Schoolwork engagement	.41**	-.10**	-.05	.22**	1.00	
6. Burnout	.02	.26**	.14**	-.40**	-.19**	1.00
<i>N</i>	824	823	766	765	862	858
<i>M</i>	3.30	2.34	2.83	4.55	4.33	2.83
<i>SD</i>	.81	.91	.82	1.20	1.48	1.14
<i>Range</i>	1-5	1-5	1-5	1-7	1-7	1-6

†  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$

Introversion correlated negatively with the social engagement approach ( $r = -.13$ ,  $p < .01$ ) and positively with social engagement avoidance ( $r = .26$ ,  $p < .01$ ). It correlated positively with burnout ( $r = .14$ ,  $p < .01$ ) and negatively with self-esteem ( $r = -.31$ ,  $p < .01$ ). The correlation between introversion and schoolwork engagement was not significant ( $p < .10$ ). The social engagement approach correlated positively with schoolwork engagement ( $r = .41$ ,  $p < .01$ ) and self-esteem ( $r = .12$ ,  $p < .01$ ). The correlation with burnout was not significant ( $p < .10$ ). Social engagement avoidance correlated negatively with schoolwork engagement ( $r = -.10$ ,  $p < .01$ ) and self-esteem ( $r = -.22$ ,  $p < .01$ ) and positively with burnout ( $r = .26$ ,  $p < .01$ ). Only self-esteem correlated significantly with the social engagement approach, social engagement avoidance and introversion, and thus this was selected for further analysis.

To test whether social engagement moderates the relationship between introversion and well-being (i.e. self-esteem, schoolwork engagement and burnout), a hierarchical multiple regression analysis was conducted. In the first step three variables were included: the social engagement approach, social engagement avoidance and introversion. Next, the interaction term between the social engagement approach / social engagement avoidance and introversion was added to the regression model (Table 3).

Table 3. Regression analysis with self-esteem, schoolwork engagement and burnout as dependent variables

Variable	Self-esteem		Schoolwork engagement		Burnout	
	B	$\beta$	B	$\beta$	B	$\beta$
<b>Step 1</b>						
SE approach	0.06	.06	0.40**	.41**	0.06	.06
SE avoidance	-0.14**	-.14**	-0.03	-.03	0.24**	.25**
Introversion	-0.27**	-.27**	0.01	.01	0.08*	.08*
<b>Step 2</b>						
SE approach x introversion	0.08*	.09*	0.02	.02	-0.06	.07
SE avoidance x introversion	0.02	.02	-0.01	-.01	-0.05	-.05

Note. SE approach = Social engagement approach; SE avoidance = Social engagement avoidance.

†  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$

In first step, the variables accounted for a significant amount of variance in self-esteem ( $R^2 = .126$ ,  $F(3, 714) = 34.24$ ,  $p < .001$ ). In the second step, the interaction term accounted for a significant proportion of the variance in self-esteem ( $\Delta R^2 = .007$ ,  $\Delta F(2, 712) = 2.99$ ,  $p = .05$ ). The results revealed no significant positive relation between the social engagement approach and self-esteem ( $B = 0.06$ ,  $p > .05$ ) but there was a significant negative relation between the social engagement avoidance and self-esteem ( $B = -0.14$ ,  $p < .001$ ) as well as between introversion and self-esteem ( $B = -0.27$ ,  $p < .001$ ). The unstandardized regression coefficient for the interaction term for the social engagement approach and introversion was significant ( $B = 0.08$ ,  $p < .05$ ) (Figure 5) and not significant for social engagement avoidance and introversion ( $B = 0.02$ ,  $p > .05$ ). There was no multicollinearity between the variables.

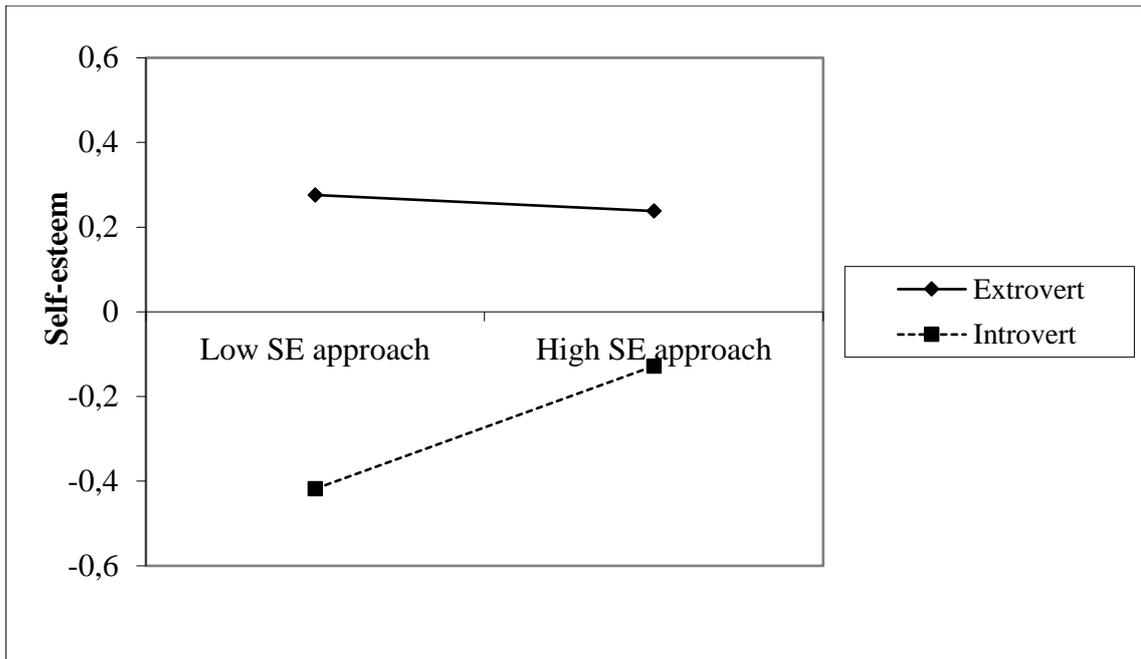


Figure 5. Social engagement approach moderating between introversion and self-esteem

Examination of the interaction plot revealed that introverts with high social engagement have higher self-esteem than introverts with low social engagement. However, high or low social engagement had no effect on self-esteem among extraverts.

When examining schoolwork engagement in the first step, a significant amount of variance ( $R^2 = .170$ ,  $F(3, 743) = 50.89$ ,  $p < .001$ ) was found. In the second step, no significant proportion of the variance was that of schoolwork engagement ( $\Delta R^2 = .002$ ,  $\Delta F(2, 741) = .27$ ,  $p > .05$ ). There was a significant positive relation between the social engagement approach and schoolwork engagement ( $B = 0.40$ ,  $p < .001$ ) but no relation between schoolwork engagement and social engagement avoidance ( $B = -0.03$ ,  $p < .05$ ) and introversion ( $B = 0.01$ ,  $p > .05$ ). The unstandardized regression coefficients for the interaction terms for introversion and the social engagement approach ( $B = 0.02$ ,  $p > .05$ ) and social engagement avoidance ( $B = -0.01$ ,  $p > .05$ ) were not significant. Multicollinearity between the variables was not found.

For burnout, there was a significant amount of variance in the first step ( $R^2 = .072$ ,  $F(3, 743) = 19.24$ ,  $p < .001$ ). But in the second step, when the interaction term was accounted for, no significant proportion of the variance was that of burnout ( $\Delta R^2 = .005$ ,  $\Delta F(2, 741) = 1.78$ ,  $p > .05$ ). There was no significant relation between the social engagement approach and burnout ( $B = 0.06$ ,  $p > .05$ ) but the relations between burnout and social engagement avoidance ( $B = 0.24$ ,  $p < .001$ ) and introversion ( $B =$

0.08,  $p < .05$ ) were significant. The unstandardized regression coefficients for the interaction terms for introversion and the social engagement approach ( $B = -0.06$ ,  $p > .05$ ) and social engagement avoidance ( $B = -0.05$ ,  $p > .05$ ) were not significant.

Multicollinearity between the variables was not found.

## 6 Discussion

The aim of this study was to examine the validity and reliability of the social engagement scale among students in Finnish comprehensive schools. Before this study, the social engagement scale had only been used in the USA and for examining learning in math and science classes (Collins, 2017; Fredricks et al., 2016; Hawkins, 2018; Rimm-Kaufman et al., 2015; Wang et al., 2016). This study revealed that the social engagement scale is a valid measure that can be used in the Finnish school context.

The examination of the scale structure indicated that a two-factor model best fit the social engagement scale. This model suggests that students' social engagement is characterized by two unique dimensions, which were named the Social engagement approach and Social engagement avoidance. The social engagement approach indicates willingness for collaborative learning and helping peers, whereas social engagement avoidance indicates unwillingness to work with peers and share ideas. Statistical support for the validity of the social engagement scale was found when each factor loaded clearly onto two factors and there was no cross-loading, suggesting that each factor assessed the unique variance attributed to the approach or avoidance subtype. The Kaiser-Meyer-Olkin Measure of sampling adequacy indicated that the strength of the relationships among the variables was high (KMO = .74). Bartlett's test of sphericity, which tests the overall significance of all the correlations within the correlation matrix, was significant indicating that factor analysis was useful in this data.

The social engagement approach also correlated positively with schoolwork engagement but there was no correlation between the social engagement approach and burnout, as hypothesized. Social engagement avoidance instead correlated negatively with schoolwork engagement and positively with burnout, as hypothesized. The results of this study indicate that social engagement plays an important role in learning: Fredricks et al. (2016) and Patrick et al. (2007) stated that the social engagement approach should be endorsed to motivate students' engagement in school. Thus, as this study and previous studies (Grigorescu et al., 2018; Mills, 1995; Storm & Rothmann, 2003) have verified, it is essential to avoid students becoming socially unengaged, as this may raise their risk of burn out.

The second aim of this study was to examine the interaction effect of social engagement and introversion on self-esteem, schoolwork engagement and burnout. Introversion was chosen to be part of this study because few studies have been conducted in schools to try to find ways to support this usually misunderstood personality trait, as introverted students can be shy, and their passive behavior may indicate that they do not care about other people. Because introverted people often choose to be by themselves, it was worthwhile examining how social engagement and introversion would interact. It was hypothesized that social engagement would act as a moderator between introversion and self-esteem. It was further hypothesized that introversion would be associated with self-esteem (Amirazodi & Amirazodi, 2011; Bown & Richek, 1969; Cheng & Furnham, 2003; Swickert et al., 2004; Tolor, 1975) , schoolwork engagement (Murberg, 2010) and burnout (Helgoe, 2010). The results demonstrate a significant negative relation between social engagement avoidance and self-esteem but relation between the social engagement approach and self-esteem was not found. The interaction between the social engagement approach and introversion was significant. This result supports previous research (Nussbaum, 2002; Schmidt & Fox, 1995) and indicates that introverts with high social engagement have higher self-esteem than introverts with low social engagement. This may indicate that for all students, no matter what their personality trait is, it is important to collaborate with other students and to have opportunities to share ideas with them and receive help from them when needed. However it is important to note that social engagement explained about 13% of the total effect, which means that other unexplored variables may affect self-esteem.

Interaction terms for the social engagement approach and social engagement avoidance for schoolwork engagement and burnout were not found as was hypothesized. This may be because schoolwork engagement and burnout measure academic well-being whereas self-esteem measures general well-being. Although social engagement correlated with schoolwork engagement and burnout it seems that neither being socially engaged, nor not being socially engaged, affected this. This may indicate that there are different operators behind academic well-being and general well-being. However, it is important to note that as results in this study revealed, the social engagement approach has a high positive relation with schoolwork engagement and social engagement avoidance has a negative relation with schoolwork engagement and a positive relation with burnout. This means that, regardless of personality type, having a high social engagement approach means high schoolwork engagement.

However, high social engagement avoidance decreases schoolwork engagement and raises the risk of burn out.

These results are important in order to boost introverted students' self-esteem and through this to improve their well-being. However, as Baumeister et al. (2003) described in their monograph, efforts to boost self-esteem will not necessarily foster improved outcomes and can lead to less desirable consequences, such as narcissism. They recommend using praise as a reward for socially desirable behavior and self-improvement to boost self-esteem. This recommendation justifies the usage of self-esteem in this study because today, acting socially at school is approved of, and leads to many other advantages in life.

This study indicated that introversion and social engagement avoidance have a positive relation, and that introverted students with low social engagement do not help their peers, are not interested in other students' ideas, and do not share their own ideas. But the study also indicated that introverts are not necessarily unsocial, and that many of them are socially engaged. In Western cultures, extraversion seems to be more socially preferable, and introversion less desirable (Myers, 1992). The findings in this study indicate that for introverted people it is useful to communicate with and be interested in others. If introverted students lack social skills, they should be taught such skills, to enable them to work with each other. Introverted students should be encouraged to work with other students: Even though they do not like too much noise and do not want to be the center of attention, it would be useful for them to have different ways of interacting with other students. Extraverts and introverts both enjoy interacting with other, but extraverts do so more frequently (Srivastava, Angelo, & Vallereux, 2008). Murberg (2010) also found that introversion and passive behavior (not participating in school and non-interactivity with others) have a significant positive relationship. The introverted students reported less perceived support from fellow students than the more active students. This means that extraverts might have more opportunities to seek out and receive support from others than introverts, and that support maybe not be so readily available to all students. Social skills help extraverts communicate with others and receive positive feedback which in turn may encourage them to engage more in social activities (Cheng & Furnham, 2003), whereas introverts may feel insecure and lack acceptance (Murberg, 2010). Introverts do not say much but when they share one deeply reflective comment it should be valued as much as the comments of students who share their ideas more often. Increasing social engagement does not mean that introverted student should be louder or expose themselves more.

Teachers should find a way to offer introverted students' opportunities to share their ideas in smaller, well-known groups or virtually.

## 7 Limitations and future research

It is important that the findings of this study be interpreted in the light of the following limitations. First, all the data were self-reported by students, which inevitably creates a few limitations. One is that people tend to answer questions in a manner that others will view favorably (social desirability) (Edwards, 1957) and this seems to be the case in personality inventories (Bäckström, Björklund, & Larsson, 2009; Gerhard, 1999) and self-esteem (Baumeister et al., 2003). Self-reported measures may produce measurement errors because factors other than those being measured will influence how people respond (Field, 2013). This is also the case in measuring introversion, as extraverted people tend to report experiencing more positive emotions, whereas introverts tend to be more neutral (Myers, 1992). Thus, it is possible that the students in this study did not answer the questionnaires completely honestly, and the number of introverts in the data may actually be even higher. As regards the results of this study, it is important to consider how important it is for adolescents to be accepted and what features are acceptable and valued in the Finnish school context. How truthful a picture students are willing to give, and how important it is for them to protect themselves must be remembered. Adolescents are in the process of building their self-esteem and how they define and evaluate themselves is complex. Peer-reported personality could improve the internal reliability of the big five questionnaires (McCrae & Terracciano, 2005) and this should be considered in future research.

Another limitation of the current study is the homogeneity of the sample. The data were collected in urban comprehensive schools in southern Finland, where socioeconomic status is higher than in other areas in Finland. This should be addressed in future research. In addition, gender differences were not accounted in this study. Boys in eastern and northern Finland are at a greater risk of falling behind, as their performance compared to girls and national averages has plummeted (Väljjarvi, 2016). Thus, the effects of gender would also make an interesting topic for future research.

This research provided empirical evidence that social engagement affects students' well-being. As such, it may be of interest to scholars examining the contextual predictors and academic consequences of school engagement and teachers interested in identifying students' risks of disengagement. As Wang et al. (2016) discovered, classroom social environments and the quality of social interactions can influence students' achievements. The present study provided a validated scale to further examine these issues. Future studies should retest the reliability of the social

engagement scale and determine whether the scores vary over time and are sensitive to changes in the learning environment.

This study took a variable-centered approach and described the associations between introversion, social engagement and well-being. In the future, it may be worthwhile also taking person-centered approach to identify groups of individuals who share particular attributes or relations among attributes. In this way, groups that need most support could be identified properly. For example, having a high social engagement approach and low introversion could have a different impact on student outcomes such as well-being than high social engagement avoidance and high introversion.

## 8 Implications

For adolescents it is essential to be motivated to study and teachers need to know how students can be engaged in studying without the risk of burnout. This study revealed that social engagement has a relation with both, and that it is important to recognize social engagement among other engagements. Social engagement has a positive effect on schoolwork engagement and protects students against burnout. This study revealed that it is not essential to be social, as is normally understood. It is important to be socially engaged, which means students sharing their own ideas and being interested in others' ideas and willing to help each other.

In addition, this study emphasized the importance of identifying, understanding and accepting different personalities at school. Teachers should identify and talk with their students about different personalities, because this helps teachers identify students' needs for support and helps students respect different personalities in classes.

Introverted students need quietness and time to be alone, but Finnish schools are usually crowded, and students are expected to participate and be socially active. This study revealed that one way in which to improve introverted students' well-being is to make them socially engaged. To be socially engaged one needs to have good social skills and be socially competent. School is usually the place in which to learn these skills. This requires a socially supportive environment in which students feel that they belong; they have to be accepted by teachers and peers and must have opportunities to interact with both. Introverted students can feel threatened if they need to share their ideas in front of the whole class because they do not want to discuss ideas straightaway. This is why they need time to gather their thoughts before sharing them. Teachers should arrange their classrooms to be encouraging of interaction with other students. Quiet places to work and opportunities to work in small and familiar groups would help introverted students participate more. This would give them positive social experiences and they would not feel so threatened in social situations which may promote more active behavior. This may raise their self-esteem and encourage them to socially commit even more. Less importance should be placed on students participating in class discussion, because this may shut some of them down. Today technology is often integrated into the classroom, which may help students participate. Different platforms could also give introverts better opportunities to share ideas and talk more with other students. These opportunities would give them time to reflect before contributing and reduce their anxiety about public speaking.

## 9 Conclusion

This study shows that the social engagement scale is a valid measure for the Finnish school context. More importantly, it reveals that social engagement plays a great role in introverts' self-esteem. Although in general introverts tend to have low social engagement, the results of this study show that they can have high social engagement in their learning, and once they are able to join groups and enjoy teamwork, their self-esteem can grow. Higher self-esteem is not necessarily better, as former studies have found (Baumeister et al., 2003), but this does not mean that should be ignored. Low self-esteem has detrimental effects on learning and motivation (Baumeister et al., 2003) and this study shows that by encouraging and ensuring that introverts engage with their peers in learning, their risk of low self-esteem can decrease and they can enjoy the same level of self-esteem as their extraverted peers. These findings also remind teachers to take their students' personalities into consideration and encourage introverted students to engage more in peer learning.

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