

**Academic Competition in the School System: At What Cost?**

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## ACADEMIC COMPETITION

### **Abstract**

Competition pervades our culture across sports, entertainment, politics, and corporations, seeping also into educational institutions. Today, children are urged not only to "play to win" but also to "learn to win." Despite awareness of competition's negative psychological and social impacts, it remains a cornerstone of the educational system as it is perceived as a strong motivating factor for academic achievement. However, academic competition has received less attention than its athletic and social counterparts, with previous research often overlooking its effects on interpersonal relationships. Existing studies have either used inappropriate measures for academic settings or failed to differentiate between other-referenced and task-oriented competition, which respectively focus on surpassing peers for status and on personal growth. This thesis introduces new scales tailored for assessing academic competition among adolescents. A pilot study involving 532 adolescents in southwestern Ontario (*Age* = 15.23) validates these scales through factor analysis using Principal Component Analysis, distinguishing between other-referenced and task-oriented competition. The new scales demonstrate reliability, with Cronbach's alpha coefficients of .789 for other-referenced competitiveness and .825 for task-oriented competitiveness. Regression analyses reveal a significant positive association between other-referenced competitiveness and bullying perpetration, while task-oriented competitiveness shows a moderate inverse relationship with bullying. These findings underscore the need to differentiate between competition for skill development and for status, as the latter may inadvertently foster bullying tendencies. This study emphasizes the importance of nuanced understanding in academic competition and its implications for student well-being. The discussion encompasses implications, limitations, and avenues for future research in this area.

**Keywords:** academic competition, other-referenced, task-oriented, bullying

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### **Academic Competition**

Competition permeates economic, political, and athletic domains, and it is even prominent in the entertainment industry. From sports games to the Oscars, there is a pervasive passion for players and viewers, for candidates and electors, for celebrities and their fans, to win, or witness the winning, of an award, a trophy, or an honour. This kind of competition involves zero-sum rivalry where winning, by design, implies loss of the other contestants (Schneider et al., 2006a). Contests between opponents seem to be the prevalent norm in corporate, political, and athletic industries, and have steadily encroached on the academic landscape over the past decades. Speaking contests, Spelling Bees and Chemistry Olympiads, for instance, are now embedded in the scholastic experiences of American children and groom them for self-advancement.

### **Competitive Culture**

The preoccupation with personal success is prevalent in North American culture, with a sharp rise in individualistic traits in recent years (Twenge et al., 2008). A meta-analysis on 85 samples of American college students found that egocentric traits like narcissism have increased by 0.33 of a standard deviation between 1982 and 2006 (Twenge et al., 2008). Concurrently, collectivist traits have waned (Twenge et al., 2008), and there is a trend of competitive individualism, with a fixation to attain material and social status (Carrant & Hill, 2019). In a study surveying 257 faculty, staff and students at Harvard University, Solnick and Hemenway (1998) asked participants whether they would prefer earning \$50,000 while others earn \$25,000 or earn \$100,000 while others earn \$200,000. Market prices were identical in both cases, so \$100,000 would provide a more comfortable life. Despite personal gain in the case of earning \$100,000 versus \$50,000, 50% of respondents preferred earning less to making less than others.

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Competitive individualism is a cultural phenomenon characterized by a modern passion with being the “number one” (Kohn, 1992) and with status-seeking and outdoing others (Currant & Hill, 2019). Schools and families act as vehicles of socialization and catalyst agents for the ambition, expectations, and educational achievements that can influence desired professional success (Reynolds et al., 2006). Hence, a preoccupation with relative academic standing is embedded within the educational system, which accepts and propels academic competition (Kohn, 1992).

### **Academic Competition**

Competition typically refers to a social situation where two or more individuals or groups attempt to acquire a reward (Houston & Queen, 2020). The reward can be material, such as a prize, or social, such as a prestigious position. In the common perception of a competitive situation, the acquisition of the desired object is mutually exclusive for those competing; one’s win implies others’ loss (Deutsch, 1949). Academic competition refers to competition in the school system, where competition is used as an educational method that builds a formal or informal scholastic hierarchy. More specifically, academic competition is predominantly reflected in structural competition when academic subjects and cognitive and artistic skills involves contests designed to determine superior proficiency. Examples include spelling bees, speaking contests, robotics competitions, and science fairs. These events not only encourage students to excel but also to outperform their peers, thereby demonstrating comparative superiority in their respective fields. Whether participation in the competition is voluntary or mandatory for students, schools often present academic competitions as a natural part of the educational experience. It seems that having someone who is “best in class”, a winner, is

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essential for educational advancement. Students who outdo their peers in whatever academic task is assessed in the competition are celebrated as the winners.

Academic competition has been associated with scholastic excellence (Loomis, 1909), acceleration of learning (Campbell et al., 2000; Si et al., 2022), student motivation (Di Stasio et al., 2016; Shafranov-Kutsev & Gulyaeva, 2017) and competence (Walker, 1980). Schools promote competitions, and parents tend to respond well to the competitions offered by the schools. Indeed, from a young age, many parents encourage their children's engagement in activities that offer potential for their child to stand out as the best. Many parents view competition as foundational for success in life, for early talent identification, for distinguished performance and as a catalyst for motivation and resilience (Campbell et al., 2000; Friedman, 2013). Several studies have linked participation in competition with superior academic performance (Agasisti & Murtinu, 2012), increased knowledge in the area of competition (Worrell et al. 2016), and successful careers (Wai et al., 2010). However, studies have shown that socio-emotional well-being may be the trade-off for optimal academic achievement (Heller-Sahlgren, 2018).

### **The Flip Side of Competition**

The research literature suggests that competition is a motivating strategy loaded with adverse outcomes (Goodman & Crouch, 1978; Schneider et al., 2006a; Roseth et al., 2008). Undeniably, competition has detrimental effects on interpersonal relationships and psychological health (Tassi & Schneider, 1997). While scarcity is a premise of competition, knowledge, skills, and learning may not necessarily be scarce (Goodman & Crouch, 1978). Yet, when schools embed pedagogy with competition, they induce unnecessary anxiety in children (Kalkavan & Çakir, 2016; Salmela-Aro et al., 2021), pose unwarranted threats to emotional well-being



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(Karayagiz Muslu et al., 2020), and can condition unhealthy attitudes towards learning and life (Pyyry & Sirviö, 2024). When there can be only one or a few winners in a competition, winning is about succeeding at the expense of others; as such, it prompts interpersonal rivalry (Tyler & Cobbs, 2015), and fosters an environment fertile for relational hostility (Volk et al., 2015). Furthermore, studies have linked winning at competitions with cheating, dishonest and unethical behavior (Schurr & Ritov, 2016), and found associations between Machiavellianism and competitiveness (Jonason et al., 2010; Brewer & Abell, 2015). Hence, competition's adverse outcomes cannot be ignored.

Finally, competition can run counter to the tide of equity in education. Equity in education posits that socio-economic background should not predict academic achievement, and thus focuses on educational philosophies that foster upward social mobility (Salinas, 2018). However, empirical findings reflect a widening gap in educational and professional outcomes between economically advantaged and disadvantaged students (Smeding et al., 2013). Hence, there is sound empirical evidence that competition correlates positively with psychological and social problems in development and does not promote equity in education.

### ***Competition and Emotional Problems***

The field of sports psychology has also investigated the link between competition and self-esteem (Tyler & Cobbs, 2015), and found negative effects of competition on children's and adolescents' self-esteem (Hines & Groves, 1989) and self-efficacy (Chan & Lam, 2008). Competition provides a social measure of relative performance and may contribute to the development of maladaptive perfectionism to win at competition (Træen et al, 2019). Maladaptive perfectionism has been associated with heightened stress, trait anxiety, and depression (Accordino et al., 2000). Furthermore, multiple studies have found that competition

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hinders academic achievement because of the mediating effect of learning and test anxiety (Hoferichter & Raufelder, 2017; Li et al., 2022). Individuals who associate success with outdoing others are constantly measuring themselves in comparison to others; however, others' performance is not within one's control (Kohn, 1992). Hence, winning is pursued often and never guaranteed, which contributes to ongoing stress around outcomes beyond one's locus of control (Liu et al., 2023). Additionally, a study conducted with 316 adolescents from four different high schools found a link between youth participation in competitive sports and greater vulnerability to gambling problems (Gavriel-Fried et al., 2015). The psychological costs associated with competition are not trivial.

### *Competition and Bullying*

**Competition and aggression.** In competitions, a student's success depends on their peers' defeat; rather than encouraging cooperative or prosocial behavior, the competitive task is laden with antisocial undertones (Volk et al., 2015). Previous work found positive associations between competitiveness and aggression (Choi et al., 2011). In an experimental study using violent video games, Adachi and Willoughby (2011) investigated the link between competition and aggression in an experiment where participants played violent and non-violent video games, with each condition being either competitive or non-competitive. They found that the presence of competition in violent and non-violent games led to more aggression than in the non-competitive conditions (Adachi & Willoughby, 2013). Hawk (2018) replicated this experiment and found similar results with a main effect of competition. These studies give empirical evidence to the negative impact of competition in video games on aggression, regardless of whether they were violent or not. With bullying being an extreme form of aggression, researchers also found that schools with a more competitive environment have more bullying incidents (Sutton & Keogh,

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2000; Volk et al., 2015). Some theories have proposed a partial explanation of the relationship between rival competition and aggression, particularly bullying.

**Bullying.** Bullying, seen as one of the most severe forms of antisocial behavior and is defined as repetitive harmful physical or relational aggression where the perpetrator holds power over the victim (Olweus, 1993). Volk et al. (2014) built on Olweus' work by distinguishing between reactive and proactive aggression, suggesting that bullying falls into the latter category, being purposeful and not necessarily repeated. According to Volk et al. (2014), the frequency or intensity of bullying behaviors can have similarly damaging effects, however the power over dynamic remains a central feature of bullying, regardless of frequency or intensity. As such, competition, and bullying share principal underlying dynamics: they are both dominance and status-seeking behavior that can be motivated by extrinsic goals of dominating others.

From an evolutionary perspective, bullying is an adaptive strategy for obtaining dominance and status and exploit individuals with less power (Volk et al., 2012). Dane et al. (2022) also found that bullying can be motivated by evolutionary competitive functions to outdo rivals, dominate, deter aggression, and seek mates. In educational settings that offer competitive programs, striving for dominance can lead to tangible rewards, such as securing top positions in competitions, which are linked to heightened social status (Volk et al., 2015; Distasio et al., 2016).

Moreover, as outlined in the Social Learning Theory (Bandura, 1977), children absorb lessons from their surroundings (Woodrow, 2001). Teaching methods that emphasize competition convey to students the notion that to excel, they must surpass their peers (Roseth, 2008). Competition tends to instill selfish and individualistic mindsets (Roseth, 2008), which may model and reinforce the importance of obtaining status, even by aggressive or antisocial

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means. As outlined in these theories of bullying, structural competition reinforces and incentivizes the pursuit of power and higher positions within the social hierarchy, inadvertently reflecting the dynamics inherent in bullying (Volk et al., 2015; Farrell & Dane, 2020). Hence, bullying and competition operate under similar mechanisms of hierarchy and dominance, which may explain why competition and bullying are so closely related.

### ***Competition: Vehicle of Cyclic Social Inequalities***

Social inequalities are prevalent in our society, and many sociologists have argued that socio-economic gaps tend to widen with the presence of competition in the educational system (Sommet et al., 2023).. On a superficial level, competition seems meritocratic because it posits a relatively objective measure of skills and hard work (Butera et al., 2021). However, a sociocultural approach suggests that an apparently meritocratic system may not account for diversities and social inequalities at the starting point of the competition. Students do not engage in school competitions from a level playing field; students from discriminated groups and low socio-economic status enter competition at a disadvantage (Butera et al., 2021). As a result, academic competition rewards students with social, academic, and economic advantages (Butera et al., 2021; Fang & Noe, 2022; Brummelman & Sedikides, 2023; Sommet et al., 2023). These students often have the resources and support from parents or tutors, which put them ahead academically relative to their less privileged peers (Luker et al., 2001; Butera et al., 2021). In a feedback loop, academic competition advances the successful trajectory of advantaged students, who are prone to better opportunities, and become more successful citizens (Luker et al., 2001; Lewis, 2007; Brummelman & Sedikides, 2023). As such, competition is catalyst to the reproduction of social inequalities, which favours privileged over disadvantaged children.

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A more recent study conducted with university students noted that competition disadvantaged students from low socio-economic backgrounds, while assessments focused on skills development did not show that difference in demographics (Smeding et al., 2013). These findings suggest that assessments and measures of performance are not unidimensional, nor do they have the same impact on social justice in education. This position is aligned with previous research that highlights the multi-dimensionality of competition (Tassi & Schneider, 1997).

### **Other-referenced Versus Task-oriented Competition**

Competition is not unidimensional and does not always involve another person or group. One can set one's own targets of success and compete against oneself to reach goals. In such a scenario, competing is a voluntary measure of success, without explicit rivalry in its design. As such, Tassi and Schneider (1997) propose a conceptual distinction between task-oriented or other-referenced competition. Intrinsic motivation usually fuels task-oriented competition and stimulates task mastery while other-referenced competition is more concerned with extrinsic motives such as status, hierarchy, and outdoing peers (Tassi & Schneider, 1997). Researchers have also found that these two types of competition differ in their social outcomes, relating task-mastery to a collectivist value system that promotes prosocial cooperation (Kavussanu, 2006). In contrast, other-referenced competition has been linked to aggression, with individualistic value systems that are more prone to selfish and antisocial behavior (Schneider et al., 2006b). Hence, task-oriented competition differs from other-referenced competition in its intention and social outcomes. Task-oriented competitiveness stems from a desire to improve skills and does not cause interpersonal harm in the process.

### **Gap in Research**

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While extensive literature supports the relationship between competition and antisocial dynamics, much of the research addresses different contexts for youth competition, such as social (Volk et al., 2015) and athletic (Bray & Martin, 2003; Jimenez-Barbero et al., 2020) competitions. Additionally, research on athletic competition focuses on intergroup dynamics (Aunola et al., 2018). Nevertheless, academic competition is often interpersonal and lacks some advantages of in-group interdependence in athletic competition. While competitive sports are not immune to psychosocial adverse effects for participants (Bray & Martin, 2003; Gianone et al., 2017), in-group dynamics may buffer social costs associated with interpersonal competition and even increase prosocial tendencies (Daniels, 2007; Zhu et al., 2015). Furthermore, DiMenichi and Tricomi (2015) measured the effect of competition on physical and cognitive task performances in an experimental study and found that although competition had a positive effect on performance in the physical task, it reduced performance on the memory task. Hence, competition may have differential effects in athletic and academic settings.

Few studies however have investigated the impact of academic competition in the middle and high school context. Competitions that take place in school settings differ from other forms of competition in that whether they are mandatory or optional, they target all students (Grinell et al., 2020). Unlike competitive extracurricular programs which often engage select participants who voluntarily enrol, students do not go to school with a forthright commitment to competing. Yet, millions of children and adolescents compete every year against their classmates and schoolmates, within the school context (McComas, 2011). Many scholars have also studied different demographics, including university students and adults, and found associations between competition and bullying in nursing schools (Bowllan, 2015) and competitive work

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environments (Wall et al., 2017; Sichka et al., 2020). However, there needs to be more coverage of the psychosocial effects of academic competition in adolescence.

With pre-puberty and puberty, social acceptance becomes a central concern for middle and high school students (Lee & Ceo, 2022). The struggle for peer acceptance intensifies as social and intrasexual competition increases in adolescence (Lee et al., 2020). In this developmental period, competitiveness spikes for boys (Andersen et al., 2013) and girls in a competitive environment (Jorgensen et al., 2022). Bullying also peaks in those vulnerable teenage years (Vaillancourt et al., 2010) especially when power is unequally distributed in the classroom (Garandau et al., 2014); thus, it is worth paying attention to the potential impact academic competitiveness has on the bullying crisis in middle and high schools. Anxiety and other psycho-emotional problems also tend to persist and worsen in adolescence if they have not vanished by middle school (Steinsbekk et al., 2021). Academic competition in school settings may be an added stressor and risk factor in an already vulnerable period of development, which may exacerbate interpersonal and psychological problems in adolescence and beyond.

Hence, further scientific examination of the associations between academic competition and psycho-social variables is warranted to inform the particulars of academic competition in adolescence. The findings of this research could inform educational policymakers and stakeholders who aim to support optimal socio-emotional outcomes for adolescents through potentially turbulent and impactful years for themselves and their peers; parents will also be able to make more informed decisions before surrendering to the competitive education model.

### Current Study

In this preliminary study, I aim to replicate previous findings on the links between other-referenced competition and adverse psychosocial outcomes among adolescents in the academic

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context. Academic competition differs from athletic and extracurricular competition in that competitive sports programs are supplementary and optional, and willingness to compete is a prerequisite of the student and/or their parent. Schools however aim to provide equal chances for scholastic success for all students. Hence, the educational intention has broader and potentially more damaging impact, considering its wider pool of active or passive participants. Furthermore, resistance to adapting a different approach to competition in education often associates discourse that challenges competition to advocacy for a lax educational system. However, this study differentiates between two subtypes of competition and suggests differential outcomes for other-referenced competition and task-oriented competition. Hence, I investigate students' distinctive competitive attitudes (other-referenced vs. task-oriented) and their associations with psychological problems, anti-social behavior, and their families' socio-economic status.

Previous studies have linked competition with antisocial behavior and peer aggression (Tassi & Schneider, 1997; Adachi & Willoughby, 2013; Volk et al, 2015) and task-oriented competition with prosocial behavior (Tassi & Schneider, 1997). Like bullying, other-referenced competition is an intentional behavior motivated by extrinsic goals, such as status, and achieved at the expense of others. Hence, I anticipate that students with higher levels of competitiveness will display higher levels of bullying perpetration. Indeed, bullying and competition share a similar mechanism. In contrast, given its focus on intrinsic versus extrinsic goals, students with higher levels of task-oriented competitiveness will display lower levels of bullying aggression. Also, considering findings in previous research linking lower academic competitiveness for children from disadvantaged backgrounds compared to more advantaged children, I also predict that students with high SES will also be more competitive towards their peers.

A review of existing self-report scales measuring competition (Sutton & Keogh, 2000;



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Newby & Klein, 2014; Orosz et al., 2018; Griffin-Pierson, 1990; Ryckman et al., 1996, Tassi & Schneider, 1997; Elliott & Church, 1997) also reveals a lack of conceptual validity for investigating the two subtypes of academic competition (other-referenced and task-oriented competition) in adolescence. Thus, in my thesis, I also propose the development of a new scale measuring academic competition simultaneously incorporating other-referenced and task-oriented competitions; adapted for middle and high-school-age children (see Appendix 1) that I will use to test my hypotheses.

### *Hypotheses*

H1. Two kinds of academic competition can be distinguished in the academic competition scale.

H2. Measures of the two kinds of academic competitiveness will differ in their relations with external variables.

H3. Other-referenced academic competitiveness will be positively associated with emotional problems.

H4. Other-referenced academic competitiveness will be positively associated with bullying perpetration. Task-oriented academic competitiveness will be negatively correlated with bullying others.

H5. Students from low SES will be lower on other-referenced competitiveness.

## **Methods**

### **Participants**

The sample comprised 532 adolescents (47% female) between the ages of 13–17 years ( $M = 15.25$  years;  $SD = 3.23$  years). The study was conducted in partnership with five local

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elementary schools and one high school in southern Ontario. All students in grades 8-12 in these schools were eligible to participate. The data for this study was collected in May 2023.

### **Procedures**

The study methods were approved by the Brock University Research Ethics Board as well as the Niagara Catholic District School Board ethics committee. Active consent was used for students in elementary school while passive consent was used for high school participants. In the former case, parents were sent a consent form which they had to return to the school prior to data collection. Students were entered for a draw for \$100 gift cards and their schools received a \$10 donation per student to general school funding. Class teachers received \$25 gift certificates for their support in the data collection process. Over a period of several weeks, the principal investigators and research assistants administered electronic Qualtrics-based questionnaires which were on electronic tablets. Questionnaires included self-reports and peer nomination. For self-report, participants were asked to report information regarding demographics, personality, social status, and peer victimization experience. In total the questionnaires took around an hour to complete (see Appendices for measures used). The tablets were then returned to the lab where the information was downloaded onto a secure computer.

### **Measures**

#### ***Demographics***

Demographic information was collected through self-report. Participants self-identified their chronological age. They reported their sex as boy, girl, other, or prefer not to say. They were also asked about their parents' level of education and their families' social economic status (i.e., they were asked to indicate in comparison with other Canadian families if they thought their family was a lot less rich, less rich, about the same, richer, or a lot richer).

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### *Academic Competitiveness*

Participants' academic competitiveness was measured through the adapted academic competition scale, comprised 18 items. The scale is conceptually divided in two sets of questions, nine that capture a competitive attitude that is other-referenced, and nine that cover the task-oriented subtype of academic competitiveness. For example, participants are asked: "If I know I likely won't win a competition, I don't want to compete" for other-referenced competitiveness, and "I care more about getting better/improving myself than I do about winning" for task-oriented competitiveness. Answers to these questions were on a five-point scale from 1 = Strongly disagree to 5 = Strongly Agree.

### *Emotional Problems*

Emotional problems were self-reported through the Strengths and Difficulties Questionnaire (SDQ), Emotional Problems subscale, which capture facets of depression and anxiety. The SDQ included five questions such as "I have many fears" and "I am easily scared". The response was a 3-point scale (not true, somewhat true, certainly true).

### *Bullying*

Peer aggression was self-reported through the Integrated Measure of Bullying and Non-Bullying Aggression questionnaire ( $\alpha = .93$ ; Prabakaran, 2020). The measure assessed different form of peer aggression - direct (i.e., physical and verbal) and indirect (i.e., relational, cyber) – within different balances of power between the perpetrator and the victim- adversarial (same power), low power (less power), and bullying aggression (more power). Participants were asked to indicate their frequency of acting aggressively on a five-point scale from 1 = Never to 5 = Very often. An example question can be "In the PAST FEW MONTHS, how often have YOU DONE the following things to someone who was LESS popular or strong as you?". For our

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analysis, I combined the forms (direct and indirect) due to the absence of a strong theoretical reason for examining differences in form. Since the three powers of aggression highly correlated, I only used the bullying aggression variable for balance of power type, due to the previously discussed theoretical evidence suggesting similar shared mechanism in bullying and other-referenced competition (Farell & Dane, 2020; Dane et al., 2022).

## Results

### Data analysis

Raw data were inputted into IBM SPSS Statistics Version 27. Variables of interest were re-coded into a new dataset, also considering reverse coding. SPSS was used to 1) test univariate assumptions 2) test multivariate assumptions and 3) obtain descriptive statistics of academic competition variables, peer aggression, SDQ, and SES. To assess hypotheses and scale validity, I conducted EFA, CFA, and hierarchical regression analyses in SPSS.

### Preliminary Results

After data screening and cleaning, the analytic sample included 532 participants. Assumptions of normality were met. Means, standard deviations and reliabilities of variables examined in this thesis can be found in Table 1. Descriptive statistics revealed that overall, participants scored higher on academic task-oriented competitiveness ( $M = 3.44$ ) than they did on other-referenced competitiveness ( $M = 2.40$ ). Thus, according to the self-report questionnaires, the schools surveyed have a greater mastery-oriented climate than a status-oriented one.

### Correlation Analyses

I ran zero-order correlations between all variables (see Table 1). There was a moderate significant positive correlation between identifying as a boy and other-oriented competition, and

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a significant positive correlation between identifying as a girl and SDQ (see Table 1). Lower socio-economic status showed a small link with low emotional problems. The correlation among the two subtypes of academic competition was significant, positive, and medium in size ( $r = .26$ ,  $p < .001$ ). Consistent with my predictions, there was a significant, positive, and moderate correlation between other-referenced competition and aggression. However, inconsistent with my prediction, the correlation between task-oriented competition and aggression was not significant.

### Factor Analysis

The 18 items of the proposed Academic Competition scale were subjected to principal components analysis (PCA) using IBM SPSS Statistics version 27. Prior to performing PCA, the suitability of data for factor analysis was assessed. An inspection of the correlation matrix revealed the presence of many coefficients of .3 and above. The Kaiser-Meyer-Olkin value was .87, exceeding the recommended value of .6 (Kaiser 1970, 1974), and Bartlett's (1954) Test of Sphericity reached statistical significance, supporting the factorability of the correlation matrix. Principal components analysis revealed the first eight principal components explained 27.59%, 15.76%, 9.68%, 5.63%, 4.84%, 4.21%, 4.85%, 3.46% of the variance respectively. An inspection of the scree plot revealed a clear break after the third component.

I reran the factor analysis using Principal Components Analysis asking for extracting just three components. The three-component solution explained a total of 53,03% of the variance. To aid in the interpretation of these three components, an Oblimin rotation was performed, the solution is shown in Table 2. The rotated solution revealed the presence of simple structure (Thurstone, 1947), with most variables loading substantially on only one component of the two that we predicted. The third factor involved avoidance of competition and was not empirically

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viable because two of the three items loaded on more than one factor, so there was only one item relating predominantly to competition anxiety that appeared to be driving that factor. The omission of the third component for subsequent analyses also made sense conceptually, as the third factor of competition captures competition anxiety and avoidance and I was interested in other-referenced and task-oriented competitions, and the competition anxiety did not fit that focus. Therefore, I chose to focus on, score, and analyze only the two theoretically expected and empirically viable factors.

The interpretation of the two components was consistent with previous research on academic competition that distinguished between two kinds of competition (Tassi & Schneider, 1997), with items assessing other-referenced competition loading strongly on Component 1 and items assessing task-oriented competition loading strongly on Component 2. There was a weak positive relationship between Component 1 and 2 ( $r = .11$ ). Using Cronbach's Alpha, I explored the reliability of the new proposed academic measure by computing scale scores with the sum of the items that loaded chiefly on a given component. The results showed reliability of  $\alpha = .789$  for Component 1 (other-referenced competition),  $\alpha = .825$  for Component 2 (task-oriented competition). Thus, the new scales appeared to be a reliable measure of other-referenced and task-oriented competition.

To address the other hypotheses in my thesis, I ran hierarchical regression analyses to assess whether the two academic competition subtypes predict emotional problems, SES and bullying. I ran three separate hierarchical regressions for each of the variables. For each of the hierarchical regression models, I entered Gender and Age variables in Step 1 to control for demographic differences. I then entered the predictor variables, task-oriented and other-referenced competition concurrently in Step 2.

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### **Hierarchical Regressions**

#### ***Emotional Problems***

I had predicted that Other-oriented Competition would be correlated with Emotional Problems, meaning that a strong desire to be the best is associated in this study with anxiety and depression. The zero-order correlation between the two variables was nonsignificant and was close to zero ( $r = -.01$ ). For the regression analysis, preliminary analyses were conducted to ensure no violation of normality, linearity, multicollinearity, and homoscedasticity. Gender and Age were entered in Step 1, explaining 12.3% of the variance in Emotional Problems. After entering other-referenced and task-oriented competitiveness at Step 2, the total variance explained by the model was 12.4%,  $F(4, 524) = 19.78, p < .01$ . Thus, contrary to my predictions, when controlling for gender, age, and task-oriented competition, I did not find a statistically significant association between other-referenced competition and the SQD measure of emotional problems.

#### ***Socio Economic Status (SES)***

I had predicted that other-referenced competition would be positively correlated with SES, the zero-order correlation was small and non-significant ( $r = .06$ ). Preliminary analyses were conducted to ensure no violation of normality, linearity, multicollinearity, and homoscedasticity. Gender and Age were entered in Step 1, explaining 1% of the variance in SES. After entering other-referenced and task-oriented competitiveness at Step 2, the total variance explained by the model was 1.2%,  $F(4, 530) = 1.67, p = .155$ . Contrary to my predictions, the regression coefficients between other-referenced competition and socio-economic status were not statistically significant, when controlling for task-oriented competition, gender, and age.

#### ***Bullying***

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I had predicted that other-referenced competition would be positively correlated with bullying and that task-oriented competition would be inversely correlated with bullying. Consistent with my predictions and previous research, the correlation between other-referenced competition and bullying was positive, moderate and statistically significant ( $r = .35$ ).

Preliminary analyses were conducted to ensure no violation of normality, linearity, multicollinearity, and homoscedasticity. Hierarchical regression analysis assessed how the two subtypes of competition predict bullying. Gender and Age were entered in Step 1, explaining 0.5% of the variance in bullying. After entering other-referenced and task-oriented competition at Step 2, the total variance explained by the model was 15%,  $F(4, 528) = 23.71, p < .001$  (see Table 4). The two competitiveness measures explained an additional 15% of the variance in bullying after controlling for age and gender,  $R^2 \text{ change} = .15, F \text{ change}(2, 528) = 45.91, p < .001$  (see Table 4). In the final model, when controlling for each other, other-referenced and task-oriented academic competition were significantly correlated with bullying. Consistent with previous research, when controlling for task-oriented competition, the regression coefficients between other-referenced competition and bullying aggression was strong and positive ( $\beta = .40$ ). When controlling for other-referenced competition, the relationship between task-oriented competition and bullying was moderate and negative ( $\beta = -.17$ ). The significant and moderate correlation between the two subtypes of competitiveness ( $r = .26$ ) indicates that there some items on the scale overlap between other-referenced and task-oriented competitiveness. Thus, when controlling for each other, the link between task-oriented competition and bullying became larger while the link between other-referenced competition and bullying only increased slightly (see Table 4).

## Discussion



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The “superiority as success” mindset is inculcated from a young age. Children are taught through games, sports, TV and through school culture that their achievements are subject to ranking, and best achievers get celebrated (Kohn, 1992). However, the consequent psychosocial damage of competition is predominantly overlooked or gets critiqued for promoting lax education (Levin, 1998). After all, cultural norms are not easily prone for criticism or change (Kosarikov & Davidova, 2022). Hence, despite the theoretical and empirical evidence of the damage it causes, competition as an educational method continues to embed the school system (Goegan & Daniels, 2022)). The psychosocial well-being of subjects at the center of this process—children, and adolescents in the school system—is central to the debate around academic competition (Tauer & Harackiewicz, 2004; Goegan & Daniels, 2022) and deserves further consideration.

In my thesis, I take a deeper dive into academic competition in the school system, by investigating students’ attitudes towards scholastic rivalry and achievement. To measure academic competitiveness in adolescence, I developed and adapted a new scale for academic competition. The proposed new scale filled gaps in existing scales that measure competition (Sutton & Keogh, 2000; Newby & Klein, 2014; Orosz et al., 2018; Griffin-Pierson, 1990; Ryckman et al., 1996, Tassi & Schneider, 1997) in that it was designed with the distinction between other-referenced and task-oriented competition in mind; it was designed for adolescents; and it captured competition within academic settings .The results of my study assessing the reliability of the scale paralleled my predictions: the factor analysis showed empirical evidence for the conceptual distinction between other-referenced competition and task-oriented competition in my scale (see Table 2). Further analyses explored the distinct relationships of

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each of the two subtypes of competitions with other variable of interest, such as bullying, emotional problems, and SES, with some results consistent with my predictions, and others not.

Previous studies had found that the presence of other-referenced competition was related to test anxiety, and high stress levels (Hoferichter & Raufelder, 2017). Hence, I expected other-referenced competitiveness to positively predict emotional problems. However, my results did not support this prediction. Methodological limitations may explain the inconsistency between my findings and previous studies. Indeed, for my measure of Emotional Problems I used the subscale of emotional problems in the SDQ, which only consisted of five items, three of which captured some facets of anxiety, and two of which captured facets of sadness. More items might capture more facets of emotional problems and particularly anxiety, and thus give better validity to the construct measured in this scale. Another possible explanation to the discrepancy between my findings and predictions, may be the presence of other moderating factors, such as personality and individual differences that would impact the vulnerability to adverse psycho-emotional impact. My hierarchical regression model does not capture those differences, but they may however exist, and some students might be greatly impacted by other-referenced competition, while for some students may not be impacted similarly. It is thus possible that competing may impact level of stress to an unhealthy degree, but it is not related to the trait competitiveness.

I also predicted that other-referenced competition would be related bullying. This prediction was founded on previous research and on the theoretical basis that rivalry—which is inherent to other-referenced competitiveness—has antisocial undertones (Volk et al., 2015) and shares the same underlying mechanism (extrinsic dominance-seeking) as bullying (Farrell & Dane, 2020). Consistent with my predictions, other-referenced competitiveness was significantly

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related to bullying in the Zero-order correlation (Table 1) and in regression analyses, when controlling for task-oriented competition (Table 4). This relationship can be explained from an evolutionary perspective bullying is adaptive in a context of scarce resources (Volk et al., 2012). When resources are limited, reproduction and survival are limited by one's access to those resources that are more available from a position of dominance. Hence bullying is about acquiring dominance and status to access resources for survival (Buss & Shackelford, 1997). Other-referenced competitiveness embodies a similar mechanism in the context of a competition designed to have winners and losers. When a competition only offers one or a few winning spots, one needs to outdo their rivals who try to access that scarce resource. The competition activates the evolutionary need of dominating and outdoing rivals to access scarce resources (Volk et al., 2012). This may also explain why competitive schools are more prone to bullying. Schools that systematically use competition as an educational method, activate the mechanism of dominance-seeking in their students, which are the same dynamics found in bullying (Dane et al., 2022). Hence, when schools invest so much time and resources to reduce bullying in their classrooms and playgrounds, they may want to consider the systemic ways they contribute to the problem. They offer scarce resources in a structural competition, which ignites attitudes of academic rivalry (Kohn, 1992), and in turn activates the dominance mechanism (Kohn, 1992). Furthermore, other-referenced competition models and reinforces for students a need for dominance and status, which they may act upon in their interpersonal relationships at school with bullying their peers. Other-referenced competitiveness is not a desired trait, it often impedes the development of trusting interpersonal relationships (Kohn, 1992). When someone is described as highly competitive, it is rarely a compliment. Hence, other-referenced competitiveness, particularly the drive for scholastic dominance, rarely benefits students socially. When looking at

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how competitions supposedly help students succeed, short and long-term interpersonal lives of students should not be overlooked.

Previous studies had shown that task-oriented competitiveness was related to high levels of prosociality (Tassi & Schneider, 1997), hence I predicted that task-oriented competition would be inversely related to bullying. The zero-order correlational analysis showed a negative correlation between bullying and task-oriented competitiveness, but the correlation did not reach statistical significance (Table 1). However, in the hierarchical regression, when controlling for other-referenced competitiveness, the association between task-oriented competition and bullying was statistically significant, moderate, and negative (see Table 4). Thus, these findings are consistent with my predictions that task-oriented competitiveness is inversely related to bullying. These results parallel evidence in previous research which posit that unlike competing to outdo others, an attitude of personal growth is inversely related to antisocial attitudes (Tassi & Schneider, 1997). Indeed, task-oriented competitiveness is linked to intrinsic motivation to do well, and not by extrinsic motivations to dominate and outdo others, so it does not share the psychological mechanism associated with bullying (Dane et al., 2022). It is important to note though, that although the design of task-oriented competitions do not formally involve dominance and status-seeking, one may want to do well for external reasons and status and be motivated by other-referenced competitiveness (Kohn, 1992). However, the distinction between other-referenced and task-oriented competitiveness, and their distinct and opposite relationships with bullying, provide empirical evidence that competition is not required for motivation and academic achievement. One may be studious and strive for excellence, without rivalry: education, intrinsic motivation, and learning can incur without artificial scarcity and competition. In turn, task-oriented competitiveness may foster prosocial dynamics around learning rather than

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bullying. As such, when schools invest an abundance of resources to combat the prevalent bullying problem, they should consider encouraging academic achievement motivated by personal growth versus ranking and status.

Finally, my hypothesis that students with higher SES will be more competitive was not supported. I used one demographic question from my self-report questionnaires that asked students how rich they are compared to other Canadians. Based on previous research that found students of low SES less motivated to compete at school (Brummelman & Sedikides, 2023), I had expected that advantage in winning competitions or experience with extra-curricular competitions would make the advantaged students more competitive. However, my results were inconsistent with my predictions, as there was no statistically significant relationship between other-referenced competitiveness and SES. A theory that may explain this discrepancy is the “avoidance-approach” response to perceived income inequality and competitiveness (Sommet & Elliott, 2023). The mere perception of income inequality prompts perceived competitiveness, however the response to this perception is either approach motivation (heightened competitiveness) or avoidance motivation (not risking failure) (Muryama & Elliott, 2012). These opposing effects of income inequality may explain why the lack of significant results in my sample for the relationship between perceived SES and competitiveness (approach motivation). Another possible explanation is that SES and competitiveness are not related to each other, and the tendency to compete is universal and consistent in adolescence, regardless of socio-economic background.

The inconsistency between my predictions and results in relation to the association between competitiveness and SES may also be due to methodical limitations, indeed adolescents perceived SES is not always an accurate estimate of their families’ advantage or disadvantage

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(Svedberg et al., 2016). Hence the measure of SES I used may not have been efficient or a sufficient tool to measure socio-economic status. Furthermore, while the basis and outcome of structural competitions may be unequitable, other-referenced competitiveness may not necessarily reflect the prevalence of one's experience of winning or losing. Previous studies demonstrate how some individuals persist through many losses (Kohn, 1992). Hence the measure of competitiveness may not be adequate to reflect equity or lack thereof, in outcomes. Students from low SES backgrounds may be engaged in academic competition regardless of their experiences of repetitive losses. Thus, a better measure of inequality in competition outcome would consider the experiences of students in addition to their attitudes towards competition.

### **Limitations**

My study had several methodological limitations. The measures of emotional problems and SES did not adequately capture the variables of interest. I used the *emotional problems* subscale of the SDQ, which only comprised five items and might not capture my variable of interest adequately. Some students avoid competing because of the stress impact of these competitions. However, better measures of overall well-being, perfectionism, self-esteem, and depression may be able to capture a more substantial breadth of psychological well-being. Indeed, emotional problems and well-being are distinct constructs and are not necessarily opposite facets on the same spectrum. An optimal level of emotional well-being may be attained regardless of emotional problems with mediating factors or with adequate and adaptive coping mechanisms and supports (Verzetti et al., 2016). Hence, a broader and more comprehensive measure of well-being may better capture well-being holistically, not just through emotional problems, which may be risk factors to emotional well-being but not determinants.

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Additionally, one of the facets of other-referenced competitiveness I attempted to capture was the self-measuring by absolute standards and a fixed mindset, that is, “The students who win the top spots at the speaking contest are good speakers, and those who don’t are bad public speakers.” Unhealthy perfectionism is related to having a fixed mindset, which impede on a healthy, sustainable, and growth-mindset approach to learning (Chan, 2012). Yet, structural competitions tend to shape or at least reinforce these mindsets, and by extension they contribute to unhealthy attitudes towards learning and impaired self-efficacy (Kohn, 1992; Chan & Lam, 2008). My study did not explore these variables, yet theoretical and empirical evidence supports a broader adverse psychological impact of competition (Kohn, 1992; Hoferichter & Raufelder, 2017; Sommet & Elliott, 2023). Future research should consider measures that capture a larger breadth of emotional well-being.

Furthermore, the academic competition constructs spoke mainly of attitudes relating to the two subtypes of competition. These constructs do not capture the impact academic competition has on students; they capture cognitive, affective, and motivational dimensions of other-referenced and task-oriented competitions at school. In short, they capture trait competitiveness, not the competitive climate. Yet, we cannot assume whether experiences of academic competition influence climate and attitudes. The aim of my study was to explore the psychosocial impacts of academic competition. While this scholarship contributes to the body of knowledge on competition, it is an attitudinal exploration as opposed to an impact-appraisal of competition as an educational method.

Finally, my sample consisted of adolescents in the Niagara Region, attending large Catholic Public Schools. The effects of competition might not be the same in small school or private schools, which might have more competitive environments. Additionally, my data is

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cross-sectional and does not imply directionality or causality. If the results are replicated with longitudinal data, they would also indicate whether competitiveness impacts bullying behavior over time or the opposite. Additionally, I used self-report measures, which may limit the accuracy of the responses due to positivity bias, potential misinterpretation of questions, and imprecise introspection. Lastly, the cross-sectional data does not account for individual differences and other potential factors that may contribute to the relationship between variables explored.

### **Future Directions**

Future research should consider measures for psychological impact that capture a larger breadth of psycho-emotional variables. Links between other-referenced competition and anxiety, perfectionism, growth versus fixed mindsets, and self-efficacy should be explored. Some studies also show that measuring self in absolute standards (I am good/bad) may lead to addiction and depression. It is vital to consider the mechanisms through which my education system may inadvertently contribute to psychological problems our society fights hard against, like poor mental health and addictions.

Additionally, future research should consider exploring the causal link between both subtypes of competitiveness and bullying through longitudinal studies and experiments. Future studies should also investigate the impact of structural academic competitions and compare students in classrooms with systemic use of competition for motivation, with those that seldom use them. Individual differences should also be considered as competition does not impact everyone in the same way. According to the Person-Environment Fit model (Pervin, 1968), environments have differential impacts on individuals; this theory has been tested on the relationship between competitive climate and trait competitiveness among Chinese adolescents,



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and studies have shown that a competitive climate increases the risks of anxiety and depression in students with high levels of other-referenced competitiveness (Liu et al., 2023). Thus, future research should take an approach on the impact of other-referenced competitions with an approach to individual differences. Students low on Honesty-Humility may also be more vulnerable to the negative effects of other-referenced academic competition. Low Honesty-Humility predicts the pursuit of status and dominance (Urbig et al., 2021), which may be achieved in structural academic competitions. Educators may want to consider the impact of class competitions on trait competitiveness in those students, and consequently how damaging increased competitiveness of students with low Honesty-Humility may be for class dynamics. Thus, future research should explore individual differences in the impact of academic competition and include the HEXACO and the Person-Environment Fit model in the study and analysis.

Finally, equity in education has taken central stage in social justice discourse (Miller, 2022). Although my study was not consistent with my predictions, future research should expand on measures that capture SES of adolescents in school settings and ask about experiences of winning or losing at academic competitions. Such measures would be more accurate indicators of the impact of other-referenced competitions on students, as a function of their socio-economic status or identification with minority or persecuted groups.

Also, alternatives to competition should be explored in comparative studies. Task-oriented competition may lack group dynamics that enhance learning. Previous researchers have proven the benefits of cooperation in motivation and increase of prosocial tendencies. Cooperation has been long proposed as an alternative to competition. Cooperation has been proven to have better outcomes than both subtypes of competition, on learning, motivation,

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productivity, creativity, mental health, and peer relationships (Johnson et al., 1981). Several studies have shown that cooperation far surpasses other-referenced competition in contributing to a holistic, inclusive, and optimal education (Kohn, 1992).

### **Implications**

My thesis demonstrates the existence of different types of attitudes towards academic competition, as well as a non-negligible commonality between a tendency for academic dominance and bullying. This finding is vital in understanding the adverse impact of other-referenced competitiveness on students. My study implies that bullies may be more engaged in zero-sum game academic competitions in parallel with their use of bullying aggression to obtain resources.

Furthermore, if other-referenced competitiveness is an undesirable attitude or trait (Kohn, 1992), it would be interesting to investigate how structural competitions at schools contribute to the development of this trait or attitude, and how it impacts differently or similarly all students. To counter arguments against competition and maintain the status quo, some dissidents argue that competition has not negatively impacted them or their children. Spanking has also not impacted all children in the same way, some people say they are even better people because of the harsh discipline they experienced as children. I argue that sometimes people are not aware of the negative impact some childhood experiences have had on them, they think they are fine and might not be cognizant that they are overly aggressive or that their active addictions may stem from these experiences. Additionally, adverse childhood events and trauma do not impact everyone in the same way. There are individual differences and personal factors of protection or risk that influence outcomes. Yet, psychological research has shown patterns of attitudes and behavior that predict outcomes and suggests interventions to soften the blow when trauma or

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adverse events happened. Academic competition may be traumatic or at best negatively impact many students. While some students may have had factors of protection against those negative impacts, an educational system should be inclusive and consider the needs and risks of all students. As such, schools should refrain from using methods with empirical and theoretical evidence of their damaging potential, even if those affect only a portion of students. That should certainly be considered when especially there are alternative educational methods with similar benefits and without the costs.

My findings may also inform educational research for teacher education. It may also bring evidence for educational policy and various stakeholders in school reform for equitable and prosocial education. The present study contributes to the research on educational competition by validating a new scale to measure academic competition that captures the distinction between other-referenced and task-oriented competition, with the former being positively associated with bullying and the latter negatively associated. The results of this study mirror previous findings on the relationship between other-referenced competition and bullying. These links highlight the importance of ongoing research on the different forms of competition among adolescents to better understand their causes and effects.

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**Table 1***Descriptive statistics and correlations among psychosocial variables and competition subtypes*

Variables	1	2	3	4	5	6	7
1. SES	—						
2. Emotional Problems	-.15**	—					
3. Bullying aggression	.004	.07	—				
4. Task-Oriented Competition	.003	-.02	-.06	—			
5. Other Referenced Competition	.06	-.01	.35**	.26**	—		
6. Gender	-.07	.34**	-.07	-.02	-.21**	—	
7. Age	-.08	.06	-.07	-.09*	.002	-.006	—
M	3.32	1.90	1.33	3.20	2.44	0.53	15.25
SD	1.09	.62	.55	.77	.76	0.63	3.23
Cronbach	—	.95	.96	.82	.79	—	

*Note.*  $N = 532$ , \* =  $p < .05$ , \*\* =  $p < .001$ , Gender was coded with 0=male, 1=female.

## ACADEMIC COMPETITION

**Table 2**

*Factor Analysis of the Proposed Academic Competition Scale using pattern matrix from a Principal Components Analysis with Oblimin Rotation*

Academic Competition Type	Factor Loading		
	1	2	3
<b>Factor 1: Other-Referenced</b>			
I am more likely to participate in activities if they offer first, second, and third place winners rather than having nobody win	<b>.68</b>	.24	-.11
I feel very upset when my friends win at a competition in which I worked hard to win	<b>.77</b>	.15	.227
I know I am good at school by comparing my grades to my classmates	<b>.70</b>	.23	.07
The students who win the top spots at the speaking contest are good speakers, and those who don't are bad public speakers.	<b>.71</b>	.15	.17
When I win, I feel I am a better person than my classmates.	<b>.79</b>	.07	.22
Losing a competition makes you a loser overall.	<b>.60</b>	-.03	.47
<b>Factor 2: Task-oriented</b>			
I care more about getting better than I do about winning	.12	<b>.77</b>	.06
I work hard on presenting a science competition I can be proud of, even if I don't win the competition	.23	<b>.75</b>	.11
Trying hard matters more than winning.	-.04	<b>.80</b>	-.031
At school, I always try to do better than I did on past tests.	.23	<b>.81</b>	-.22
I like competing because it makes me learn new things.	.42	<b>.63</b>	-.55
When I finish my work early, I like when the teacher gives me harder work so I can get even better.	.37	<b>.41</b>	-.29
I like a challenge, whether I'm with others or by myself.	.16	<b>.71</b>	.067
Trying hard matters more than winning.	-.045	<b>.80</b>	-.031
<b>Factor 3: Competition Anxiety</b>			
If I know I likely won't win at a competition, I don't want to compete	.48	.10	<b>.59</b>
Competitions are very stressful because I would be really upset if I lost	.60	.21	<b>.51</b>
I don't like coming to school on days there are serious or formal competitions	.15	.09	<b>.73</b>

*Note.* N=532



## ACADEMIC COMPETITION

**Table 3**

*Hierarchical Regression Analysis of Relations Between Subtypes of Competition and Psycho-Social Impacts*

		Emotional		SES	
Predictor	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	
Step 1	.127		.010		
Gender		.348**			-.077
Age		.075			-.065
Step 2	.131		.012		
Gender		.362**			-.067
Age		.073			-.066
Task-Oriented		-.022			.052
Other-		.069			-.018
Referenced					
Total $R^2$	.37				.022

*Note.*  $N=531$ , \* $p < .05$ . \*\* $p < .01$ . Only  $\Delta R^2$  for significant predictors are reported. Gender was coded with 0=male, 1=female. \* $p < .05$ . \*\* $p < .01$ .

## ACADEMIC COMPETITION

**Table 4***Hierarchical Regression Analysis of Relations Between Subtypes of Competition and Bullying*

Predictor	Bullying	
	$\Delta R^2$	$\beta$
Step 1	.005	
Gender		-.054
Age		-.044
Step 2	.152**	
Gender		.025
Age		-.060
Other-referenced competition		.40**
Task-oriented competition		-.17**
Total $R^2$	.157	

*Note.*  $N=532$ , \* $p < .05$ . \*\* $p < .01$ . Gender was coded with 0=male, 1=female. \* $p < .05$ . \*\* $p < .01$ .

## ACADEMIC COMPETITION

**Appendix A – Academic Competition Proposed New Scale**

(Self-created)

Note: (r) for reverse coded

**Other-referenced Competitiveness**

Focus is on winning:

1. I am more likely to participate in activities if they offer first, second, and third place winners rather than having nobody win
2. I feel very upset when my friends win at a competition in which I worked hard to win

Constantly measures self against others:

3. I know how good I am at school by comparing my grades to my classmates

Measures self by absolute standards:

4. The students who win the top spots at the speaking contest are good speakers, and those who don't are bad public speakers.
5. When I win, I feel I am a better person than my classmates

Tendency to choose tasks where winning:

6. If I know I likely won't win a competition, I don't want to compete
7. Competitions are very stressful for me because I would be really upset if I lost
8. Losing a competition makes you a loser overall
9. I don't like coming to school on days when there are serious or formal competitions like track and field or public speaking contests (r)

**Task-oriented Competitiveness**

Focus is on achieving mastery and increasing competence:

1. I care more about getting better/improving myself than I do about winning
2. I work hard on presenting a science project I can be proud of, even if I don't win the science competition

Goals are performance-oriented:

3. The spelling bee does not make me better at spelling (r)
4. Trying hard matters more than winning

Goals are mastery-oriented:

5. At school, I always try to do better than I did on past tests
6. I like competing because it makes me learn new things

Tendency to choose challenging task:

7. When I finish my work early, I like when the teacher gives me harder work so I can get even better
8. I tend to quit when things are hard (r)
9. I like a challenge, whether I'm with others or by myself

## ACADEMIC COMPETITION

**Appendix B – Demographics****Demographics**

What is your ID number?

I \_\_\_\_\_ agree to participate in the study.

1. How old are you?
2. Are you a boy or a girl?
  - a. Boy
  - b. Girl
  - c. Other
  - d. Prefer not to say
3. What grade are you in?
4. Which school do you attend? (drop down)
5. Which category **best** describes your race or cultural group? **Mark all that apply.**
  - White
  - East Asian (e.g., Chinese, Japanese, Korean)
  - Southeast Asian (e.g., Vietnamese, Filipino, Cambodian, Malaysian, Laotian)
  - South Asian (e.g., East Indian, Pakistani, Sri Lankan, Afghan, Bangladeshi)
  - West Asian or Arab (e.g., Iraqi, Syrian, Lebanese, Egyptian)
  - Black African (e.g., Ghanaian, Kenyan), Black Caribbean (e.g., Jamaican, Haitian) or Black Canadian or American
  - Latin American, Central American, South American (e.g., Mexican, Colombian, Brazilian, Chilean)
  - Indigenous/Native (e.g., First Nations, Métis, or Inuit)
  - Other
6. Compared to the average Canadian, do you think your family is (choose one):
  - a. A lot less rich
  - b. Less rich
  - c. About the same
  - d. More rich
  - e. A lot more rich
7. What is the highest level of schooling your parents completed?
  - a. They have not completed high school
  - b. Completed high school
  - c. Complete college/university
  - d. Don't know
  - e.

## ACADEMIC COMPETITION

**Appendix C – Emotional Problems****Strengths and Difficulties Questionnaire  
(only the Emotional Problems subscale)**Reference:

Goodman, R. (1997). The strengths and difficulties questionnaire: A research note. *Journal of Child Psychology and Psychiatry*, 38(5), 581-586.

Instructions: Select the response that best describes your opinion on the following statements.

Response Scale: 1= Not true, 2 = Somewhat true, 3 = Certainly true

1. I get a lot of headaches, stomach-aches or sickness.
2. I worry a lot.
3. I am often unhappy, downhearted or tearful.
4. I am nervous in new situations. I easily lose confidence.
5. I have many fears. I am easily scared.

Scoring Key:

Total score.

## ACADEMIC COMPETITION

**Appendix D – Bullying Scale****Balance of Power in Aggression Scale**

IN THE PAST FEW MONTHS, how often **HAVE YOU DONE** each of the following actions **TO SOMEONE** with less, about the same, or more strength, popularity or power **compared to you**

**Response scale: Never, hardly ever, sometimes, fairly often, very often**

1. Hit, kicked or shoved
  - a. Someone with **LESS** strength, popularity or power than me
  - b. Someone with **ABOUT THE SAME** strength, popularity or power as me
  - c. Someone with **MORE** strength, popularity or power than me
2. Used physical force against
  - a. Someone with **LESS** strength, popularity or power than me
  - b. Someone with **ABOUT THE SAME** strength, popularity or power as me
  - c. Someone with **MORE** strength, popularity or power than me
3. In real life (in person), threatened
  - a. Someone with **LESS** strength, popularity or power than me
  - b. Someone with **ABOUT THE SAME** strength, popularity or power as me
  - c. Someone with **MORE** strength, popularity or power than me
4. In real life (in person), made fun of or said mean things to
  - a. Someone with **LESS** strength, popularity or power than me
  - b. Someone with **ABOUT THE SAME** strength, popularity or power as me
  - c. Someone with **MORE** strength, popularity or power than me
5. In real life (in person), spread negative rumours or gossip about
  - a. Someone with **LESS** strength, popularity or power than me
  - b. Someone with **ABOUT THE SAME** strength, popularity or power as me
  - c. Someone with **MORE** strength, popularity or power than me
6. In real life (in person), left out or excluded from a group
  - a. Someone with **LESS** strength, popularity or power than me
  - b. Someone with **ABOUT THE SAME** strength, popularity or power as me
  - c. Someone with **MORE** strength, popularity or power than me
7. In real life (in person), ignored, or threatened to stop being friends with,
  - a. Someone with **LESS** strength, popularity or power than me
  - b. Someone with **ABOUT THE SAME** strength, popularity or power as me
  - c. Someone with **MORE** strength, popularity or power than me
8. Used the internet or a cell phone to spread negative rumours or gossip about...
  - a. Someone with **LESS** strength, popularity or power than me
  - b. Someone with **ABOUT THE SAME** strength, popularity or power as me

## ACADEMIC COMPETITION

- c. Someone with **MORE** strength, popularity or power than me
  - 9. Used the internet or a cell phone to say or show mean things about
    - a. Someone with **LESS** strength, popularity or power than me
    - b. Someone with **ABOUT THE SAME** strength, popularity or power as me
    - c. Someone with **MORE** strength, popularity or power than me
  - 10. Used the internet or a cell phone to post embarrassing or hurtful information, pictures or videos, for other people to see, about
    - a. Someone with **LESS** strength, popularity or power than me
    - b. Someone with **ABOUT THE SAME** strength, popularity or power as me
    - c. Someone with **MORE** strength, popularity or power than me
1. In the **PAST FEW MONTHS**, how often have you spread rumours about someone, or left someone out, in real life (in person), **WHEN THEY WERE NOT SURE WHO HAD DONE IT TO THEM?**
    - a. Never
    - b. Hardly Ever
    - c. Sometimes
    - d. Fairly Often
    - e. Very Often
  2. In the **PAST FEW MONTHS**, how often have you used the internet or your cell phone to gossip or spread rumours about someone, or to send or post things that are hurtful or embarrassing to someone, **WHEN THEY WERE NOT SURE WHO HAD DONE IT TO THEM?**
    - a. Never
    - b. Hardly Ever
    - c. Sometimes
    - d. Fairly Often
    - e. Very Often

***Identity-Based Bullying***

3. In the **PAST FEW MONTHS**, how often have **YOU DONE** the following, against someone who was **LESS** popular or strong than you?

Response Scale: Never, Hardly Ever, Sometimes, Fairly Often, Very Often

- a. Made fun of someone's language, religion, race, or culture
- b. Targeted someone online because of their language, religion, race, or culture
- c. Excluded someone because of their language, religion, race, or culture
- d. Physically hit someone because of their race, religion, or culture
- e. Made fun of someone's sexuality, gender, or disability
- f. Targeted someone online because of their sexuality, gender, or disability
- g. Excluded someone because of their sexuality, gender, or disability

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- h. Physically hit someone because of their sexuality, gender, or disability

***Aggressive Functions***

4. How often have you done the things below for the following reasons?
- Hit, kicked, shoved, or used physical force against someone
  - Threatened or said mean things to someone in person
  - Spread hurtful rumours or left someone out of a group
  - Used the internet or a cell phone to send or post things that may have hurt or embarrassed someone

Response Scale: Never, Hardly Ever, Sometimes, Fairly Often, Very Often

- a. To be cool or popular
- b. To show others not to mess with me
- c. Someone made me angry and I reacted without thinking
- d. To get the things I want
- e. To get attention and feel respected
- f. To make people afraid of me and show that I'm tough
- g. To influence others so I get my way
- h. Just for fun
- i. To get someone to like me more than another person
- j. Joking or messing around with a group of friends
- k. Others did something wrong to me and I reacted without thinking
- l. To change what others think about a rival
- m. Others frustrated me and I acted before calming down
- n. Because it felt exciting
- o. It was part of a plan to get back at someone
- p. To compete with or weaken a rival
- q. To win a competition
- r. To get someone to back off
- s. To show off and impress someone I'd like to date
- t. To show who's the boss
- u. To be in charge
- v. Because I was bored
- w. It was just fun to see their reaction