

EXPLORING PREDICTORS OF ACADEMIC SELF-CONCEPT AND SOCIAL
CONNECTEDNESS IN HIGH SCHOOL STUDENTS IMPACTED BY THE CELL PHONE
BAN IN NOVA SCOTIA

by

Madyn Bourque

Submitted in partial fulfilment of the requirements
for the degree of Master of Arts in School Psychology

at

Mount Saint Vincent University
Halifax, Nova Scotia
August 2026

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List of Abbreviations and Symbols Used

ADHD:	Attention-deficit/hyperactivity disorder
ASCS:	Academic Self-Concept Scale
ASD:	Autism spectrum disorder
BRCS:	Brief Resilient Coping Scale
BSI:	Brief Symptom Inventory
CBT:	Cognitive behavioral therapy
EECD:	Education and Early Childhood Development
EF/s:	Executive function/s
FFCWS:	Fragile Families and Child Wellbeing Study
GPA:	Grade point average
HEXACO-PI-R:	Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, Openness to Experience Personality Inventory – Revised
IIP:	Inventory of Interpersonal Problems
ISB:	Information-seeking behavior
MTSS:	Multi-Tiered System of Supports
PSC:	Psychological sense of community
RFs:	Resilience factors
RM:	Resilience mechanisms
SADS:	Social avoidance and distress
SCS-R:	Social-Connectedness Scale – Revised
SLD:	Specific learning disorder
SPSS:	Statistical Package for the Social Sciences
SRS:	School Resilience Scale
SSMMD:	Self-System Model of Motivational Development
STEM:	Science, technology, engineering, and mathematics
UCLA:	University of California, Los Angeles

Abstract

This study investigated how various aspects of personality – agreeableness, openness to experience, and resilient coping – promote academic and social success following the implementation of a province-wide cell phone ban in Nova Scotia public schools. Data were collected from 52 high school students through online surveys consisting of the ASCS, SCS-R, HEXACO-PI-R, and BRCS. Multiple regression analyses were used to determine that agreeableness, openness, and resilient coping collectively account for 16.3% of the variance in academic self-concept and 26.3% of the variance in social connectedness. Several significant correlations were found. Group differences in academic self-concept were identified between those in grade 11 and those in grade 12, and men and women. Post-hoc analyses were completed to examine differences in students with high and low academic self-concepts and social connectedness. Findings emphasize the protective nature of the identified traits for academic and social success during times of change in the learning environment. Implications for school psychologists include a more comprehensive understanding of how personality influences school success and well-being, and findings may inform support at all Tiers of the MTSS model. Longitudinal research that includes objective measures would add to our understanding of how personality promotes school success during times of change.

CHAPTER ONE

Literature Review

Prior to the 2024-2025 school year, the Nova Scotia Department of Education and Early Childhood Development (EECD) introduced a directive that removed cell phones from public school classrooms. In doing so, the EECD hoped to promote better achievement of learning and social outcomes for students (Education and Early Childhood Development, 2024b). The ban was intended to look different according to grade level; cell phones were to be kept off and out of sight altogether in elementary school classrooms, while there was more freedom of use for instructional purposes and during formal break times in junior high and high school environments. Teachers and other school team members were also instructed to abide by the directive, therefore limiting their use, as well.

Up until this point, schools – and their students – have been reliant on the technology awarded by cell phone access to program, deliver, and access daily lessons and maintain almost instant communication between peers, colleagues, and families. This directive introduced significant change to the schools' daily proceedings, especially for those in junior high and high school as these students have had cell phone access at school for the entirety of their education up until this point.

Although the ban may reflect a change in school culture, it is important to acknowledge that there has been variability in how the ban has been implemented and enforced across schools, and this discrepancy means that there is no guarantee that all high school students are experiencing the ban to the same degree. Some teachers and parents suggest that initial enforcement efforts were strong at their schools, but quickly relaxed by the time November rolled around, with the ban essentially being non-existent by the new year (Belouizdad, 2025).

Therefore, any evaluation of outcomes or goal-attainment related to the ban should be interpreted with the understanding that the ban is imperfect, and that the degree of implementation likely varies across schools and classrooms.

Currently, little is known about how successful the ban has been in promoting positive personal academic beliefs and peer connection; these two areas are important for student well-being and academic achievement, and also directly align with the reasons the EECD provided when the ban was introduced (Guay et al., 2004; Jose et al., 2012; Education and Early Childhood Development, 2024b). Research suggests that some specific personality traits are associated with better academic and social outcomes (Asendorpf & Van Aken, 2003; Charoenkul & Chanchalor, 2021; Constantinou et al., 2024; Fu et al., 2024; Johannsen et al., 2024; Mueller et al., 2019). For example, those who have high levels of agreeableness and openness to experience tend to be more involved in their learning and willing to adapt to changing circumstances, which supports their academic self-concept (Charoenkul & Chanchalor, 2021; Hausen et al., 2022). Socially, these two traits are helpful both when establishing new friendships and maintaining lasting relationships; those who are high in these traits are more likely to be open, cooperative, and easy-going (Bohndick et al., 2025; Lounsbury et al., 2003).

Given the cell phone ban presents a significant change to the learning environment, the role of resilient coping in student success is questioned. Resilient coping refers to one's ability to bounce back after adversity or change, often requiring the individual to make changes to their attitudes and behaviors (Karairmak & Figley, 2017). When considered within the context of the cell phone ban, students with high levels of resilient coping would be better equipped to navigate the changes the ban introduced, both socially and academically.

In summary, the literature presents compelling evidence that agreeableness, openness to experience, and resilient coping, both alone and together, are associated with stronger academic self-concept and social connectedness, and promote success in these two domains. The present review will examine these variables in detail to situate their proposed significance in relation to the cell phone ban in Nova Scotia public schools.

Provincial Assessment Results and Academic Performance

Each year, students in grades three, six, and eight take provincial assessments in reading, writing, and mathematics. Results from these assessments are publicly available on the Education and Early Childhood Development website. Given that the implementation of a province-wide cell phone ban was meant to increase student performance and grades, data collected from provincial assessments may have the potential to suggest whether or not the ban has been effective at meeting the goals set by the EECD.

A review of the 2023-2024 and 2024-2025 provincial assessment results indicates that the number of grade three students meeting reading, writing, and mathematics expectations has increased. This is the first time an increase in those meeting writing expectations has been seen since before the Covid-19 pandemic. Grade six students only saw an increase in those meeting reading expectations, while writing and mathematics performance declined. Conversely, the number of students meeting writing and mathematics expectations in grade eight increased in 2024-2025, but those meeting reading expectations remained the same. Students in grades three and eight wrote their assessments in May, almost a full academic year into the cell phone ban, while grade six students wrote in October. The increases seen for grade three and grade eight students may somewhat reflect how an environment without regular cell phone access impacts student learning.

There are several other variables that may explain and/or account for these results besides the cell phone ban including curriculum shifts, instructional differences, and assessment variability. These changes can impact the degree to which students are prepared for the assessment, in terms of both the content learned and practice with assessment-adjacent tasks. The quality of teacher instruction students receive plays a role in student assessment success. Furthermore, student performance declined during the pandemic (Jakubowski et al., 2025). As the education system stabilizes following this disruption, student grades and overall achievement have somewhat recovered (Dewey et al., 2026). This post-pandemic recovery is another potential explanation for the increase in number of students meeting expectations.

Measuring Academics

Data collected from provincial assessments is only one way of measuring student performance. The EECD cited that removing cell phones from the classroom would lead to better academic outcomes, but no formal definition or description of what this constitutes has been communicated (Education and Early Childhood Development, 2024a). It is best assumed that an increase in student grades would be reflected by enhanced learning experiences. Grades and grade point averages (GPAs) are regularly used to measure student success and are likely what comes to mind first when thinking about achievement (Biller et al., 2022; Scoulas et al., 2025; Xu et al., 2024). Beyond grades, there are several different ways of assessing student achievement, including motivation, resilience, and academic self-concept (Boncquet et al., 2024; Fullerton et al., 2021; Rost et al., 2005). The thought here is that as learning gets better, these characteristics get stronger. Conversely, as these characteristics get stronger, learning tends to get better, as well. Specific achievement outcomes will be explored below.

Motivation

A student's motivation plays a key role in if and how they engage with course material and instruction. Motivation can typically be divided into three types: intrinsic, extrinsic, and amotivation (Akram & Li, 2024). Intrinsic motivation is motivation that is person-driven; in terms of academics, the student is motivated to engage in the work or lesson because they are interested in what they are learning or enjoy what they are doing (Taylor et al., 2014). Alternatively, extrinsic motivation is driven by external stimuli. When considering academics, this could include receiving a high mark on an assignment or in a course, obtaining a diploma, certificate, or degree, earning scholarship money and/or titles, or receiving recognition, praise, and other forms of reward from teachers, parents, or peers. Extrinsic motivation is also driven by wanting to avoid punishment. An example of this would be studying hard for a test because you will lose access to a reinforcer, such as computer privileges if you fail. Lastly, amotivation refers to the experience of lacking intent to act. When framed within the context of academics and learning, amotivation is where a student feels no desire to participate in their learning or complete academic tasks (Vlachopanou et al., 2025). This may manifest as procrastination and disengagement with school, both in the classroom and at home (Norvilitis et al., 2022).

Several personality traits have been found to be associated with motivation, including agreeableness and openness to experience (Zhou, 2015; Müller et al., 2006). Furthermore, hierarchical multiple regression analyses determined that openness accounts for some of the variance in motivation when combined with conscientiousness and neuroticism (Müller et al., 2006). Research has also established agreeableness as a predictor of academic performance, with students high in agreeableness doing better academically (Zhou, 2015). Although resilience and resilient coping are not directly related to motivation, there is an established positive relationship between academic grit and academic motivation (Obeng et al., 2025). Academic grit refers to the

perseverance and dedication someone has for their education and accounts more for how someone exercises their motivation to do well, while resilient coping refers to one's ability to bounce back after adversity or a setback (Obeng et al., 2025). Academic grit and resilient coping can be viewed as two sides of the same coin; they both drive student success. The above findings assert that motivation is related to innate personality traits that can influence the degree to which someone is motivated to do well academically.

Motivation is not only associated with academic achievement, but is related to academic self-concept, as well. Research suggests that strong academic self-concepts predict strong intrinsic motivation, while weaker academic self-concepts predict amotivation (Livesey et al., 2023). This suggests that strong academic self-concepts foster internal motivational reserves to promote academic success (Livesey et al., 2023).

Self-System Model of Motivational Development (SSMMD). Our motivation is formed within the social context of the self-system model of motivational development. The SSMMD is rooted in self-determination theory, and connects an individual's intrinsic motivation and relatedness to developmental outcomes (Connell, J.P. & Wellborn, J.G., 1991). The four components that make up the SSMMD are the social context, the self-system, actions, and developmental results. The social context is what forms the support system an individual has; this includes friends, family, teachers, and other community members. The social context is where motivation, engagement, and beliefs about oneself stem from. The self-system develops from the interaction between members of the support system and the context they operate within, determining what the individual chooses to participate in and what they pursue, both in a day-to-day setting and over extended periods of time (i.e., the action or doing an individual engages in). These actions then influence the individual's development and outcomes and this typically

includes academic achievement (Connell, J.P. & Wellborn, J.G., 1991). This model provides a direct link between motivation and academic performance, all the while situating the relationship within a social development framework; motivation is related to achievement through action. Additional research suggests that academic self-concept (or self-efficacy) is related to motivation in the sense that the sureness that comes with a strong self-concept is motivating for the student and vice versa; this relationship is reciprocal in nature (Turarova et al., 2025). Subsequently, motivation can be used as a proxy measure of academic achievement.

Resilience

When considering academics, resilience or academic coping refers to how a student adapts to differing or challenging circumstances within the school context (Skinner et al., 2016). Examples of this could include receiving a disappointing grade, experiencing a disruptive change to the learning environment, or having difficulty mastering a concept or question. This also extends to social dynamics; bullying or adversity during their school years, whether it occurs at school or not, would also be considered a challenging scenario for a student to navigate.

Resilience has been found to be a predictor of academic performance for students of all ages, particularly through its relationship with motivation (González-Yubero et al., 2025). Students who tend to have stronger emotional intelligence use better coping methods in the classroom more frequently and effectively; this serves as a reinforcer to their intrinsic motivation for learning (González-Yubero et al., 2025). Resilience has also been found to be important for self-regulated learning and managing everyday academic setbacks (Wolters & Taylor, 2012; Farrington et al., 2012).

For high school students specifically, a study by Putwain et al. aimed to examine how high school student's test anxiety, academic resilience, and coping were related to their grades on a national exam (Putwain et al., 2016). They established that resiliency is important for navigating difficult or stressful academic situations, with academic resilience moderating the negative relationship between test anxiety and exam grades (Putwain et al., 2016). Given resilience is related to traits that keep students engaged with class content and motivated to do their best, it can be used as a measure of academic achievement.

Academic Self-Concept

Academic self-concept refers to how someone perceives their abilities and potential to do well in academic settings (Shavelson et al., 1976). Research suggests that students with stronger academic self-concepts do better academically and have higher grades. The opposite is also true; those with weaker academic self-concepts tend to have lower grades (Valentine et al., 2004).

Research suggests that academic self-concept is associated with classroom engagement in high school students (Schnitzler et al., 2021). Schnitzler and colleagues concluded that students who had a tendency to raise their hand more frequently than their peers to respond to questions and contribute to class discussion had the strongest academic self-concept when compared to those demonstrating other patterns of participation (Schnitzler et al., 2021). Furthermore, these students were more likely to be doing better academically than those who were disengaged from their learning (Schnitzler et al., 2021). While these findings are correlational and do not reflect a causal relationship, they do represent observed consistencies between students with strong academic self-concepts and their degree of class participation. Other factors that are likely to influence a students' willingness to participate in class include feelings of belonging, subject-

specific enjoyment, and overall well-being; these should be considered when interpreting the results of the aforementioned study.

Strong academic self-concepts have been found to be associated with favorable student outcomes including better academic achievement, goal orientation, and educational attainment (Bakadorova & Raufelder, 2020; Johannsen et al., 2024; Guay et al., 2022). These outcomes are not the direct result of strong academic self-concepts, but instead are more likely to occur when a student has a strong academic self-concept. There are several other variables that influence academic success and educational attainment, including socioeconomic status, mental health, responsibilities held outside of school, and broad systemic and cultural factors. Nonetheless, academic self-concept has been found to be a better predictor of educational attainment than prior academic achievement, which demonstrates its value as an academic construct (Guay et al., 2004).

Similar findings are true for math. Math self-concept (i.e., academic self-concept for math independent of their broad academic self-concept) in grade ten had a positive significant effect on how many math units a student completed by the end of high school and the highest math course they finished (Marsh, 2023). This was a subsequent predictor of how many math courses they went on to complete in their post-secondary education, and if they had received a STEM (science, technology, engineering, and mathematics) credential. These findings emphasize that the academic self-concept students develop in high school shapes both how they engage with math throughout the remainder of their education, and the possible careers they have access to in the future.

Academic Self-Concept Development

There are three widely accepted theories of academic self-concept development: the internal/external frame of reference theory, the reciprocal effects model, and the big-fish-little-pond effect. The internal/external frame of reference theory describes why there tends to be a correlation between verbal and math achievement, but their associated self-concepts do not always follow this same pattern. The internal reference is where students compare their performance in one domain (e.g., math) to their performance in another (e.g., French). Conversely, the external reference is where students compare their own performance in one domain (e.g., math) to other student's performance in the same domain (e.g., math) (Marsh, 1986). Several studies provide evidence supporting student use of the internal reference to develop self-concepts in contrasting areas (Marsh, 1986; Marsh & Hau, 2004; Möller et al., 2009).

The reciprocal effects model suggests that academic achievement and the associated self-concept (i.e., math achievement and math self-concept) are both a cause and effect of each other (Marsh et al., 2018). This means that math achievement influences the math self-concept, while the math self-concept influences math achievement, both positively and negatively. Various meta-analyses have found evidence for the reciprocal effects model (Huang, 2011; Valentine et al., 2004).

The third theory is the big-fish-little-pond effect. This theory suggests that students who attend schools that could be considered high-achieving tend to have lower academic self-concepts as students tend to compare their achievement to that of their classmates (Marsh et al., 2014). Compared to students of equal achievement at lower achieving schools, students at high-achieving schools often have lower academic self-concepts, suggesting that there may be a negative effect on self-concept to attending a high-achieving school (Marsh et al., 2014).

Schools' Role in The Development of Academic Self-Concept

As described above, it is evident that the school environment can influence student's academic self-concepts. A study by Salchegger had the goal of examining whether or not school-level tracking was associated with the size of the big-fish-little-pond effect in forty-one countries (Salchegger, 2016). They determined that the big-fish-little-pond effect is stronger in areas of the world where students are divided into different school types based on their academic achievement earlier; this is referred to as explicit school-level tracking (Salchegger, 2016). In Nova Scotia, schools are formed through implicit tracking meaning that students feed into schools primarily based on where they are located. Where a student is located may be influenced by their financial well-being and socioeconomic status. Implicit school-level tracking did not have any influence over the big-fish-little-pond effect (Salchegger, 2016). Although the tracking system Nova Scotian schools use is not likely generating more of this discrepancy, it does not mean that schools are void of the big-fish-little-pond effect. This just means that the system is not systematically creating higher- and lower-achieving schools beyond the socioeconomic factors that already do so.

Teachers can also play a role in the development of student academic self-concepts. Research has found that supportive teacher-student interactions and relationships contribute to academic self-concept growth and achievement (Verschueren & Koomen, 2012; Roorda et al., 2017). Furthermore, teacher involvement has been associated with shifts in students' level of school engagement (Rickert & Skinner, 2024). These strong teacher-student relationships are also protective against the adverse effects of low-quality family relationships on academic outcomes and achievement (Dempsey et al., 2024). For economically vulnerable students, positive teacher interaction is even more important. Research suggests that cumulative positive

interaction serves as a moderator for the relationship between parental expectations and student educational attainment; as more positive interactions occur, the moderating effect becomes more impactful (Dempsey & McCoy, 2026). Within the context of the cell phone ban, removing phones from the classroom may promote student-teacher interpersonal interaction in a broad sense, making way for the development of positive relationships which in turn support academic success. In summary, schools and teachers play an influential role in the development of students' academic self-concept.

Academic Self-Concept in Students with Specific Learning Disorders (SLDs) and Other Learning Difficulties

Although having a stronger academic self-concept can promote better outcomes in all students, it is often more impactful in those with identified neurodevelopmental disorders and/or specific learning disorders (SLDs). Diagnoses captured under these terms include (but are not limited to) dyslexia, dysgraphia, dyscalculia, attention-deficit/hyperactivity disorder (ADHD), and autism spectrum disorder (ASD). Individuals with these diagnoses tend to have more negative perceptions of themselves in comparison to those without, and this extends to academics (Gans et al., 2003). Students with SLDs, in particular, are more likely to attribute getting a question wrong, making a mistake, or failing a test to internal shortcomings rather than external factors (McQuade et al., 2011). For example, a student who failed their math test is more likely to blame themselves for not being skilled enough, not putting enough effort in, or for being “dumb”, rather than considering that their teacher did not provide adequate instruction or generating another explanation outside of themselves. This self-judgment contributes to a destructive cycle in which the student becomes less motivated to engage with schoolwork, and more negative self-talk and emotion is directed towards academic tasks (Heath et al., 2013).

This, in turn, may lead to poorer grades and performance which could seemingly confirm the negative beliefs the student already has about themselves and their ability to achieve academically. Ultimately, this can lead to students internalizing a state of learned helplessness.

As remains true for all students, the learning environment plays a role in the development of academic self-concept in those with SLDs and other neurodevelopmental diagnoses. Research suggests that students who have access to tailored programming that meets their specific learning needs make more gains than those receiving little to no support (Krämer et al., 2021). Students learning in supportive environments have stronger academic self-concepts and are able to do better academically; in fact, having access to inclusive programming has the potential to be protective for students who are already at a greater risk of falling victim to the learned helplessness cycle (Krämer et al., 2021). Students with neurodevelopmental disorders and/or those with SLDs have a better chance at success when schools provide them with individualized support and remove stigmatizing language and attitudes at a systemic level, and ensure it spans across instruction and communication (both implicit and explicit). In doing so, students are more likely to feel as if they are capable of achieving in the way that they hope (Kloomok & Cosden, 1994).

The willingness of the school to engage and collaborate with students with neurodevelopmental disorders, and to program for their success is paramount; while systems may often be a barrier to support, the mindsets, attitudes, and biases that school staff and personnel hold can also present as a challenge. Evidence suggests that one of the best ways to support the development of academic self-concept in students with SLDs and other neurodevelopmental diagnoses is to have them learn in an environment where the systematic

implementation of a pedagogical approach promotes inclusive and tailored programming (Kloomok & Cosden, 1994).

Attention and Engagement in The Classroom

In recent years, teachers have suggested that it has become more challenging to keep students engaged during class time, both during instructional time, and during group and independent work. Attentional and behavioral challenges have made it difficult to deliver course content, obtain enough data to assess students, and meet curriculum goals. Given the present review is tasked with examining social and academic outcomes within the context of the cell phone ban in Nova Scotia, it is important to consider if and how cell phone and media use plays a role in these difficulties.

Children's leisure time has been redefined by access to social media and electronic devices; instead of playing outside or doing arts and crafts, more children are instead playing video games, watching television and YouTube, or being online or in front of a screen in some capacity. Broad research suggests that these changes have interfered with child development, especially in emotional, behavioral, and cognitive domains (Clemente-Suárez et al., 2024; Dong et al., 2025).

One impacted area that has been researched extensively is how increased access to screen time has affected the development of executive functioning. Executive functions (EF/s) capture a variety of higher-order processes including problem solving, self-regulation, planning, inhibition, and attentional control (Gentil-Gutiérrez et al., 2022). Broadly, increased exposure to screen time has been found to be negatively associated with several components of executive functioning including cognitive control, working-memory, and attention span; these findings are more stark

the earlier frequent screen use is introduced (Bustamante et al., 2023; Namazi & Sadeghi, 2024). Several mechanisms have been identified as potential explanations for these associations, namely rapid task switching, cognitive overload, and frequent exposure to stimulating visual content (Paulus et al., 2023). The difficulties resulting from these processes may present as behavioral challenges, limited focus and concentration, impulsivity, and minimal engagement in classroom settings. While it is unlikely that access to cell phones and screen time is the sole reason for executive functioning difficulties, it is evident that the increase in usage is unlikely to promote executive functioning development. Furthermore, screen time is not the only barrier to EF development; both parents and overall household structure can accommodate for EF difficulties, making it challenging to identify where difficulties stem from.

A student who has a difficult time paying attention in class may be at risk of having a lower academic self-concept. Missed instruction can make tests and assessments more challenging, and receiving poor grades may negatively impact the way a student views their abilities and potential to succeed. This can confine students to a recurring cycle that encourages learned helplessness and limits their self-concept. As noted earlier, positive student-teacher interactions and tailored learning can be protective for students' academic self-concept. Establishing a safe and positive relationship between student and teacher is essential, and doing frequent check-ins, modifying classwork, and providing manipulatives and worked examples can better support student learning and confidence.

Overall, academic self-concept has been found to be an important variable in student success in grade school and beyond. Not only do those with stronger academic self-concepts enrol in and complete higher-level math courses, but they also are more likely to go on to pursue STEM professions (Marsh, 2023). In turn, these individuals may have access to higher salaries,

potentially setting them up for a more stable and secure future. While academic self-concept is not the be-all-end-all, it is a trait that should be fostered and encouraged in students to promote both their academic and overall success.

Social Outcomes

The EECD cited that the cell phone ban would have positive social outcomes for students. More specifically, they suggested that student well-being would increase and that students would interact more with each other in class and at school (Education and Early Childhood Development, 2024a). Despite stating that removing cell phones from the classroom would have positive social outcomes, the EECD did not offer a clear definition of what that is or looks like. As such, there are several ways these social goals can be operationally defined and measured, including terms like school belongingness, peer support, and social connectedness (Bohndick et al., 2025; Lan et al., 2023; Kahhale et al., 2025).

School Belongingness

Self-determination theory suggests that there are three basic psychological needs: autonomy, competence, and relatedness (Deci & Ryan, 2000). These three needs determine an individual's level of motivation, engagement, performance, and overall well-being, in various areas of their life. The degree of belongingness one feels goes hand-in-hand with the level of relatedness they experience, with a stronger sense of belonging contributing to a stronger sense of relatedness and vice versa (Deci & Ryan, 2000). In the school context, this often looks like high levels of inclusion and acceptance into an environment, as well as respect from peers and social integration (Marksteiner et al., 2019). A stronger sense of belonging predicts better

academic outcomes, including better grades, self-concepts, performance, and motivation (Barbieri & Miller-Cotto, 2021; Schachner et al., 2019; Walton & Cohen, 2007).

A student's sense of belonging is foundational to their success; if they do not feel connected to their school or if they are not integrated into their learning community, their motivation to engage with course content may decrease, while grades and performance drop. High levels of school belongingness give students a more supportive environment for learning by limiting social stressors like bullying, loneliness, and peer pressure, making it more likely that students will engage with learning (Doğrusever et al., 2026). However, students may still be successful despite having low levels of school belongingness; belonging does not equal academic success but rather supports it.

The EECD's removal of cell phones from the classroom aligns with stronger school belongingness. Limited phone access during instructional time promotes peer interaction and offers opportunities to form connections and friendships with classmates. As a result, students are directly contributing to the development of an integrated learning environment that emphasizes inclusion and social relatedness, therefore meeting one of their basic psychological needs and setting them up for success.

Peer Support

Healthy and strong friendships are an essential part of development and well-being, especially in adolescence (Zheng et al., 2024). When adolescents have difficulty forming and maintaining close peer relationships, they are more likely to experience feelings of loneliness and isolation (Tian et al., 2013). This can often have a snowball effect where the students' loneliness starts to impact other areas of their life such as their mental or physical health, or academics.

Studies suggest that loneliness in adolescence is associated with poor academic outcomes including slower progress or acquisition of understanding, and poor exam performance (Benner, 2011). Therefore, we can conclude that healthy peer friendships are protective of academic success. Removing cell phones from the classroom may be especially beneficial for high school students approaching post-secondary; limiting phone use during class time may give students the chance to develop stronger friendships that reach beyond the digital world, promoting resistance to loneliness and academic pressure (Munir et al., 2015).

Social Connectedness

Social connectedness refers to how people connect to each other socially (Do & Widom, 2025). When compared to the peer support construct, social connectedness is more of an active connection that requires consistent upkeep and engagement, while peer support tends to be more passive in nature, going little beyond simply knowing that you have a strong network of peers (Lan et al., 2023).

There are two types of social connectedness: the subjective and objective. The subjective type concerns itself with how someone perceives the amount of social support they have access to, while the objective has to do with how often concrete instances of social interaction occur (Saeri et al., 2018). While both components are important, it is the subjective understanding of connectedness that tends to be more strongly related to psychological well-being (Holt-Lunstad et al., 2010). For example, an individual who lives alone may only have a few tangible social interactions each day yet experience stronger subjective feelings of social connectedness either because of the quality of those infrequent interactions or because of other protective factors or personality traits. Conversely, someone who interacts with other people all day may feel less socially connected to those they interact with because those interactions feel superficial or

surface level rather than truly meaningful. Therefore, the subjective labeling of the interactions people have with each other is what carries the most weight when considering outcomes of well-being.

Implications of Social Connectedness

Social connectedness has been found to be associated with several positive outcomes including better physical and mental health, and longer life spans (Saeri et al., 2018; Hein et al., 2024; Kahhale et al., 2025). Stronger feelings of connection have also been found to be associated with lower blood pressure and decreased risk of depression (Steptoe et al., 2009; Badri et al., 2021). Overall, social connection is a component of human nature that should be prioritized to support future quality of life.

Several studies suggest that social connectedness is important for students in the school context (Jose et al., 2012; Lan et al., 2023). A recent study that explored the relationship between social connectedness, peer support, academic pressure, and loneliness determined that social connectedness played a mediating role in the relationship between the three other variables (Lan et al., 2023). An association between social connectedness and overall well-being has also been identified (Jose et al., 2012). While this finding is correlational, the study was longitudinal and the association persisted both over time and across different connectedness domains, further supporting the meaningfulness of this finding. In summary, research supports that social connectedness is important for academic and social well-being.

Negative Peer Interaction

While positive peer interaction promotes health and well-being, negative peer interaction tends to have harmful implications for youth. A secondary data analysis study using data from

the Fragile Families and Child Wellbeing Study (FFCWS) in the United States had the goal of identifying distinct profiles reflecting youth well-being and their association with bullying and social connectedness (Dow-Fleisner et al., 2023). They found that those who fell into the thriving group were more likely to have higher levels of social connectedness and report fewer experiences of bullying. Even more interesting, social connectedness was identified as being protective against minimal experiences of bullying, while it was not sufficient enough to minimize the effects of frequent bullying (Dow-Fleisner et al., 2023). These findings emphasize that negative peer interactions can not only have a harmful impact on youth health and well-being, but that social connectedness can be a protective factor. Furthermore, only working to promote social connectedness is not enough to minimize the effects of bullying altogether. This suggests that social connectedness is not an overwhelming solution within the social context.

Phone Use and Social Deprivation

In considering literature in support of the cell phone ban, it is both timely and relevant to discuss how phones may limit meaningful interaction. Even though phone use can be perceived as a way to maintain connectedness with peers, it is not achieving the same outcome as real, face-to-face interaction, which is a necessary and important part of social development (Gray, 2013). Not only does the uptick in phone use limit visual feedback from peers that facilitates social interaction, but it also prevents the practice of this skill by depriving adolescents of true social engagement. Even when face-to-face interaction is occurring, the vibration or ping of a phone may interrupt and redirect attention, decreasing the intimacy of the social interaction (Barrick et al., 2022). Research also suggests that those who spend more time on their phone and on social media tend to have poorer mental health than those who spend more time with their peers (Twenge, 2017). This finding does not guarantee poor mental health as a consequence of

phone use, but asserts some consistent trends between these two constructs. Furthermore, the relationship between mental health and phone use is likely bidirectional, with phone use potentially contributing to poorer mental health, and poor mental health contributing to increased phone use. Overall, it is evident that phone use has impacted the quality of our relationships and social interactions.

The Downward Trend in Social Connectedness

Given the way we interact with others has shifted, it is not surprising that social connectedness has been on the decline in recent years. A study out of Finland examined secondary cohort trends in social connectedness and how they vary across several constructs including gender, sociodemographic background, and education (Read et al., 2024). The researchers included three constructs within their definition of social connectedness: self-reported school belongingness, number of close friends, and loneliness. They found that each of these constructs declined by approximately 10% between 2017 and 2021 (Read et al., 2024). Of relevance is the onset of the Covid-19 pandemic within this timeframe and the subsequent worldwide lockdowns that likely contributed to this decline in some capacity. Nonetheless, not only does this represent an alarming decrease in the social connectedness experienced and felt by youth and younger adults, but it also reflects a shift in the way students interact with each other.

Cell phone use has undoubtedly impacted what it means to communicate with peers. In the classroom and beyond, phones are used to connect almost instantaneously with one another via text and social media applications. Phones have also become a way to express opinions and identity to a larger audience, and to connect with those who have similar mindsets (F et al., 2014). A study done out of the United States took a closer look at youth digital communication patterns and examined how these trends impacted reported social connectedness at various times

throughout the day (Garrett et al., 2023). They found that youth had stronger feelings of social connectedness when they were interacting with their peers over text, social media, and video chat, but not when they were talking with friends over the phone (Garrett et al., 2023). One limitation of this study is that social connectedness was measured using a single item. As such, while the findings from this study are appealing, they should be interpreted with some caution, with the researchers themselves emphasizing the need for future research to measure social connectedness in a more comprehensive way with validated scales. These results still accentuate the importance of a tangible anchor or visual input in promoting feelings of connection; adolescents can see that they are interacting with their peers and evidence of the correspondence often remains when it is over. Despite this, there is still an overall decrease in visual feedback when using technology to communicate with peers, impacting the social development, well-being, mental health, and social connectedness youth feel and experience (Gray, 2013; Twenge, 2017; Barrick et al., 2022).

The Big Five Personality Traits

First identified through factor analysis by Donald Fiske in 1949, the Big Five personality traits are five salient characteristics that are present in each person to varying degrees (Fiske, 1949). Other researchers in the field have replicated the findings from the original study and expanded upon the theory, and it has become one of the most scientifically validated theories of personality (McCrae & Costa, 1987). The Big Five traits are as follows; openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism (McCrae & Costa, 1987). These traits have also been found to be stable throughout our lives (Roberts et al., 2006).

Agreeableness

Agreeableness is one of the Big Five traits. Those who are high in agreeableness tend to be more kind and compassionate than others, be more cooperative and easy going, and more willing to help those around them (Sheese & Graziano, 2004). Those who are low in agreeableness tend to exhibit the opposite traits; they are more reluctant to help others, are often more difficult to engage with, and are less easy going.

For youth, research has established that agreeableness is related to academic achievement, self-concept, and various social outcomes (Asendorpf & Van Aken, 2003; Charoenkul & Chanchalor, 2021; Constantinou et al., 2024; Fu et al., 2024; Johannsen et al., 2024; Mueller et al., 2019). A study done out of Thailand sought to examine the association between academic achievement, personality, and information-seeking behavior (ISB) (Charoenkul & Chanchalor, 2021). Agreeableness was found to be predictive of both ISB and academic achievement, with high ISB-students more likely to be those actively participating in the classroom and demonstrating engagement with their learning (Charoenkul & Chanchalor, 2021). These results suggest that students who are more likely to cooperate or go along with what they are being asked to do, are more likely to exhibit a seemingly strong commitment to their learning, and in turn, tend to do better academically. Other studies exploring the association between agreeableness, and academic achievement and performance show similar trends (Constantinou et al., 2024; Johannsen et al., 2024). Although agreeableness often reflects a more conservative association to performance and achievement, especially when compared to other Big Five traits, its relationship to academic success is undeniable (Constantinou et al., 2024; Johannsen et al., 2024).

Psychological Sense of Community

Socially, one of the strongest links to agreeableness is through psychological sense of community (PSC). PSC has been operationally defined as how connected one feels to their environment and to those around them (Lounsbury et al., 2003). For students engaging in primarily online learning, research has determined that PSC accounts for a significant amount of variance in student well-being, suggesting that PSC is especially relevant to well-being when there is a degree of online presence or engagement (Knott & Baker, 2023). While there is not necessarily a one-to-one association between this finding, youth cell phone use, and social deprivation, it is difficult to ignore the obvious: stronger PSC and social connectedness is a protective factor for youth mental well-being, especially when the means of engagement is through online platforms.

Research has determined that agreeableness accounts for the largest variance in PSC out of all Big Five traits in high school student populations (Lounsbury et al., 2003). Given that high levels of agreeableness tend to make someone more likely to get along with others, it makes sense that agreeableness has been found to promote connection with communities at large. Agreeableness has also been identified as a protective factor against depression in youth (Fu et al., 2024). Overall, agreeableness predicts better social connection and adjustment, making it a valued construct when considering youth well-being.

Openness to Experience

Openness to experience is another Big Five personality trait. Those who have high levels of openness tend to be open to engaging in new experiences and meeting new people, while those who are low in openness are more likely to be reserved and avoid situations that involve novelty of any kind (Morales-Vives et al., 2020).

Academically, openness has been found to be predictive of better class engagement and stronger learning interest (Zhang et al., 2019). Students who are more interested in what they are learning are more likely to pay attention during class instruction, complete class work, and be an active agent in their learning. The trait has also been indirectly implicated in academic achievement through its association with intelligence; a strong positive association was identified between openness and intelligence, and research has determined that intelligence is the largest predictor of academic achievement (Morales-Vives et al., 2020).

Shifting focus to academic self-concept, a German study examined how personality influences the academic self-concept development (Hausen et al., 2022). They found that several Big Five traits were associated with broad academic self-concept, including openness to experience. These results remained true when controlling for other variables such as gender and GPA (Hausen et al., 2022). These findings underscore that openness is related to academic achievement, performance, and self-concept through the degree of intellectual curiosity and intrinsic motivation one possesses.

Openness has also been implicated as a predictor of social success and connectedness. Research demonstrates that student personality influences how connected they feel to their peers and those around them with students reporting high levels of openness at the beginning of the year more likely to experience a greater sense of belonging (Bohndick et al., 2025). Furthermore, a polynomial regression found that students who had a stronger sense of belonging spent more time with peers who had higher levels of openness. While openness may most commonly be thought of as being beneficial to making initial friendships and maintaining connections, these findings extend to reciprocal influences; classmates who exhibit more openness tend to foster belonging in those around them (Bohndick et al., 2025). Relatedly, openness has also been found

to be associated with PSC in high school populations (Lounsbury et al., 2003). In summary, openness to experience, similarly to agreeableness, has been established as an influential factor in the development of student social connectedness and sense of belonging.

Conscientiousness and Extraversion

Given the aim of this project is to examine academic and social outcomes of perceived experiences with the Nova Scotia cell phone ban and their predictors, agreeableness and openness to experience were chosen because they best align with the willingness to change required to facilitate the transition brought on by the ban. Although conscientiousness may be a better predictor of academic success, and extraversion a better predictor of social connectedness, these two traits do not capture the adaptability agreeableness and openness lend themselves to (Chernikova et al., 2025; Lee et al., 2008). Furthermore, agreeableness and openness have established connections to academic self-concept and social connectedness which asserts their significance to this study (Bohndick et al., 2025; Charoenkul & Chanchalor, 2021; Hausen et al., 2022; Lounsbury et al., 2003). Out of the Big Five traits, openness and agreeableness are most likely to describe qualities best suited to navigate the change in the learning environment brought on by the cell phone ban.

Resilience and The Stress Response

Resilience refers to the ability to quickly recover following an adverse event or period of prolonged adversity (Nunez et al., 2025). When considering how this definition relates to the stress response, it can be said that resilience reflects good mental health in the face of adversity (Hermans et al., 2025). Several researchers differentiate between resilience factors (RFs) and resilience mechanisms (RMs). RFs primarily include innate traits, genetic predispositions, and

social variables that predict resilient outcomes, while RMs are the behavioral and psychological responses that occur when someone is faced with a stressor (Howlett & Stein, 2016). RMs can be likened to the equipment one needs to navigate life's stressors, promoting recovery while fostering resiliency (Howlett & Stein, 2016).

Acute stress nurtures the development of RMs that encourage resilience and the promotion of successful coping strategies (Hermans et al., 2011; Young et al., 2017; Baczkowski et al., 2023; Bahtiyar et al., 2020; Moscarello & Hartley, 2017; Limbachia et al., 2021; Dutcher & Creswell, 2018). Exercising the brain pathways and mechanisms associated with RMs increases one's ability to successfully navigate a stressful experience. In summary, resilience can be considered as the outcome of genetic predispositions and life experience; the amalgamation of these two occurrences build the architecture of our brains.

Resilience and Resilient Coping

As noted earlier, resilience refers to one's ability to recover following an adverse experience or stressor (Kalisch et al., 2017). Along a similar vein, resilient coping is defined as a response to adversity resulting from conscious changes to one's attitudes and behaviors (Karairmak & Figley, 2017). Resilience encompasses the broad ability to bounce back after a stressor, while resilient coping captures the process of doing so. These two constructs are both governed by RFs and RMs.

The Covid-19 pandemic saw an uptick in research on resilience as this period of time presented as a salient, persistent, worldwide stressor. Schools, universities, and colleges saw major changes in both the delivery of instruction and assessment administration which had a heavy impact on students of all ages. These changes, coupled with the psychological stress many

students were experiencing, made academic burnout a construct of particular interest (Wang et al., 2025). It was determined that psychological resilience is negatively related to academic burnout; the more resilient someone is, the less burnout they are likely to experience, and vice versa (Wang et al., 2025). Resilience was also found to be positively associated with performance, with findings emphasizing benefits to learning optimization and adaptability (Wang et al., 2025). It is worth reiterating that these relationships are not causal (i.e., high levels of resilience do not always mean less burnout), and that there are likely other variables at play contributing to these outcomes.

When changes to the learning environment occur, being resilient increases a student's likelihood of managing the change effectively and doing well academically. While the implementation of the cell phone ban cannot be compared in full to the Covid-19 pandemic, both events reflect changes to what the learning environment looks like for students. In making such a connection, resilience is likely a helpful trait for students in that it increases their willingness to adapt to change and to adjust their behavior accordingly.

Resilient coping also supports academic self-concept, and a significant positive association between the two variables has been established (Haktanir et al., 2021). While this finding is valid, a stronger and more meaningful argument for the connection between resilient coping and academic self-concept can be found in multiple regression results describing college adjustment; in combination, these two variables were found to account for 36% of the variance in college adjustment scores (Haktanir et al., 2021). Of the two, resilience accounted for more of the variance (i.e., 32%). This further suggests that high levels of resilience supports students through changes related to their schooling, whether that be the move from secondary to post-secondary learning or a more unexpected change such as the implementation of a province-wide

cell phone ban in schools. Either way, high school students' experiences and academic self-concepts are likely to somewhat shape transitional moments in their life.

Resilient coping is also important for feelings of peer and social connection. Research suggests that a significant positive association exists between sense of belonging and resilience with direct linkage to the sense of relatedness resilience factor (Planert et al., 2022). This finding suggests that someone who experiences high feelings of comfort, trust, and support is more likely to feel as if they fit in and belong to the peer or social grouping in question (Planert et al., 2022). In turn, youth are likely to experience more social connectedness. Furthermore, resilience has been found to moderate the association between bullying victimization and school truancy, with resilience acting as a buffer and promoting school retention (Jiang et al., 2025).

A study by Hall and her colleagues determined that students who exhibit higher levels of recovery report fewer negative emotional states (Hall et al., 2022). Recovery refers to a student's ability to bounce back following a change or a perceived adversity, and is one of three areas of resilience identified in students between the ages of eleven and sixteen (Hall et al., 2022). This finding reflects that resilience is important for youth well-being and should be fostered where possible. Overall, resilience and resilient coping have been identified as important constructs for fostering both academic and social success.

Conclusion

The implementation of the Nova Scotia province-wide cell phone ban in schools presents a unique change to students' academic environment. Despite the seemingly small scale change the ban presents in comparison to some recent events (e.g., the shift to online learning due to the Covid-19 pandemic), it reflects a scenario in which students must adapt, nonetheless.

The EECD emphasized that students would benefit academically from the ban, but the department did not lay out a plan to evaluate the success of these changes. Besides grades, academic outcomes can be evaluated by considering student motivation, resilience, and academic self-concept (Vlachopanou et al., 2025; Haktanir et al., 2021; Huang, 2011). Motivation refers to one's willingness to engage in goal-directed behavior, and is usually defined by three types of motivation: intrinsic, extrinsic, and amotivation (Akram & Li, 2024). Within a school context, resilience is defined as how willing and able someone is to adapt to academic and social adversity (Skinner et al., 2016). Academic self-concept seemingly captures both of these constructs in a more meaningful way. Operationally defined as how someone perceives and understands their own ability to do well academically, it includes both the motivation (i.e., being confident in one's ability to do well can be considered a motivating factor) and resilience (i.e., when faced with an academic challenge, a student who thinks strongly of their abilities is more likely to bounce back and persevere) piece (Shavelson et al., 1976). As such, academic self-concept embodies the academic strengths and successes the EECD hopes to see developed in Nova Scotian students.

The EECD was also hopeful to see an increase in peer interaction result from the cell phone ban (Education and Early Childhood Development, 2024a). Operationally defining and subsequently measuring peer interaction presents a difficult task, so three variables measuring various aspects of social support were examined and considered. Social connectedness includes conceptual understandings from both school belongingness and peer support. Most notably, school belongingness reflects how strongly someone feels connected to the school environment, while social connectedness captures how connected someone feels to others more broadly (Marksteiner et al., 2019). Peer support refers to how supported someone feels by their friends

and peers (Zheng et al., 2024). As the present study will be examining support within a school context, social connectedness presents as the best measure to describe the current social state of our high school students. The present research aims to capture a current picture of how students are doing both academically and socially following the implementation of the cell phone ban. Academic self-concept and social connectedness have been identified as our outcome measures.

Decades of research suggests that personality influences various outcomes and this remains true for student populations. Several Big Five traits have been identified as being important for academic success including openness, conscientiousness, agreeableness, and extraversion, while openness, agreeableness, and extraversion stand out as being essential for perceived and actual social well-being (Asendorpf & Van Aken, 2003; Charoenkul & Chanchalor, 2021; Constantinou et al., 2024; Fu et al., 2024; Johannsen et al., 2024; Lounsbury et al., 2003; Mueller et al., 2019). As such, openness to experience and agreeableness have been recognized as the two key traits that most strongly reflect the academic achievement and social connectedness the EECD aims to cultivate in students. Research supports these two variables as being associated with both academic self-concept and social connectedness (Audet et al., 2023; Bohndick et al., 2025; Constantinou et al., 2024; Lounsbury et al., 2003). As mentioned prior, resilience is important for bouncing back following adversity (Karairmak & Figley, 2017). Resilient coping adds intention and action to the definition of resilience which provides a more holistic view of how we deal with challenging scenarios, stress, and change.

Despite considerable research on these traits being correlational in nature, these variables have been found to be part of models that both predict and explain significant amounts of variance in academic self-concept, social connectedness, and other related constructs as described above. Their demonstrated significance in other regression models supports their

inclusion in the present study. The aim of the present study is to examine how agreeableness, openness to experience, and resilient coping interact to describe current academic and social outcomes for students. These traits have not yet been explored together, let alone within the context of the cell phone ban in Nova Scotian public schools.

In summary, academic self-concept and social connectedness are two constructs which have the potential to provide insight into how successful the province-wide cell phone ban in Nova Scotia has been. Examining how openness, agreeableness, and resilient coping may be predictive of these two constructs can help us better understand how to help students through both small- and wide-scale change. Collecting the above information may capture a picture of how Nova Scotian high school students are currently doing in terms of academics and social well-being in the wake of this new directive. It may also provide context for the province's current academic assessment results.

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CHAPTER TWO

Exploring Predictors of Academic Self-Concept and Social Connectedness in High School Students Impacted by The Cell Phone Ban in Nova Scotia

The Nova Scotia Department of Education and Early Childhood Development (EECD) introduced a province-wide directive that removed cell phones from public school classrooms prior to the start of the 2024-2025 academic year. They indicated that the ban was intended to target two areas of growth: academic achievement and social well-being (Education and Early Childhood Development, 2024). At present, little is known about how successful the ban has been at promoting better outcomes in these two areas. The current study aims to identify how Nova Scotian high school students are doing both academically (as measured by academic self-concept) and socially (as measured by social connectedness) following the implementation of the province-wide cell phone ban. Furthermore, various aspects of personality, such as agreeableness, openness to experience, and resilient coping, and their association to academic self-concept and social connectedness will be explored. Specifically, this research looks to better understand how personality may promote better academic and social outcomes during a substantial change in the learning environment.

Academic Self-Concept

Academic self-concept refers to how one thinks of their abilities and potential to succeed academically (Shavelson et al., 1976). Research suggests that there is a positive association between academic self-concept and academic achievement, with students with stronger academic self-concepts doing better academically and having higher grades (Valentine et al., 2004).

In addition to higher grades, academic self-concept has been found to be associated with other variables that promote academic success. High school students with stronger academic self-concepts tend to be more engaged during classroom instruction (Schnitzler et al., 2021). Schnitzler and colleagues concluded that students who raise their hands more frequently to respond to questions and participate in class discussion had stronger self-concepts than classmates who did so less frequently (Schnitzler et al., 2021). These students were also more likely to have better grades than those who demonstrated more disengaged patterns of participation (Schnitzler et al., 2021).

Beyond the classroom, academic self-concept is predictive of better future educational attainment (Guay et al., 2004). If students believe in their ability to do well, they are more likely to pursue post-secondary education. Furthermore, academic self-concept was found to be a better predictor of educational attainment than prior academic achievement, which demonstrates its value as an academic construct (Guay et al., 2004). Not only is broad academic self-concept related to academic attainment, so are subject-specific self-concepts. Marsh and colleagues determined that math self-concept (i.e., academic self-concept for math independent of their broad academic self-concept) in grade ten had a positive significant effect on both how many math units a student went on to complete by the end of their high school education and the highest math course they finished (Marsh, 2023). These findings emphasize that the academic self-concepts students develop and hold during their high school academic careers shape how they engage with both specific subjects and academics more broadly throughout the remainder of their education.

Promoting Strong Academic Self-Concept

Supportive teacher-student interactions and relationships are important for both academic self-concept development and overall academic success (Verschueren & Koomen, 2012; Roorda et al., 2017). Strong relationships promote school engagement and participation while individualized programming and support, and the removal of implicit and explicit stigmatization ensures access to academic material (Rickert & Skinner, 2024; Krämer et al., 2021; Kloomok & Cosden, 1994). Within the context of the cell phone ban, removing cell phones from the classroom has the potential to promote teacher-student interaction and in turn, support the development of stronger academic self-concepts.

Social Connectedness

Social connectedness refers to the extent in which individuals perceive themselves as being connected to those around them (Do & Widom, 2025). Commonly conceptualized as being composed of two distinct components – the objective and subjective – this construct has become increasingly important to understanding how meaningful relationships are recognized. The objective component refers to the frequency of interactions one has with other people, whereas the subjective component more so reflects how meaningful one perceives their interactions to be. Although both components contribute to overall connectedness, subjective connectedness has been found to be more strongly associated with well-being (Holt-Lunstad et al., 2010). More specifically, adolescents who have relatively few social interactions may report higher levels of social connectedness if they perceive those interactions as being more meaningful, whereas those who interact with others more often may experience less feelings of connectedness if they perceive their interactions as being superficial or surface-level.

Within the school setting, social connectedness has been found to be associated with better student well-being, fewer feelings of loneliness, and stronger peer relationships (Jose et

al., 2012; Lan et al., 2023). Furthermore, Lan and colleagues determined that social connectedness mediated the relationship between peer support, loneliness, and academic pressure, suggesting that supportive peer relationships contribute to positive educational outcomes by fostering a sense of connection among students (Lan et al., 2023). Research also suggests that stronger feelings of social connectedness serve as a buffer against the negative effects of bullying and peer victimization (Dow-Fleisner et al., 2023). This finding suggests that social connectedness may be related to resiliency in the face of adversity.

Concerns regarding adolescent social connectedness have increased as recent evidence suggests that social connectedness has experienced a steep decline over the past several years. Read and colleagues determined that feelings of school belongingness, number of close friends, and loneliness all deteriorated by approximately 10% from 2017 to 2021 (Read et al., 2024). Despite having increased access to their peers by means of social media and cell phone use, high school students are feeling less connected to those around them. Further complicating matters is the finding that more frequent cell phone and social media use is associated with poorer mental health outcomes in adolescents (Twenge, 2017). The removal of cell phones from the classroom presents an opportunity for students to interact with each other more directly and in more meaningful ways, which in turn will likely promote stronger feelings of social connectedness and subsequent academic success.

Agreeableness

Agreeableness is one of the Big Five personality traits, which are five salient characteristics present in all people to varying degrees. Those who are high in agreeableness tend to be kind and compassionate, cooperative and easy going, and willing to help those around

them, while those who are low in agreeableness tend to be more reluctant to help others, are often more difficult to engage with, and are less easy going (Sheese & Graziano, 2004).

Among adolescents, agreeableness has been consistently associated with both academic and social outcomes, suggesting that it is an important trait for promoting success in these areas (Asendorpf & Van Aken, 2003; Charoenkul & Chanchalor, 2021; Constantinou et al., 2024; Fu et al., 2024; Johannsen et al., 2024; Mueller et al., 2019). Furthermore, students who are high in agreeableness tend to have more collaborative personalities, making them more willing to engage with peers during academic assignments and projects, and more likely to demonstrate an eagerness to engage with course content (Constantinou et al., 2024; Johannsen et al., 2024).

One mechanism through which agreeableness has been found to contribute to academic self-concept is by promoting greater learning engagement in the classroom (Charoenkul & Chanchalor, 2021). Charoenkul and Chanchalor determined that students demonstrating high levels of information-seeking behavior (ISB) were more likely to actively participate in the classroom by paying attention to instruction, asking questions, engaging in classroom discussions, and seeking out additional opportunities to enhance their understanding. Agreeableness was found to predict both ISB and overall academic achievement, suggesting that students who have high agreeableness are more likely to engage in behaviors that facilitate their learning and academic success (Charoenkul & Chanchalor, 2021). When students experience academic success, they are likely to have more positive beliefs about their potential to succeed. This suggests that agreeableness supports the development of stronger academic self-concepts through increased engagement and achievement.

Research also suggests that agreeableness is associated with social connectedness, with particularly strong findings linked to psychological sense of community (PSC). PSC refers to an

individual's perceived sense of belonging and connection to others within their environment (Lounsbury et al., 2003). Among high school students, agreeableness has been found to account for more variance in PSC than any other Big Five trait, suggesting that adolescents who are more cooperative, empathetic, and relationship-oriented are also more likely to develop meaningful social connections within their school communities (Lounsbury et al., 2003).

PSC also has established links to student well-being when examined through the lens of online learning. Knott and Baker determined that PSC accounted for more variance in well-being, but only for students who were participating in primarily online learning (Knott & Baker, 2023). This finding suggests that PSC is important for well-being, especially when there is a degree of online presence or engagement. Furthermore, stronger PSC and social connectedness can be viewed as protective factors for youth mental health when the mode of engagement is through online platforms (Knott & Baker, 2023).

To summarize, pre-ban research indicates that agreeableness has positive associations with both academic and social success. Within the context of the cell phone ban, students who are higher in agreeableness are likely more equipped to navigate the changes to the school environment brought on by the ban.

Openness to Experience

Openness to experience is also a Big Five trait. Those who are high in openness tend to be more willing to explore unfamiliar situations, consider new perspectives, and adapt to changing environments, while those who are low in openness tend to exhibit the opposite traits; they are more reserved and less likely to adapt to change (Morales-Vives et al., 2020).

Research has consistently demonstrated that openness is associated with academic outcomes. More specifically, openness has been linked to greater interest in learning, higher levels of classroom engagement, and more positive educational experiences (Audet et al., 2023; Morales-Vives et al., 2020; Zhang et al., 2019). Although evidence for a direct relationship between openness and academic achievement is mixed, research suggests that the trait may influence academic success indirectly through its relation to cognitive and motivational processes. For example, Morales-Vives and colleagues determined that openness was strongly associated with intelligence, which emerged as the strongest predictor of academic achievement in their adolescent population (Morales-Vives et al., 2020).

In terms of academic self-concept, Hausen and colleagues reported that openness was positively associated with general academic self-concept, suggesting that students who are high in openness may hold more positive beliefs about their academic abilities (Hausen et al., 2022). This finding could be attributed to the willingness to adapt most commonly associated with the openness trait. This topic was heavily explored during the Covid-19 pandemic and research supports openness being associated with adaptability during times of significant change (Audet et al., 2023). Audet and colleagues determined that openness predicted higher levels of engagement with the online learning semesters during the pandemic. Furthermore, this relationship was mediated by intrinsic motivation, indicating that students who were higher in openness remained engaged because they were more intrinsically motivated to participate despite substantial changes to instructional delivery. This suggests that openness may facilitate successful adaptation during periods of educational change.

Openness has also been linked to student's social well-being and connectedness. Bohndick and colleagues determined that students with higher levels of openness reported a

stronger sense of belonging over the course of the academic year (Bohndick et al., 2025). Furthermore, students whose close classmates were also higher in openness experienced greater belonging themselves, suggesting that openness contributes not only to individual adjustment but also to the development of supportive peer relationships (Bohndick et al., 2025). Similar findings have been reported in high school populations, with openness being positively associated with psychological sense of community (Lounsbury et al., 2003). Together, these studies indicate that openness is associated with greater social connectedness and belonging, both of which are recognized as important contributors to student well-being and academic success. In considering these findings and how they relate to the cell phone ban, it is evident that students who are high in openness and who therefore are more willing to adjust to change will likely have an easier time adapting to the shift in their learning environment resulting from the ban.

Resilient Coping

Resilient coping refers to an individual's capacity to successfully adapt when faced with adversity, stress, or significant change by modifying their thoughts, emotions, and behaviors (Kararmak & Figley, 2017). Although resilience is often viewed as a response to challenging circumstances, researchers have also suggested that resilient coping represents a relatively stable individual characteristic that influences how people manage adversity across a variety of situations (Kararmak & Figley, 2017).

Research suggests that resilient coping is associated with positive academic outcomes. For example, research coming out of the Covid-19 pandemic emphasized that resilience promotes students' ability to remain engaged and academically successful during periods of disruption to their educational experience (Wang et al., 2025). Wang and colleagues determined that resilience was positively associated with online learning performance and negatively

associated with academic burnout suggesting that resilient students are better able to maintain engagement despite substantial change to their learning environment (Wang et al., 2025).

Furthermore, students with higher resilience have been found to demonstrate fewer negative emotional responses to academic challenges, whereas students lower in resilience expressed greater frustration, rumination, and perceptions of limited teacher support (Hall et al., 2022).

These findings suggest that resilient coping not only supports academic persistence but also influences how students interpret and respond to educational challenges.

In terms of academic self-concept, resilient coping has been found to be significantly positively related to academic self-concept (Haktanir et al., 2021). This means that students who cope more effectively when faced with adversity also tend to have more positive beliefs about their academic abilities. Resilient coping may also be viewed as a protective factor for academic self-concept, as resilient students tend to navigate and adapt to changing circumstances better than those with low resilient coping which supports their overall academic success.

Resilient coping has also been linked to positive social outcomes. Planert and colleagues determined that resilience was positively associated with school belongingness in upper elementary students, with stronger feelings of resilience corresponding to greater perceptions of trust, support, and comfort within the school environment (Planert et al., 2022). Research has also demonstrated that resilience can buffer the negative effects of adverse social experiences. For example, Jiang and colleagues found that resilience moderated the relationship between an internalized victim mindset after experiencing bullying and school truancy, with less resilient students being more likely to disengage from school (Jiang et al., 2025). Although this study did not directly examine social connectedness, it emphasizes that resilient coping can be a protective

factor against challenging interpersonal experiences. Subsequently, this buffer effect may promote social connectedness and school belongingness in these students.

Objectives

Research supports academic self-concept and social connectedness being essential to promoting academic and social success within the school environment. Removing cell phones from public school classrooms reflects a significant change to the learning environment and the EECD hopes that this change will promote positive academic and social outcomes in students across the province. Given agreeableness, openness to experience, and resilient coping have well established connections to academic and social success – both directly and indirectly through relationships to other related variables – then it is worth investigating whether or not these traits play a role in high school students’ success in these two areas following this shift within the school system. As little is known about how successful the ban has been, the current research study aims to identify how Nova Scotian high school students are doing both academically (as measured by academic self-concept) and socially (as measured by social connectedness) following the implementation of the province-wide cell phone ban. Furthermore, various aspects of personality, including agreeableness, openness to experience, and resilient coping, will be explored to determine their role in promoting academic and social success. This research aims to better understand how personality may promote better academic and social outcomes following a substantial change to the learning environment.

Given agreeableness, openness to experience, and resilient coping have established connections to positive academic and social outcomes, it is suggested that these traits collectively are supportive of student academic self-concept and social connectedness in Nova Scotian high school students following the implementation of the province-wide cell phone ban in public

schools. As such, the following hypotheses were identified: 1) higher levels of agreeableness, openness to experience, and resilient coping (alone and together) would be associated with stronger academic self-concepts; and 2) higher levels of agreeableness, openness to experience, and resilient coping (alone and together) would be associated with higher levels of social connectedness.

Methods

The current study followed a quantitative correlational design using an online survey to determine significant associations between academic self-concept, social connectedness, and various personality traits. Multiple regression analyses were performed to assess the relations between the predictor variables and outcome variables, and post-hoc testing was completed to examine both high and low academic self-concept and social connectedness scores using a median split.

Participants

To participate in the study, participants had to be a grade 10, 11, or 12 high school student in Nova Scotia and aged 16 or older. To determine the sample size needed to avoid Type II errors, it was determined through G-Power (3 predictor variables) that a sample size of 48 participants was necessary for a power of .80 (meaning 80% chance of detecting the effect). One hundred thirteen survey responses were collected, with 61 of them unable to be used due to exiting the survey early before responding to questionnaire data, not consenting to participate, or not meeting eligibility criteria. This left 52 useable survey responses for analysis. As such, this study had sufficient power for the multiple regressions that were conducted. Of the 52 participants in the sample, sixteen participants identified as male, 33 as female, one as

transgender, one as non-binary, and one as other. The majority of the sample were students in grade 12 (61.5%), while 34.6% were in grade 11, and 3.9% in grade 10. Furthermore, 55.8% of participants were aged 17, with 26.9% aged 16, and 17.3% aged 18. Overall, the majority of the sample is made up of 17-year-old, female, grade 12 students.

Procedure

Recruitment for the study occurred through social media, posters shared in library, recreation, and community spaces, and word of mouth. The limitations of convenience sampling accompanied with this method of data collection are acknowledged; the sample is inherently non-random and minimally reflective of the broader student population as the sample is primarily made up of female, grade 12 students. The limitations of self-report measures were also considered. Students may interpret items differently, be influenced by prior subjective perceptions of their experiences, and may respond in socially desirable ways. As such, these limitations should be considered when evaluating the findings of the present study.

When the survey questionnaire was first accessed, participants were brought to a welcome page that asked them to indicate if they were under sixteen. Those that indicated they were sixteen or older were allowed to continue to the survey, while those who were under sixteen were thanked for considering participating and redirected out of the webpage. Informed consent was obtained from eligible participants at the beginning of the survey, and participants were advised of their right to withdraw from the study at any time throughout their participation. LimeSurvey was used for data collection. Raw data was reverse scored as necessary and then summed or averaged based on scale scoring requirements. Statistical analysis was performed using IBM Statistical Package for the Social Sciences (SPSS) Statistics software for Mac, Version 30.0 (IBM Corp., 2024).

Analysis of Assumptions

Before correlational analyses and multiple regressions were performed, several plots and tests were examined to test assumptions. Descriptive statistics, probability plots, histograms, scatterplots, and Levene's test were used. Correlations were examined between all variables to test for multicollinearity of predictor variables, and all correlations were less than .70 indicating that the variables are distinct from one another. No violations were noted and all assumptions were met. Therefore, all variables were within the normal range for a naturally occurring data set.

Measures

Academic Self-Concept

To measure academic self-concept, the Academic Self-Concept Scale (ASCS) was used. This measure includes 40 items rated on a scale from 1 (*strongly disagree*) to 4 (*strongly agree*). Participants were asked to indicate their level of agreement or disagreement with several statements. Scoring instructions required several items to be reverse scored before scores across all items being added up to give a total academic self-concept score. Higher scores were associated with higher academic self-concepts, and lower scores with lower academic self-concepts. The word 'major' was changed to 'this year' in items 24 and 39 to reflect that the scale was completed by high school students. For example, item 24 was changed from 'I have doubts that I will do well in my major' to 'I have doubts that I will do well this year'. A reliability analysis was conducted following data collection to ensure that this change did not impact the reliability of the scale ($\alpha = .96$). The Academic Self-Concept Scale has demonstrated high reliability and validity (Reynolds, 1988). Specifically, evidence of convergent validity was found

in correlations between the measure and grade point average (GPA), and scores of overall self-concept as measured by the Rosenberg Self-Esteem Scale, while evidence of discriminant validity were found in correlations between the measure and social desirability as measured by the Marlowe-Crowne Social Desirability Scale. A confirmatory factor analysis has been completed, and the results supported a seven-factor model representing effort, study habits/organizational self-perceptions, peer evaluation of academic ability, self-confidence, school satisfaction, self-doubt, and self-evaluation. This suggests that the scale has strong construct validity. Furthermore, the scale was able to find differences in academic self-concept between year levels (Reynolds, 1988).

Social Connectedness

Social connectedness was assessed with the Social Connectedness Scale-Revised (SCS-R). This 20-item scale is made up of statements of which participants need to indicate their level of agreement using a six-point Likert scale from 1 (*strongly disagree*) to 6 (*strongly agree*). Participants were asked to consider their behavior, thoughts, and feelings at school within the context of the cell phone ban when responding to items. Scoring instructions required several items be reverse scored before being added up to give a total social connectedness score, with higher scores indicating higher levels of social connectedness and lower scores indicating lower levels of social connectedness. The scale evidences good internal reliability (Lee et al., 2001). To demonstrate convergent validity, significant correlations between social connectedness and loneliness (UCLA Loneliness Scale), collective self-esteem (Collective Self-Esteem Scale), independent self-construal (Self-Construal Scale), social avoidance and distress (SADS) were found. In support of discriminant validity, the scale was found to not be significantly correlated with measures of interdependent self-construal (Self-Construal Scale), collective identity

(Collective Self-Esteem Scale), somatization, obsessive-compulsiveness, phobic anxiety (BSI), and interpersonal responsibility and controlling behaviors (IIP). A confirmatory factor analysis was used to cross-validate the factor structure of the SCS-R to support construct validity. Overall, the Social Connectedness Scale – Revised demonstrates strong reliability and validity (Lee et al., 2001).

Agreeableness

Agreeableness was measured using the agreeableness subscale of the HEXACO-PI-R. This ten-item subscale required participants to indicate their level of agreement with various statements on a five-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*). The subscale is composed of four subfactors that feed into an overall agreeableness score; the four subfactors are forgiveness, gentleness, flexibility, and patience. Scoring instructions required items 9, 15, 21, and 57 to be reverse scored before item scores were added up to give an overall agreeableness score, with higher scores being indicative of higher levels of agreeableness, and lower scores of lower levels of agreeableness. The HEXACO-PI-R has demonstrated strong reliability with moderate-to-high internal consistency across versions, ratings, and dimensions (Moshagen et al., 2019). Self- and observer-rating agreement is also high suggesting that the method of data collection makes little difference to item response. Furthermore, the dimensions measured by the HEXACO were determined to be weakly correlated with each other, and therefore approximate orthogonality. Overall, the HEXACO-PI-R evidences strong reliability and validity (Moshagen et al., 2019).

Openness to Experience

Openness to experience was measured by the openness to experience subscale of the HEXACO-PI-R. Similar to the agreeableness subscale, this ten-item scale will be rated using a five-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*). The openness subscale has four subfactors that feed into the overall openness score; these are aesthetic appreciation, inquisitiveness, creativity, and unconventionality. Scoring instructions required some items to be reverse scored before being totaled to give an overall openness to experience score, with higher scores being associated with higher levels of openness, and lower scores being associated with lower levels of openness.

Resilient Coping

Resilient coping was measured using the Brief Resilient Coping Scale (BRCS). This scale is four items in length and requires participants to indicate how well the item statements describe their behavior and actions using a five-point Likert scale from 1 (*does not describe them*) to 5 (*describes them very well*). Scoring instructions require item scores to be totaled to give an overall resilient coping score. The BRCS has demonstrated good internal consistency and test-retest reliability (Sinclair & Wallston, 2004). Convergent validity of the BRCS is evidenced by significant correlations with personal coping resources, pain coping behaviors, and psychological well-being. Furthermore, scores on the BRCS were predictive of outcomes following a cognitive-behavioral intervention, demonstrating that the scale indeed measures an individual's ability to cope that impacts overall psychological well-being. Overall, the BRCS has evidenced good reliability and validity (Sinclair & Wallston, 2004).

Results

Participant responses were used to determine how levels of agreeableness, openness to experience, and resilient coping are related to levels of academic self-concept and social connectedness in Nova Scotian high school students impacted by the province-wide cell phone ban in public schools. Results were based on a set of five online questionnaires, including the ASCS, SCS-R, HEXACO-PI-R Agreeableness Subscale, HEXACO-PI-R Openness to Experience Subscale, and the BRCS. Prior to data analysis, all variables were examined for normality using histograms, and all variables were found to be within normality expectations. Skewness and kurtosis were also examined with all variables falling within expected ranges (between -1 and 1) except resilient coping scores, which had a kurtosis value of 1.74. However, when the histogram was examined, the scores approximate a normal distribution. As such, nothing needed to be done to address this explicitly as the normality assumption was met, and resilient coping was considered normally distributed. Descriptive statistics for each variable are outlined in Table 1. Not included in Table 1 are age, where 14 participants were 16, 29 were 17, and 9 were 18, grade level, where 2 participants were in grade 10, 18 were in grade 11, and 32 were in grade 12, and gender, where 16 participants identified as male, 33 as female, 1 as transgender, 1 as non-binary, and 1 as other.

Correlations

Pearson correlations were conducted to look for relationships between each variable. Results indicated that resilient coping and academic self-concept were positively correlated with each other, $r(50) = .32, p = .02$. Other positive correlations include agreeableness and resilient coping, $r(50) = .29, p = .04$, agreeableness and academic self-concept, $r(50) = .38, p = .006$, agreeableness and social connectedness, $r(50) = .37, p = .006$, resilient coping and social connectedness, $r(50) = .46, p < .001$, and academic self-concept and social connectedness, $r(50)$

= .31, $p = .03$. Furthermore, gender was negatively correlated with academic self-concept, $r(50) = -.33$, $p = .02$, and positively correlated with openness, $r(50) = .37$, $p = .007$. Grade level was also found to be positively correlated with both openness to experience, $r(50) = .31$, $p = .02$, and resilient coping, $r(50) = .31$, $p = .03$. There were no other significant correlations between variables. Correlation results are also reported in Table 2.

T-Tests

Independent sample t-tests were used to examine quantitative differences between groups within the sample. A significant difference in academic self-concept was found between those who are in grade 11 ($M = 99.89$, $SD = 24.01$) and those who are in grade 12 ($M = 112.50$, $SD = 16.18$), $t(48) = -2.22$, $p = .03$. Furthermore, a significant difference in academic self-concept was also found between men ($M = 120.44$, $SD = 16.25$) and women ($M = 102.03$, $SD = 20.70$), $t(47) = 3.12$, $p = .003$. No other quantitative differences between groups were found.

Regression Analyses

A multiple linear regression (enter method) using agreeableness, openness to experience, and resilient coping as predictors of academic self-concept in Nova Scotian high school students impacted by the province-wide cell phone ban in schools was conducted. Results indicated that 16.3% of the variance in academic self-concept can be accounted for by agreeableness, openness, and resilient coping, collectively, $F(3,48) = 4.32$, $p = .009$. A second regression analyses was conducted (enter method) using agreeableness, openness, and resilient coping as predictors of social connectedness in the same population. The results of the analysis indicated that 26.3% of the variance in social connectedness can be accounted for by agreeableness, openness, and

resilient coping, collectively, $F(3,48) = 7.07, p < .001$. Regression results are also reported in Tables 3, 4, and 5 for convenience.

Qualitative Question Themes

Participants were asked to share their thoughts and feelings regarding the cell phone ban, with qualitative questions examined to look for common themes across responses. While there were several participants who indicated that they disagreed with the ban and felt as if it had no meaningful benefit, the majority suggested that they did note improvements in overall attention and engagement during class time, in addition to them seeing better grades as a result. However, several participants explained that they felt it unfairly impacted students who were already maintaining a good work-phone balance in the classroom. Furthermore, numerous students mentioned that they now have nothing to do when they finish their work earlier and their peers are still completing class work. Concerns regarding communication during emergency situations also came up several times.

When asked to indicate whether or not they talk face-to-face more with their peers since the implementation of the cell phone ban, the majority of participants indicated that they have seen no change in the amount of direct conversation they have with peers. While a few participants did mention that they speak to their classmates more at school, some alluded to increased phone use (and minimal face-to-face conversations) during break times to compensate for their limited phone use in class.

Finally, participants were asked if they felt more connected to their peers following the implementation of the cell phone ban. There were mixed responses to this question, with there being approximately an even split between those indicating they felt more connected and those

who feel no difference in their connectedness. Some participants noted that they have made new friendships since the ban was put in place and that they now experience more meaningful relationships with their peers. Others emphasized that the removal of phones from the classroom has made their social anxiety worse and that they now have more difficulty engaging with their classmates.

Post-Hoc Analyses

To examine differences in students with high and low academic self-concepts and social connectedness, a median split was conducted for both variables to form groupings. Pearson correlations were computed to look for relationships between variables. It was determined that strong academic self-concepts are positively correlated with high levels of social connectedness, $r(50) = .31, p = .03$. Strong academic self-concepts were also negatively correlated with gender, $r(50) = -.31, p = .02$. Furthermore, high levels of social connectedness were positively correlated with both agreeableness, $r(50) = .35, p = .01$, and resilient coping, $r(50) = .38, p = .006$. High levels of social connectedness were also negatively correlated with gender, $r(50) = -.31, p = .02$. Independent sample t-tests were used to examine quantitative differences between these new groupings and other variables of interest. A significant difference in agreeableness was found between students with high social connectedness ($M = 3.38, SD = .44$) and low social connectedness ($M = 3.01, SD = .56$), $t(50) = -2.62, p = .01$. A significant difference in resilient coping was also found between students with high social connectedness ($M = 15.85, SD = 1.80$) and low social connectedness ($M = 14.12, SD = 2.47$), $t(50) = -2.88, p = .006$. A significant difference in academic self-concept was found between males and females, with females having weaker academic self-concepts ($M = 2.04, SD = .82$) and males having stronger academic self-concepts ($M = 1.58, SD = .58$), $t(50) = 2.34, p = .02$. Lastly, a significant difference in social

connectedness was found between males and females, with females having lower levels of social connectedness ($M = 2.04$, $SD = .87$) and males having higher levels of social connectedness ($M = 1.58$, $SD = .50$), $t(50) = 2.34$, $p = .02$.

Discussion

The current study investigated how Nova Scotian high school students are doing both academically (as measured by academic self-concept) and socially (as measured by social connectedness) following the implementation of the province-wide cell phone ban in public schools. As the cell phone ban represents a substantial change in the learning environment, the present study aimed to examine how personality may promote better academic and social outcomes for students.

As hypothesized, agreeableness, openness to experience, and resilient coping were found to predict academic self-concept in high school students who have been affected by the cell phone ban. More specifically, these three traits collectively explain 16% of students' academic self-concept. Within the context of the cell phone ban, student personality is predictive of better academic self-concept during times of academic adversity and change. This finding is consistent with previous studies that suggest that the Big Five traits are related to better academic outcomes and performance, with openness emerging as one of the strongest predictors of academic self-concept (Johannsen et al., 2024; Spengler et al., 2016). More specifically, Johannsen and colleagues determined that higher levels of openness moderated the relationship between German self-concept (i.e., language-specific academic self-concept) and German grades; openness also was found to moderate the association between math self-concept and math grades (Johannsen et al., 2024). Furthermore, higher levels of agreeableness predicted better overall

math grades (Johannsen et al., 2024). These findings suggest that these personality traits serve as a resource for high academic self-concept students to draw from to perform better academically.

Research also supports a relationship between resilience and academic performance (Carroza-Pacheco et al., 2025). Using the School Resilience Scale (SRS), Carroza-Pacheco and colleagues determined that all resilience factors in the SRS were associated (i.e., not causally related) with academic achievement (operationally defined as student grades in this study) (Carroza-Pacheco et al., 2025). In support of an ecological interpretation of resilience, Supervía and colleagues emphasize the importance of self-efficacy as a mediating variable for the relationship between resilience and academic performance (Supervía et al., 2022). While conceptually distinct from academic self-concept, academic self-efficacy is more task specific and deals primarily with capability, while academic self-concept captures broader ability beliefs (Carroza-Pacheco et al., 2025). Furthermore, correlational research has determined that academic self-concept is positively associated with academic self-efficacy, which suggests that stronger academic self-concept is supportive of self-efficacy beliefs (Ferla et al., 2009). As such, these findings collectively suggest that students pull from their inner psychological resources (i.e., self-concept) to promote resilience and, in turn, stronger academic outcomes. Paired with the findings from the present study, a reciprocal effect between resilient coping and academic self-concept could be argued. Nonetheless, resilient coping remains predictive of academic self-concept when paired with agreeableness and openness during times of significant change within the academic environment.

The hypothesis that higher levels of agreeableness, openness, and resilient coping (alone and together) would be associated with social connectedness was also supported by the results of the current study, with the three traits collectively explaining 26% of students' social

connectedness. This means that student personality is predictive of stronger social connectedness during times of change within the academic environment. The literature suggests that this finding is aligned with prior research. A substantial body of research examining social connectedness focuses and relates to sense of belonging. Stubblebine and colleagues determined that agreeableness was positively associated with sense of belonging in first year college students who have recently transitioned to post-secondary, while Bohndick and her team concluded that all Big Five traits were associated with sense of belonging in a similar population (Stubblebine et al., 2024; Bohndick et al., 2025). These findings do not mean that agreeableness (or other Big Five traits) directly lead to a stronger sense of belonging; instead, this suggests that higher levels of these traits are more likely to be seen in those with a stronger sense of belonging. While transitioning to post-secondary education reflects more of an external shift in the learning environment, it remains a significant change, nonetheless.

Resilience and resilient coping are closely associated with social connectedness, and research suggests that this relationship is especially important during times of adversity and significant change (Gizdic et al., 2023; Nitschke et al., 2021). Resilient coping promotes social connectedness by supporting overall well-being, which makes it easier for students to make meaningful connections. Conversely, social connectedness can be viewed as a buffer against adversity, which promotes resilient coping (Gizdic et al., 2023; Nitschke et al., 2021). As such, the two are connected by a bi-directional relationship.

Social connectedness is especially relevant within the school context both in terms of actualized academic achievement and factors that influence overall academic success. High school students who reported stronger feelings of social connectedness had fewer disciplinary referrals and failed courses, while those who reported more meaningful relationships were late

less often and missed fewer classes than those who had few strong connections at school (Churchill et al., 2021). Social connectedness has also been found to mediate the relationship between academic pressure, peer support, and sense of loneliness, suggesting that this variable is important for overall academic and psychological well-being (Lan et al., 2023).

The present study revealed several significant correlations between variables of interest. Agreeableness was positively associated with resilient coping. This finding aligns with the literature that suggests that resilient students tend to have higher levels of all Big Five traits, including agreeableness (Mammadov & Tozoglu, 2023). Resilient students also reported higher overall life satisfaction, and were more likely to prefer using adaptive problem-solving as a coping strategy (Mammadov & Tozoglu, 2023). Academic self-concept was positively correlated with social connectedness. Research indicates that school belongingness may explain the relationship between these two variables, with school belongingness being a mediating factor between perceived academic competence and connectedness (Sebokova et al., 2018). This emphasizes the importance of a supportive learning environment for academic success and overall well-being.

Grade level was correlated with both openness to experience and resilient coping, with higher grade levels being associated with high levels of both variables. As high school students progress through secondary education and approach post-secondary, opportunities to explore the world around them become more apparent. The transition to adulthood comes with more independence and agency so it is not surprising that openness tends to be higher as students get closer to post-secondary education. Similarly, as students experience academic success, begin actualizing their goals, and navigate challenges successfully, the perception of their ability to cope effectively is likely to become stronger. Again, with the approaching transition to post-

secondary, students are likely to be seeing their efforts rewarded and, as such, resilient coping may be higher.

Group differences in academic self-concept were found between those in grade 11 and those in grade 12, with grade 12 students having stronger academic self-concepts. As mentioned before, grade 12 students are more likely to experience the outcome of their hard work, whether that be from being accepted into post-secondary institutions, receiving scholarships, or other academic accolades. The result of their efforts are likely to enhance their academic self-concepts, supporting the group difference to grade 11's identified in the current study. This group difference has been replicated in other populations (Quiñarejo, 2026). Finally, results from the present study also indicated that there is a significant difference in academic self-concept between men and women, with men having stronger academic self-concepts. This finding is aligned with prior literature on the topic (Jaafar et al., 2025).

Current Status of Nova Scotia High School Students

One of the objectives of this study was to evaluate how Nova Scotian high school students are doing both academically and socially following the implementation of the province-wide cell phone ban in public schools. The findings from this study indicate that while Nova Scotian high school students report varying degrees of improvements in attention, engagement, grades, and peer interaction, they quantitatively have strong academic self-concepts and social connectedness. This means that students both think highly of their academic skills and their ability to succeed, and feel highly connected to their peers and larger school environment. Considering that the EECD emphasized that removing phones from schools would lead to better academic and social outcomes, and despite mixed reviews from students, the current findings align with what they hoped to see. As the present study did not collect pre-ban data, and

therefore did not include a formal comparison group, it is difficult to conclude whether students have experienced academic and social gains as a result of the ban. However, it is likely that the cell phone ban was not harmful to how students perceive their academic abilities or the degree of social connection they feel.

Several participants expressed an overall satisfaction with the ban but expressed concerns with policy enforcement, disciplinary action taken against students who were caught using their phones, and communication during emergency situations. Often citing that the ban unfairly impacted students who were already using their phones appropriately in class, some students suggested that a total ban on phone use was unnecessary and asserted that individual students bear responsibility to manage both their academics and phone use. Overall, most students indicated that they have not experienced more direct, face-to-face peer interaction, while approximately half feel more connected to their classmates.

Post-hoc analyses emphasized the importance of agreeableness for social connectedness. Not only were high levels of social connectedness positively correlated with agreeableness, but those with higher social connectedness had significantly higher levels of agreeableness. These findings suggest that agreeableness is an important trait for social success. Prior research points to agreeableness being positively associated with sense of belonging, especially during times of significant change to the academic environment (Stubblebine et al., 2024). The present study further supports agreeableness being meaningful to student social connectedness and well-being.

Resilient coping also emerged as a significantly relevant trait for social connectedness. Strong feelings of social connectedness were positively correlated with resilient coping. Furthermore, those with high social connectedness had significantly higher levels of resilient coping. Given the students in our population have recently had to navigate a large change to their

learning environment, these findings emphasize the importance of social connection and sense of belonging during times of adversity. Resilient coping promotes social connection by supporting overall well-being, while social connectedness acts as a buffer against adversity and in turn, promotes resilience (Gizdic et al., 2023; Nitschke et al., 2021). The findings from the present study reaffirm the importance of resilient coping for social connectedness, especially in times of adversity and change.

Implications for School Psychologists

School psychologists work within the education system to support students, teachers, and their families as they navigate the school environment. Understanding how students are currently doing and having a comprehensive appreciation for broad academic and social consistencies that may be at play can drive intervention planning. Furthermore, the identification of specific personality traits that predict and/or are associated with better academic and social outcomes can inform targeted support. While not intended to replace evidenced-based cognitive behavioral approaches, the findings from this study support the implementation of school-based interventions that target resilience in students (Cai et al., 2025). Cognitive behavioral therapies (CBT) are not necessary – and should not be – for every student, but depending on what other areas have been identified as areas for growth, agreeableness and openness are likely to be supported by CBT as a result of the focus on mindfulness, cognitive reappraisal and restructuring, and emotion regulation. This should be understood as an additional way CBT may be beneficial for student social and academic success, and not as a means to an end.

School psychologists practice within the Multi-Tiered Systems of Support (MTSS) model. To support students both academically and socially, psychologists can deliver service at all tiers to foster resilience and personality development to promote better overall learning

outcomes. At Tier 1, this may look like consultation with the school team and classroom teachers regarding activities and projects that target these traits. Conversely, the school psychologist themselves could provide class-wide teaching. At Tier 2, small group resilience interventions may be considered in order to support students who may be struggling academically and/or socially. Similarly, small group CBT could be provided if several students are having difficulty with anxiety or mood. This looks more or less the same at Tier 3 but with more intensity and one-on-one support. Furthermore, school psychologists are equipped to provide information and resources with their school communities and are encouraged to do so. While targeting these traits may not resolve widescale difficulties for students, understanding where they might support academic and social success is both relevant and comprehensive.

Finally, school communities change and grow, and experience a variety of challenges. The findings from this research project provide meaningful context and guidance for school psychologists to support students and school teams through change and adversity. The cell phone ban represents a shift in the learning environment and, as such, the community had to evolve with it and the results from this study reflect that. As noted earlier, understanding how personality promotes academic and social success in times of adversity is a resource school psychologists can pull from to support students both proactively and responsively. Furthermore, promoting resilient coping may be especially beneficial for enhancing student well-being and success. The information gained from this study serves to support a more comprehensive and holistic understanding of how school psychologists may support students and school communities at large.

Limitations and Future Directions

There are several limitations of the present study that should be considered. As mentioned earlier, the limitations of convenience sampling and self-report measures are acknowledged. Convenience sampling renders the sample inherently non-random and subsequently not reflective of the broader school population. Self-report measures are also prone to social desirability and interpretation variability. It is recommended that future research make use of more objective outcome measures.

Secondly, this project intended to gather information on high school students' academic achievement but was unable to access student grades. Instead, academic self-concept was used as a measure of academic success. It is important to note that there is likely not a one-to-one relationship between the two constructs and the potential variability should be acknowledged. Future research would benefit from examining whether or not personality is predictive of student grades within the context of a cell phone ban.

Thirdly, data was not collected prior to the cell phone ban and therefore, the present study lacks a true comparison group. This limits our ability to make definite conclusions about the impact that ban has had on student academic and social well-being. For areas of the world without current bans in place, it is hoped that data be collected both prior to implementation and after it has been in place for an extended period of time to allow comparison and track relevant outcomes. On a similar note, the present study captures data from a relatively homogeneous sample of Nova Scotian high school students. The sample is also primarily made up of female grade 12 students, while further limits the generalizability. It may be beneficial to look at a more varied sample in terms of both grade level and location.

Finally, it is worth mentioning that the cell phone ban has been implemented and enforced with considerable variability across schools in the province and in individual

classrooms. These inconsistencies have likely introduced considerable uncontrolled variance which should be considered when interpreting results from the present study. Future research may benefit from conducting similar projects in other areas of the world where cell phone bans have been implemented in schools to look for consistencies in academic and social outcomes for students.

Overall, longitudinal research using objective academic indicators, in other areas of the world and with multiple informants, would considerably add to our understanding of how personality influences academic and social outcomes during times of significant change to the learning environment.

Conclusion

The current study concluded that agreeableness, openness to experience, and resilient coping collectively account for approximately a quarter of the variance in both academic self-concept and social connectedness. These findings suggest that student personality is important for promoting academic and social success in students who have experienced a shift in their learning environment. Currently, the majority of high school students in our sample have strong academic self-concepts and social connectedness. Agreeableness and resilient coping emerged as especially relevant for social connectedness. Students with high levels of social connectedness had significantly higher agreeableness and resilient coping levels. School psychologists provide direct and indirect support for students who are experiencing difficulty within the school environment. Understanding how personality may predict and/or promote better academic and social outcomes for students is both relevant to the role and comprehensive for student care. School psychologists can support teachers and school teams through consultation and resource-sharing to promote resilience and well-being in students. Furthermore, school psychologists can

provide direct service at all tiers of the MTSS model in the form of class-wide teaching, small group service, or one-on-one intervention that fosters open-mindedness, positive thinking, and resilience. Overall, the present study brings attention the importance of personality and resilience in supporting academic and social success in times of challenge, change, and adversity within the school environment.

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Table 1*Summary of Variable Descriptives (N = 52)*

Variable	Min.	Max.	<i>M</i>	<i>SD</i>
Academic Self-Concept (ASCS)	51.00	141.00	107.81	20.75
Social Connectedness (SCS-R)	48.00	102.00	78.77	14.67
Agreeableness (HEXACO-PI-R Subscale)	1.70	4.10	3.19	.54
Openness to Experience (HEXACO-PI-R Subscale)	1.90	4.70	3.20	.58
Resilient Coping (BRCS)	8.00	19.00	14.98	2.31

Table 2*Pearson Correlations (N = 52)*

Variable	ASC	SC	Agr	Ope	RC	Grade	Age	Gender
ASC								
SC	.31*							
Agr	.38**	.37**						
Ope	.14	-.16	-.10					
RC	.32*	.46**	.29*	.13				
Grade	.26	-.11	.03	.31*	.31*			
Age	.05	-.18	-.10	.17	.27	.67**		
Gender	-.33*	-.27	-.13	.37*	-.03	.22	.16	

Note. ASC = academic self-concept. SC = social connectedness. Agr = agreeableness. Ope = openness to experience. RC = resilient coping. * Correlation is significant at the 0.05 level (2-tailed). ** Correlation is significant at the 0.01 level (2-tailed).

Table 3*Model Summaries for Multiple Regressions*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.461	.212	.163	18.980
2	.554	.306	.263	12.593

Note. Model 1 multiple regression criterion variable was academic self-concept; predictors were agreeableness, openness to experience, and resilient coping. Model 2 multiple regression criterion variable was social connectedness; predictors were agreeableness, openness to experience, and resilient coping.

Table 4*ANOVA Table for Multiple Regression Models*

Model 1	Sum of Squares	df	Mean Square	F	Sig.
Regression	4664.347	3	1554.782	4.316	.009
Residual	17291.730	48	360.244		
Total	21956.077	51			
Model 2					
Regression	3363.095	3	1121.032	7.069	< .001
Residual	7612.136	48	158.586		
Total	10975.231	51			

Note. Model 1 multiple regression criterion variable was academic self-concept; predictors were agreeableness, openness to experience, and resilient coping. Model 2 multiple regression criterion variable was social connectedness; predictors were agreeableness, openness to experience, and resilient coping. Sig = significance.

Table 5*Coefficients for Multiple Regression Models*

Model 1	Unstandardized B	Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
(Constant)	22.464	25.138		.894	.376
AGREEABLENESS	12.890	5.228	.333	2.466	.017
OPENNESS	5.176	4.634	.146	1.117	.270
RESILIENT COPING	1.845	1.217	.206	1.516	.136
Model 2					
(Constant)	34.423	16.679		2.064	.044
AGREEABLENESS	6.450	3.469	.236	1.860	.069
OPENNESS	-4.820	3.074	-.192	-1.568	.123
RESILIENT COPING	2.615	.807	.412	3.238	.002

Note. Model 1 multiple regression criterion variable was academic self-concept; predictors were agreeableness, openness to experience, and resilient coping. Model 2 multiple regression criterion variable was social connectedness; predictors were agreeableness, openness to experience, and resilient coping. Sig = significance.