

An Evolutionary–Developmental Perspective on Altruistic Thinking, Social Reasoning
Skills, and Self-Perceptions in Middle Childhood

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Abstract

This study utilized an evolutionary developmental framework to explore individual differences and relations among prosocial behaviours and social reasoning skills related to self-perceptions in middle childhood. There is little research in this area specifically, as an evolutionary developmental framework is seldom applied to this age group within the context of education. Participants (n=70) aged 9–11 years old were recruited from different schools under one school board. Participants completed self-report measures online that measured altruistic thinking, perceived academic competence, school-related perceived stress and pressure, global self-worth (GSW), theory of mind (ToM), and empathy. Results showed a significant difference in empathy between those who scored high versus low in altruistic thinking. Altruism was positively correlated with affective empathy and cognitive ToM (e.g., a type of social reasoning skill that involves cognitive perspective-taking), although cognitive ToM was not related to affective empathy. Perceived academic competence was positively correlated with GSW. High levels of perceived classroom-related stress and pressure were negatively correlated with perceived academic competence and GSW. In contrast, high levels of perceived stress and pressure positively correlated to high levels of affective empathy. Implications for practice include the development of strategies for educators to promote positive relationships and altruistic behaviours among students to aid in student well-being. Implications for research include support for the application of an evolutionary developmental perspective to the social domains of classroom dynamics.

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CHAPTER ONE: THE RESEARCH PROBLEM

Teachers play a vital role in the academic success and the social development of their students. For this reason, educational psychology has become a growing field that can benefit classroom environments (Henson & Eller, 2012). Theories in educational psychology (e.g., behaviourism, cognitivism) can be used as a means to improve teaching practices, aid in student learning, and promote positive interactions between teachers and students (Henson & Eller, 2012). Therefore, this branch of psychology provides opportunities for teachers to put theory into practice.

When considering theories that contribute to educational psychology, social learning theory and social-ecological theories can be contested. Social learning theory provides an explanation for the importance of cooperation and sharing in learning environments, as these have been found to aid in academic achievement and group dynamics (Caprara et al., 2000). Social-ecological theory highlights schools and peers as part of the microsystem, which can immediately influence a child's development (Bronfenbrenner, 1979). However, different psychological frameworks also can be utilized in the same way, such as developmental evolutionary psychology.

An evolutionary-developmental framework can contribute to understanding the benefits of social dynamics as it conceptually allows for us to connect our modern behaviours and actions with evolutionary human existence (e.g., Ellis & Bjorklund, 2005; Foley, 1995). This means that we can consider how humans have evolved over time, and evaluate what adaptations have become advantageous. For example, positive social connections would have derived from the formation of groups, and this has now developed in the human ability to form relationships (Foley, 1995). With this notion, we

also are able to recall what has not been advantageous and, therefore, provide context as to why we do not partake in certain actions and behaviours. For example, humans over time have become more domesticated to adapt with the customs of civilization, thus eliminating actions and/or behaviours that may have been noted during the Era of Early Adaptation (EEA) (e.g., aggressive attacks, lack of hygiene, etc.).

An evolutionary perspective within education can help explain why certain behaviours have continued over time, and allow an understanding as to how such behaviours still provide advantages to an individual's survival. The purpose of this study is to explore the relations among altruistic thinking, social reasoning, perceived school-related stress and pressure, global self-worth, and perceived academic competence while utilizing an evolutionary developmental framework.

Various behaviours can be considered evolutionary advantageous. To be considered as such, the behaviour would have had to aid in the survival of our ancestors throughout evolution (Foley, 1995). Charles Darwin (1859) developed the theory of natural selection and explained how species adapt to their environment to survive within it. Darwin's (1859) theory has since been popularized, and has been used to explain gene variations across generations. Similarly, this theory can also explain how humans adapt behavioural changes over time to thrive or succeed in their environment.

This idea can also be considered in an educational setting. Students constantly are being presented with information and stimuli within the classroom. Stress can be induced from these stressors (e.g., pressure to perform well on tests), thus potentially eliciting a "fight or flight" response. This response is the body's way of dealing with hyperarousal. Students are expected to handle this stress in a way that is socially acceptable within the

classroom environment. They not only are expected to behave in a certain way (e.g., prosocial interactions with peers, respect one another) but also are presented with the challenge of performing well academically. Prosocial behaviours (e.g., altruism) have been found to have positive impacts on both academic achievement (Caprara et al., 2000) and stress (Layous et al., 2012; Midlarsky, 1991).

In sum, connections can be made theoretically among the way students conduct themselves in the classroom as a means to “survive” in that environment. We can consider prosocial behaviours and social cognition as a means to navigate through times of classroom stress and pressure (e.g., test anxiety). Further, it allows us to consider how such behaviours (e.g., altruism) that once had adaptive qualities during our earlier existence also aid in adaptation to the classroom today.

Background

Researchers use evolutionary theory to make ancestral connections to modern day behaviours, attitudes, and motivation. An evolutionary perspective has been used to explain why and how our behaviours have adapted over time, and how this process of adaptation proves to be advantageous in today’s daily life. We can consider how behaviours have been selected, as this allows for an explanation that connects to theories such as natural selection (Darwin, 1859), and the survival of the fittest (Spencer, 1864).

Natural selection is the theory to which species adapt over generations to better survive the elements of the environment (Darwin, 1859). In contrast, the survival of the fittest theory outlines that “success” leads to the reproduction of one’s genetic material (Spencer, 1864). Although slightly different from each other, these two theories outline why certain behaviours are selected rather than how they manifest (Belksy et al., 1991).

Other, more modern, theories have stemmed from these two theorists. Dacher Keltner's (2009) survival of the kindest theory, for example, explains how prosocial behaviours, and the ability to be kind to one another, have played an integral role in human survival and evolution.

Prosocial behaviours are actions and/or responses that benefit interpersonal relationships. A prosocial behaviour that evolutionists often study is altruism. Altruism involves acts of kindness that will benefit a receiver, while also providing potential benefits to the giver (de Waal, 2008). The giver's motivation to perform an act (e.g., helping, sharing, etc.) is based on several principles. One notion is that there is the potential to receive a benefit at a later time—meaning that the act will be reciprocated (de Waal, 2008). This is explained further by Pradel's (2008) tit-for-tat principle, in which there will be a future response to behaviours that are presented to us. Reciprocal altruism theory has also been noted in literature, and highlights that the advantage of being altruistic is reliant on the fact that the original giver will gain some benefit in exchange for his/her act (Trivers, 1971).

Altruism can also be connected to social cognition—or the ability to think or reason about social situations which would include both affective and cognitive skills (Gabriel et al., 2019). One affective skill is known as empathy, which is the ability to sense distress and/or emotions of another person, and which encourages us to interact with others (Smith, 2006). The empathy altruism hypothesis (EAH) explains that there are benefits that motivate the giver to help an individual (Batson, 2016). Some of these benefits may include the gain of social rewards (e.g., validation and acceptance) and reduction of social/self-punishment (e.g., isolation).

Social reasoning also includes the ability to imagine the perspective of another person, which is referred to as theory of mind (ToM). This ability has also been found to relate to altruism and is a critical aspect of prosocial behaviours (Moore & Macgillivray, 2004). That is, this perspective-taking ability has been found to allow individuals to act in altruistic ways, such as helping an individual in need. Researchers also have found correlations to a genetic component (e.g., phenotypes) for ToM (Hughes & Cutting, 1999), thus further supporting sociobiological contexts. Therefore, the ability to detect another person's mental state or perspective is a crucial component in acting altruistically towards others.

Prosocial behaviours contribute to one's learning. There are two reasons for this, including increasing positive emotions and facilitating good interpersonal relationships (Luks, 1988). The positive emotions that come from prosocial behaviours aid in stressful situations, hence why they have been selected for over time. The ability to help others has been linked to mood enhancement such as the "helper's high" (Luks, 1988), and personal well-being (Midlarsky, 1991). In fact, demonstrating acts of kindness to help another individual has been linked to increases in subjective well-being, compared to only helping oneself (Titova & Sheldon, 2021). For example, feelings that elicit happiness are connected to prosocial spending compared to personal spending (Moche & Västfjäll, 2021).

Positive emotions can reduce stress, meaning that prosocial interactions have implications on student work ethic, as relationships have been noted in literature to increase work engagement (Rath & Harter, 2010). Demonstrating prosocial behaviours can lead to personal well-being, as it has been found that trying to make other individuals feel happy has a direct link to one's own happiness (Titova & Sheldon, 2021). Beyond this, researchers

also have taken into considerations how receiving and giving support have an impact on one's neurology, thus decreasing negative psychological effects (Inagaki et al., 2016).

Prosocial behaviours (e.g., altruism) and social cognition (e.g., empathy, ToM) attribute to interpersonal relationships as well. Within the classroom, students often are placed in a setting in which they must learn in pairs or groups. Teachers utilize this cooperative learning as a strategy to increase student–student interactions as well as facilitate social learning. Such interactions have been found to have a positive impact on academic achievement and social relationships (Hertz-Lazarowitz, 1984). Social interactions also aided in relationships during the time of early era of adaptation (EEA). Humans during the EEA had to develop bonds with in-group members as a means of protection against outside threats (Foley, 1995). Today, this idea is still prevalent in how humans have a need to develop a sense of belonging.

However, evolutionary theory is typically considered when looking at behaviours in infancy or mating patterns in later years. Considerations in middle childhood are lacking in this area of study. Middle childhood is a critical part of development as it is a transitional period between childhood and adolescence (ages 9–11). Piaget (1965) developed a theory based on cognitive development, and within this “concrete operational” stage, children begin to exit out of egocentric thinking, and are able to consider how others think. This may have the potential to allow students to start depicting socially mindful actions, as they can recognize that prosocial acts can aid another individual regardless of knowing that person's specific needs (Zhao et al., 2021).

It has also been noted by Kohlberg (1958) that the transition between pre-conventional and conventional morality occurs during middle childhood. This means that children begin to use empathy to make their moral decisions. Further, Erikson's (1950)

theory of psychosocial development highlights the importance of the combination of school and social relationships during this time period. Bajovic and Rizzo (2021) note that to create positive outcomes in the classroom, cognitive processes, emotions, and moral actions should be encouraged. One reason for this is that interactions with other individuals, especially through childhood, can foster the ability of perspective taking. Therefore, socialization during childhood within the classroom is a crucial piece to moral development.

Much like our ancestors, the importance of belonging to a group and working collaboratively is important to human survival. The sense of belonging contributes to student–student interactions, thus also affecting academic achievement. With this notion, there needs to be more research done about the connection between the prosocial behaviours and social cognitive processes, how this connection has continued on throughout evolution, and how the prosocial behaviours and social cognitive processes connect to self-perceptions within the classroom.

Purpose of the Study

The purpose of this study was to explore the relations among prosocial behaviour, social reasoning skills, perceived school-related stress and pressure, and perceived academic competence within an evolutionary developmental framework in the context of middle childhood. To do so, students in middle childhood (e.g., Grade 4 or 9-year-olds), completed a series of tasks that measured their prosocial behaviour (altruism), social reasoning skills (empathy, ToM), perceived school-related stress and pressure, and perceived academic competence. The study sought to answer two primary research questions, including:

1. What are the relations among children's altruistic thinking, ToM, empathy,

perceived academic competence, school-related perceived stress, and global self-worth?

2. Are there gender differences among children's altruistic thinking, ToM, empathy, perceived academic competence, school-related perceived stress, and global self-worth?

Rationale

Explaining the evolutionary perspective to modern day human behaviours has always been fascinating to me since I took a course on Evolutionary Psychology in my undergraduate degree. I thoroughly enjoyed the perspective of connecting modern life to theories based on our ancestors and/or primates. Upon beginning my master's degree, I took a course in which we learned about Dacher Keltner's take on Darwin's theories. Keltner (2009) brings to light the concept of "survival of the kindest" which he argues better encompasses human nature than "survival of the fittest."

I found this concept interesting, as in my opinion, I was never taught that being kind could be a means of survival in modern life. Through my own experience, being labelled as a "nice person" never seemed to be something that helped me; in fact, being a "nice person" often made me unable to confront bullies whilst growing up. Therefore, I wanted to explore Keltner's theory within the classroom.

This then led me to consider my previous experience in elementary school. I recalled how those who were kind and empathetic towards their peers tended to successfully achieve their desired grades compared to those students who would be labeled as a "bully" or would treat others unfairly. With this notion, I chose to consider altruistic thinking, social reasoning skills, perceived academic competence, and well-being in the classroom for my thesis.

Definitions

This study references several key terms that can also be defined in various ways; therefore, it is important to present an overview of how these terms will be utilized within this body of research.

Prosocial Behaviour (Altruism)

Prosocial behaviours can encompass a variety of attitudes, actions, and/or responses. These tend to include behaviours that will impact interpersonal relationships. In this study, the prosocial behaviour that will be emphasized is altruism. Altruism is noted as acts of selflessness (Comte, 1875), such as helping and sharing with others based on sensing distress or need for extrinsic benefits (de Waal, 2008).

Reciprocal altruism is best explained by the tit-for-tat principle (Pradel, 2008). This means that a giver will help another individual with the expectation that they will receive help in return in the future. In the present study, altruism will be defined as any form of helping, sharing, or comforting that is reported through the adapted self-report altruism scale.

Social Cognition (Empathy, Theory of Mind)

Social cognition or the ability to think or reason about social situations involves both cognitive and affective components. Empathy is one social cognitive skill that allows us to consider the mental states of other individuals as well as how to act on these assumptions (Smith, 2006). The cognitive component of empathy allows us to recognize one's mental state, whereas the affective component may elicit an emotional response (Guhn et al., 2020). In the present study, I consider the affective component of empathy.

This can be related to ToM, which allows individuals to socially connect with others while also considering their perspectives (Weimer et al., 2021). Many studies have

found relations between ToM and empathy (e.g., Devine & Hughes, 2013). In the present study, I explore cognitive ToM. Since ToM is multidimensional and includes affective and cognitive components, other studies have found no relation between ToM and empathy. For example, Kankse et al. (2015) found that ToM and empathy actually come from two different neural streams in the brain.

Cognitive ToM and affective empathy are considered within this study as they may or may not interact with one another. Exploring this may also lead to considerations of how and why we choose to treat others the way we do. In the present study, social cognition are considered to be the processes in which the participants are able to evaluate and act within social situations via self-report measures. The two key components of social cognition considered in the study are affective empathy and cognitive ToM, as these may play a role in an individual's ability to act altruistically.

Academic Self-Perceptions

Academic self-perception will be defined as how a student believes he/she is performing in school. For the purpose of this study, academic self-perceptions will be quantified through a subscale of Harter's self-perception scale. This measure considers scholastic competence, in which the participants will answer the question based on how they view themselves academically.

Middle Childhood

Middle childhood encompasses ages 9 to 11, and is a critical stage in development in which children begin to think more logically through inductive reasoning (Piaget, 1965) and further develop relationships with their peers (Erikson, 1950). Berry and O'Connor (2010) noted that in regards to social reasoning skills, there are significant increases between Grade 3 and 5. This age group ranges from 9 to 11 years old. For this

study, including Grade 4 students will represent middle childhood.

School-Related Stress/Pressure

Physiological stress can act as a good representation of “fight versus flight” responses. These responses are reactions from the body in response to a threat (e.g., sweating, elevated heart rate, trouble sleeping). High demanding academic environments can elicit scenarios in which students may feel pressure, thus impacting well-being (Chambel & Curral, 2005). Examples of this pressure can include anxiety regarding school, competition with peers, and poor grades (Fallin et al., 2001). Pressures in the classroom may lead to physiological stress reactions because school-related pressure acts as a threat in this modern-day context.

Theoretical Framework

Social emotional theories can also be connected to evolutionary theory. Altruistic behaviours have been noted in primates (Warneken & Tomasello, 2006), but they can also be connected to social-emotional learning as development in this area also encompasses perspective, taking, mindfulness, and kindness (Malti, 2020). Therefore, the present study aims to highlight an evolutionary–developmental framework as it can be related to other psychological theories that are applicable across the lifespan to explain social and emotional development.

An evolutionary–developmental framework encompasses two components of psychology: theories rooted in evolution and how humans develop. It allows for an explanation of how evolutionary adaptation has been able to influence the behaviours of modern-day humans (Ellis & Bjorklund, 2005). This framework, therefore, is able to further explain the genetic, epigenetic, and environmental factors that also impact

behaviour (Müller, 2009). When we consider explaining behaviours through this lens, we are focusing on how and why modern behaviours have come to be what they are today.

An important component that allows us to explain behaviours through this lens is noting that relevance of making connections to our ancestors and the environment of evolutionary adaptedness (EEA). This is the time period in which evolutionary advantageous behaviours developed for humans to survive, reproduce, and socialize.

Keltner (2009) notes that, “A clear picture of early hominid social life would tell us of the recurring social contexts that reduce the chances of genes making it to the next generation” (p. 56). This means that there is a reason for us to understand how humans have evolved throughout our existence (e.g., cognitively, morally, emotionally), and how it extends into our social behaviours. Keltner also mentions that “Knowing these social facets of the EEA (era of early adaptedness) would then lay a platform for understanding the deeper origins” (p. 56). Ellis and Bjorklund (2005) also support this by mentioning that functional behaviours stem from the cognitive mechanisms that evolved through natural selection during this time. Acknowledging these “deeper origins” is important because it can connect sociobiological components to our modern behaviours. It contributes to the explanation of why some behaviours (e.g., developing groups) are still relevant to our less archaic, modern day lifestyles.

With the present study, the concept of evolutionary psychology is fundamental. This branch of psychology can use evolutionary theory to explain the behaviours of infants and children (Ellis & Bjorklund, 2005). However, more research with this perspective needs to be done when studying the behaviour of children, as this framework is typically used to explain adult behaviour (Ellis & Bjorklund, 2005). Some researchers do use this lens to analyze child behaviour as this field continues to grow.

For example, Jay Belsky is a developmental child psychologist who has been using this framework within his research to explain how genes and the environment can influence a child's neuroplasticity and socialization. For example, when analyzing plasticity, the evolutionary perspective would support the idea that natural selection would favour varying plasticity in offspring (Belsky & Pluess, 2009). This would mean that one's offspring would have varying abilities to adapt to the environment, thus increasing chances of survival.

Belsky et al. (1991) considered socialization through this lens, thus providing an analysis of various theories that would otherwise not be associated in developmental psychology alone. This argument explains that, "*individuals* are selected on the basis of behaviours that *maximize reproductive fitness*" (Belsky et al., 1991, p. 663), meaning that the behaviours that optimize our survival can be passed on with each generation that follows.

Overall, utilizing Keltner's (2009) "survival of the kindest" theory contributes to the framework for the present study, as it relates the evolutionary perspective to explain how acts of kindness (e.g., through altruism) are an adaptation that allows for "fitness" in one's environment. In the current study, I highlight the relevance of this within the classroom context through consideration of altruism, social reasoning skills, and self-perceptions that can be connected to well-being.

Overview of Method

The study was conducted online with students who ranged from ages 9 to 11 from a school board in Northern Ontario. Ethical clearance to conduct the study was obtained from the Brock University Research Ethics Board in early 2020, and then by the school board's Director of Education. Data collection was paused due to a labour action across Ontario during the winter of 2020 which prevented me in my role as the student primary

investigator from contacting principals and teachers. Once the labour action was resolved in the spring of 2020, due to the suddenly imposed health restrictions caused by COVID-19 in March 2020, I needed to modify my original data collection plans which were to have participants complete the self-report measures on paper while being present face-to-face should they have had any questions.

The COVID-19 pandemic brought into consideration further ethical concerns, primarily face-to-face contact with students. These new restrictions meant that the study had to be shifted to online platforms to keep all participants safe.

Consent forms were administered via Google Forms and returned to the student researcher. Each student was given a link to a Qualtrics survey that included the adapted version of the self-report altruism scale (Rushton, 1981, adapted by Witt & Boleman, 2009), two subscales of the student life stress inventory (Gadzella, 1994), one subscale (empathetic concern) of the interpersonal reactivity index (Davis 1980), two subscales of Harter's self-perception scale (Harter, 1985), and an advanced ToM task (Osterhaus, et al., 2016).

Data Analysis Plans

The data obtained from this study was analyzed through SPSS software. Descriptive statistics were taken to account utilizing the demographics of the sample. Scores were analyzed through descriptive and inferential statistics including means, standard deviations, skewness/kurtosis, transformation, t-test, and correlations.

Limitations

There were various limitations within the study. The first limitation is the restriction to a Westernized classroom. It is possible that a study like this would elicit different results in Eastern societies, meaning that this would be a further area of study.

This study is also restricted to a time limit to be completed. Furthermore, the participants are a relatively small sample size. A larger sample size collected over time may have facilitated more robust findings as longitudinal statistical analysis could have been conducted to explore for causal effects.

Prior to data collection, a labour action throughout Ontario was carried out. This prevented the student researcher from collecting data within the originally planned time frame. A labour action would constitute ethical concerns when contacting the school board and teachers. Because of this, data collection had to be postponed. Data collection plans were then further revised, as the COVID-19 pandemic caused major changes to the standards of data collection and elementary school plans. Due to this, rather than the study being in-person, methods were changed to online means.

COVID-19 restrictions included the elimination of face-to-face data collection. The student researcher was not permitted into any schools. Furthermore, to ensure as little contact as possible, the original plan of utilizing paper to administer the study was also modified. To do so, consent forms and the study were transferred to online platforms. This acted as a limitation as the student researcher was only able to be contacted through video calling if the teachers had any questions while students partook in the study.

Implications

The results of this study provide implications that can contribute to theory, practice, and further research. It contributes to literature in evolutionary developmental theory. As mentioned by Ellis and Bjorklund (2005), this theoretical framework is typically applied to explain the behaviours of adults. This study contributes to the literature within this framework, and applies it to middle childhood.

Implications for practice are also suggested, as teachers can use the results of this study to further encourage prosocial behaviours in their students. Furthermore, knowing that prosocial behaviours have a connection to academic achievement can motivate teachers to utilize strategies such as cooperative learning in their classrooms to help improve student learning and interpersonal relationships with their peers. Finally, the methods of this study can be applicable to other cultures and age groups to further this research.

Outline of Remainder of the Document

Chapter 1 presented an overview of what is missing from this research. It calls attention to why an evolutionary–developmental framework can be utilized within the classroom. It also provided background information regarding prosocial behaviours and relevance to middle childhood. The purpose and rationale for the study were stated. Key terms including prosocial behaviours, academic achievement, and middle childhood were also defined. A thorough outline of the evolutionary–developmental framework was explained. The methods, plans for data analysis, limitations, and implications were included within this section.

Chapter 2 presents further information regarding the evolutionary adaptive behaviours in connection to academic achievement. This review highlights why researchers focus on the connection between our ancestors and the modern-day human. These connections are further highlighted through the definition of altruism and its various subcategories. The chapter also connects altruism to empathy and theory of mind. These prosocial behaviours are then connected to stress, academics, and social development in middle childhood.

Chapter 3 gives an overview of the methodology of the study. Further rationale is explained. A detailed explanation of the procedures is also given, and includes ethical procedures, the study conducted in the school or at home, as well as post-study protocols. The chapter defines the measures included in the study and concludes by describing the process for data analysis.

Chapter 4 features results of the study, including relations, patterns, and trends between the variables. Demographics are also highlighted in this chapter.

Chapter 5 further examines the findings from Chapter 4. The chapter relates the findings from this study and compares it to previous literature within this domain. It also addresses the two main research questions, study limitations, and implications for further study and practice within the classroom.

CHAPTER TWO: REVIEW OF LITERATURE

This chapter provides an extensive overview of literature and theories that connect to the present study. I highlight the studies that consider prosocial behaviours and social cognition in relation to well-being and academic achievement, and explain how these findings connect to the main variables in the present study. Further, I highlight the importance and relevance of evolutionary–developmental theories and how they can be applied to the classroom context.

General Background

The expression of prosocial behaviour can be analyzed through an evolutionary–developmental perspective. By utilizing an evolutionary framework, we can gain a better understanding of how advantageous behaviours develop over time, and why they are continued today. To study the connections between our ancestors and the modern-day human, researchers study commonalities and differences between humans and primates. For example, Warneken and Tomasello (2006) highlighted how helping and sharing behaviours compare between infants and chimpanzees. This was done through behavioural observations of infants and chimpanzees. Studies such as this can give us an idea on how prosocial behaviours have evolved, while still maintaining the notion that since they exist within the two species, there must be some advantage to the behaviour. When looking at research like this, one must also consider what makes behaviours advantageous, and within what contexts. This allows researchers to make other connections to theories and frameworks to explain them, leading to practical implications.

Charles Darwin (1859) developed the theory of natural selection, which demonstrates that species adapt within their environments to survive. This can happen

through generational biological variations, behaviours, and/or actions. Although Darwin meant for this theory to represent plants and animals (Rogers, 1972), the theory has since been applied to other theoretical frameworks (e.g., socialist framework). Social Darwinists have extended the theory of natural selection to explain how humans develop within their social facets (Rogers, 1972). The notion of those who are happy and healthy able to reproduce successfully is relevant to this, although it can be contested that this may be a better reflection of Spencer's (1864) "survival of the fittest." However, Darwin (1871) does note that "those in weak body and mind are eliminated" (p. 501). Therefore, social Darwinism highlights that humans are also susceptible to natural selection.

Keltner (2009) notes that "survival of the kindest" begins with the notions of caregiving of our offspring. For this reason, I argue that consideration of Spencer's (1864) theory is critical when looking at Keltner's (2009) "survival of the kindest". Keltner (2009) poses that positive interactions with others through compassion and kindness may elicit stronger bonds. In the context of evolution, this would allow an individual to find a mate. For example, if you are in a compassionate, kind relationship with your significant other, you would be more likely to stay together to reproduce and raise your offspring. As Spencer's (1864) theory is based around the successful of passing on of your genetics, it is evident how prosocial such as kind and compassionate behaviours would contribute to this in today's social context.

One major component when considering evolutionary theory is the idea of cost versus benefit. For a behaviour to be selected for, it is crucial that the benefits of expressing that behaviour must outweigh the cost of it. Reciprocal altruism is a strong example of this. Reciprocal altruism involves the act of helping another individual with

the expectation of gaining something in return in the future (Trivers, 1971). Therefore, the energy expended by the giver from helping the receiver would be compensated for when the receiver ends up helping the giver. Another benefit would be the “helper’s high” the giver would feel after helping (Luks, 1988). Concepts like “helper’s high” support the idea as to why our ancestors would have selected behaviours that helped other individuals, as it may have led to intrapersonal benefits for the giver.

Part of our general survival is to deal with stress. At the time of our ancestors, stress would have been closely related to threats of death. Modern-day stress can come from a variety of situations but are rarely life-threatening. However, adaptive prosocial behaviours can still contribute to the relief of stress through interpersonal and intrapersonal benefits. Empathy-based altruism is something to consider in this case. Empathy can be a motivation for altruistic behaviours (Batson, 2016), and is also supported by the empathy altruism hypothesis (EAH). This theory highlights how the giver also gains some sort of benefit from acting altruistically (Batson, 2016). Empathetic arousal gives humans the motivation to help but also to decide what our actions will be (Bloom, 2016), which is what separates altruistic behaviours in humans from non-human primates.

Another component to this that separates us from non-human primates is our ability to understand or read the thoughts and emotions of self and others. To do so, an individual will need to have emotional understanding and perspective-taking abilities (Bosacki et al., 2020) as these are two crucial elements to theory of mind (ToM). ToM allows for an individual to facilitate positive relationships through empathy (Moore & Macgillivray, 2004).

Advantages of positive relationships can be seen within the classroom setting. Interactions between students have been studied, and it has been found that these interactions promote intrapersonal benefits and academic achievement (Hertz-Lazarowitz, 1983). One reason for this is the fact that prosocial behaviours help to reduce stress. This is crucial within the academic setting, as stress can hinder academic performance. These behaviours can promote acceptance within groups, which helps students establish a sense of belonging (Layous et al., 2012).

Positive relationships also help create a good sense of work ethic (Rath & Harter, 2010). One way in which student interactions are utilized in the classroom is through cooperative learning. Cooperative learning occurs when students are placed within small groups to work towards an academic goal or complete an assigned task. Gillies (2004) noted that working in this way improves the cooperative behaviours in students, thus creating a positive impact on their interpersonal relationships.

Wentzel (1994) also mentions that kind acts of helping, sharing, and cooperating are important components of social competency and connect to academics. The connections between social interactions and academic achievement are prevalent in middle childhood. Multiple psychological theorists have highlighted the importance of social behaviours during this time (e.g., Erikson, 1950; Piaget, 1964). This transitional period is when children begin to think about the feelings and emotions of others, as well as establish belonging amongst their peers. Therefore, since certain prosocial behaviours have been evolutionary advantageous, they must also have benefits within the classroom, specifically with academic self-perceptions in middle childhood.

Connections to Our Ancestors

Researchers study the connections between modern humans and our ancestors by analyzing common behaviours that occur in both humans and non-human primates (e.g., Warneken & Tomasello, 2006). Commonalities between the two species depict a connection to a common ancestor who would have lived during the time of the era of early adaptedness (EEA). Understanding the connection between species and behaviours is important, as it highlights how certain behaviours (such as empathy, helping, and sharing) are not simply a result of teaching or mimicry, but rather behaviours that come naturally to humans, stemming from our early existence.

Warneken and Tomasello (2009) reviewed altruistic behaviours in both children and chimpanzees, focusing on three specific areas, including helping and sharing. Helping is the process of aiding another in achieving a goal, with little to no personal benefit (Warneken & Tomasello, 2006). In one study, 24 infants (18 months old) were presented with 10 situations in which an adult male attempted to achieve a goal. The situations were broken down into four categories, including “out-of-reach objects” (e.g., adult is unable to reach for a marker that was dropped), “access obstructed by a physical obstacle” (e.g., doors of a cabinet blocking ability to put away magazines), “achieving a wrong result” (a book falls and the adult tries to put it on top), and “using a wrong means” (e.g., trying to get a spoon out of a hole it fell through; Warneken & Tomasello 2006, p. 1301).

In these experimental situations, the adult spent 1 to 10 seconds looking at the object and made a statement in regards to it (e.g., “My marker!”), then would look at the child. Each experimental situation had a corresponding controlled situation. The

controlled conditions varied as the adult looked at the object with a neutral expression for 20 seconds, without any vocal response or eye contact with the child (Warneken & Tomasello 2006).

Infants were more inclined to help in the experimental conditions rather than the control conditions. Helpful actions that were noted included retrieval of out-of-reach objects, completion of tasks the adult failed at, and opening cabinet doors that acted as a barrier (Warneken & Tomasello 2006). Therefore, humans can demonstrate helpful behaviours in as early as infancy.

Helpful behaviours have also been observed in primates, specifically chimpanzees. Warneken and Tomasello (2006) used similar experimental situations that they used to test infants to also test chimpanzees. The chimpanzees also partook in the retrieval of out-of-reach objects. The chimpanzees were not as successful in the other tasks. The researchers attributed this to infants being able to interpret another's need for help in more difficult situations compared to the chimps, but noted that both species showed a willingness to help (Warneken & Tomasello 2006). In chimpanzees, this willingness to help may be linked to the ability to understand goals and intentions based on one's behaviour (Call & Tomasello, 2008).

Sharing is different than helping, as this would involve an individual giving up a valuable resource. Children are more generous when it comes to sharing compared to chimpanzees (Warneken & Tomasello, 2006). Researchers attribute this to social-cognitive differences between the two species (2006).

In one study, Brownell et al. (2009) presented 28 children (of either 18 months or 25 months of age) with a table with two options that would test sharing or non-sharing

decision-making. At the opposite end of the table from the child was an adult. Depending on the handle the child pulled, a snack would either be delivered to both the child and adult, or just the child. The results depicted that when sharing resulted in no cost to the 25-month-old children, they shared with the adult. In contrast, the 18-month-old children did not share, even when the adult indicated that she wanted the snack. Brownell et al. noted that these results go beyond empathetic motivation, but also relate to the understanding of when another individual wants or needs a particular resource.

Sharing in primates has been studied, but the reasons for these behaviours are drastically different than that of humans. Muller and Mitani (2005) discussed three possible hypotheses as to why wild chimpanzees may be inclined to share meat they have hunted, two of which will be considered for this review.

The first is the cooperative hunting hypothesis. This particular theory relates closest to selective sharing, in which chimpanzees will share with other chimpanzees that are likely to share with them for various reasons (e.g., abundance of resources). Reciprocal altruism, then, plays a factor in this case. The chimpanzees are not sharing out of emotional motivation; rather, they are doing so to benefit themselves in the future.

The second hypothesis refers to the use of meat as a tool that amplifies cooperative behaviour. This acts as a means to strengthen social bonds (Muller & Mitani, 2005). This implies that sharing connects to social behaviours in chimpanzees, just as it does in humans.

Researchers study connections between humans and non-human primates to investigate related behaviours. Because it is impossible to study our ancestors, making connections between the two species has become one way to study evolutionary

advantageous behaviours. These behaviours are likely to continue in both species because they contribute to survival. In the case of altruism, it is evident that helping and sharing are common behaviours in both children and chimpanzees. Although the underlying motivations to these behaviours may differ, both species partake in these behaviours with the consideration of cost versus benefit.

Altruism

The term “altruism” originated from Auguste Comte’s (1875) writings, where he discussed acts of selflessness. The definition has since been further developed, and refers to behaviours in which there is a cost to the individual performing an action, and a benefit to the individual receiving the action (de Waal, 2008).

Altruistic behaviours have been studied in humans and non-human primates to explore similarities and differences between the two species (Warneken & Tomasello, 2006, 2009). By doing so, researchers can draw conclusions as to how altruistic behaviours might have been evolutionarily advantageous, as well as investigate why these behaviours are still relevant today. Three types of altruism can be related to prosocial behaviours in humans: directed, intentional, and empathy-based (de Wall, 2008).

Directed Altruism

Directed altruism occurs when an individual helps another due to a sense of distress or need (de Waal, 2008). For example, donating a kidney to a stranger can be considered directed altruism. The donor is able to recognize that there is a need for the kidney, without having an interpersonal relationship of any kind with the receiver (Brethel-Haurwitz et al., 2020). To perform an altruistic act, one has to observe actions or

vocal cues from another individual to recognize one's physical, emotional, or situational state and decide whether he/she would need assistance. Therefore, directed altruism can be considered as the act of helping. Directed altruism can be further broken down into three domains, including altruistic impulse, learned altruism, and intentional altruism.

The first domain is altruistic impulse. This occurs when helping an individual happens spontaneously as a reaction to a distressful response from another individual. Impulsive altruism is not a new concept, and has been written about for decades. Gavanescul (1895) challenged what La Rochefoucauld believed about generosity by explaining altruistic impulses.

In contrast to La Rochefoucauld, who believed all impulses were motivated by a sense of self-love, Gavanescul (1895) highlights how human nature derives from our evolutionary history, stating that “the moral character of acts and deeds is determined by the thought and feeling that call them out, by the desired result, not by the actual one” (pp. 202–203). In this case, Gavanescul (1895) is explaining how we partake in altruistic behaviours without knowledge of what the outcome may be, because the situation calls for it.

The second domain of directed altruism is learned altruism. This notion is also supported through social ecological learning systems theory, as the way an individual develops can stem from interactions among the microsystem (e.g., family, school, peers; Bronfenbrenner, 1979). Learned altruism occurs as a response to positive reinforcement, such as one's environment, or socially accepted behaviours. These extrinsic benefits of altruism might not occur until after an extended length of time (de Waal, 2008).

However, positive reinforcement can also happen immediately, but the benefit of this reinforcement may not outweigh the cost of the altruistic act.

To study the effects of positive reinforcement, Rushton and Teachman (1978) created a study that tested for induced altruism in middle-childhood. Sixty boys (ages 8–11) were recruited for the study. Each participant was shown a bowling game in which the player could win tokens that he could later exchange for a prize. A poster, which featured a child named Bobby, who had “no Mommy or Daddy or anyone to look after him” (p. 323) was placed next to the game. The participant was told that he could choose to share his tokens with Bobby. The researcher modeled sharing with Bobby in front of the participant.

If the participant also chose to share, the experimenter would respond with a statement that was representative of the condition. Positive reinforcement statements were paired with either self-attribution (e.g., “So the reason you shared was because you are a generous kid. That is terrific”), no attribution (e.g., “Good for you”), or external attribution (e.g., “If you keep sharing with Bobby, I’ll let you have a turn with me on this Basketball game when you have finished”; Rushton & Teachman, 1978, p. 323).

If there was no reinforcement, the experimenter would simply nod at the participant to encourage the playing of the game. In the no model–no reinforcement condition, the experimenter did no model sharing and only watched the participant play the game. Rushton and Teachmann (1978) discovered older children were more generous and also found an effect on the participants’ behaviour when they were given praise for demonstrating the same action (donating) as the experimenter. This study (Rushton & Teachmann, 1978) supports the connection between positive reinforcement and altruism

in middle childhood. This is something to note, as altruistic behaviours may be reinforced by teachers within their classrooms. A teacher encouraging students to be kind, helpful, or generous could elicit more altruistic behaviour within their students.

Another concept that is worthy of highlighting is the idea of imitation and mimicry. One way in which humans learn is through these processes—whether they are mimicking family, friends, or those around them in society. This is done as a means of conforming to particular norms representative of that culture or society. For example, in school, young children are taught to follow the teacher’s lead by putting a finger to their mouth when they are being loud. This has a ripple effect, and as one child partakes, the rest will follow, indicating to the class as a whole that it is time to be silent. Imitation has also been connected to empathy.

One explanation for this is mirror neurons and how they allow humans to mimic others (Iacoboni, 2009). In his review, Iacoboni (2009) brings into question why mirror neurons were selected for throughout our evolution. One theory that accounts for this is that imitation is an evolutionary tactic that allows us to partake in empathy. This is because it contradicts the biological need for individual survival, and allows us to make social connections (Iacoboni, 2009).

de Waal (2008) also touches upon this in his explanation of the Russian doll model. In this model, empathy is an emotional state that follows a multistep process in which an individual begins with a basis of perception-action mechanisms (PAM). This baseline begins with emotional contagion, which leads to sympathetic concern, resulting in helping an individual in need. Imitation correlates with this process, beginning with motor mimicry, leading to recognition of shared goals, and resulting in imitation (de

Waal, 2008). Therefore, this notion of mimicking empathy is applicable to how we learn to be empathetic, as it connects us to other humans.

Intentional Altruism

Intentional altruism is the third domain of altruism mentioned by de Waal (2008). The term intentional altruism and reciprocal altruism can be used interchangeably. This particular form of altruism involves the expectation that the individual who is helping will later receive help back (de Waal, 2008). The simplest representation of this idea would be the example of “you scratch my back, and I’ll scratch yours.” This exchange, therefore, has both cost and benefit to both parties involved. The cost would be the energy expenditure that comes from performing the act, but the benefit would be receiving the action from another individual—thus the energy expenditure is returned. This exchange of input and output from both parties is the basis of reciprocal altruism.

Pradel (2008) further explains this concept with the tit-for-tat principle. This notion works on the basis that we respond to the behaviours that are presented towards us. Therefore, if Person A acts cooperatively towards Person B, Person B will likely also be cooperative towards Person A, based on the potential of interactions in the future (2008). Researchers study the likelihood of reciprocal altruism by comparing things like willingness to help, return benefits (e.g., sharing), and level of kinship (e.g., Warneken & Tomassello, 2006).

Stewart-Williams (2007) considered both Hamilton’s (1964) kin selection theory and Triver’s (1971) reciprocal altruism theory to explain reciprocal exchanges in his study. Kin selection theory is based on the idea that altruistic acts are more likely performed towards those who are in close relation to us due to genetic relatedness

(Hamilton, 1964). Reciprocal altruism theory, in contrast, works on the premise that altruism is advantageous based off of the idea that the giver will receive some benefit (Trivers, 1971).

Both theories provide some explanation as to why altruistic behaviours are selected for. In Stewart-Williams's (2007) study, 295 undergraduate psychology students were recruited via an online pool. Participants consisted of 146 males and 149 females, ranging from the ages of 16 to 46. Each participant was given a booklet consisting of multiple questionnaires. The first questionnaire was called "Finding Person A" in which the participant had to answer questions based on one person they knew. Depending on the individual they chose, his/her condition would be based on the sex of the individual and his/her relationship with that individual. The relationships were categorized as either a full sibling, cousin, acquaintance, or close friend. After completion of this questionnaire, participants completed a word-meaning priming task.

The final questionnaire asked questions based on the individual the participant chose to focus on and altruism. To measure altruism, the questions were based on the participant's willingness to help the individual in a low- (e.g., provide emotional support), medium- (e.g., helping in a crisis), and high-cost (e.g., donating a kidney) condition.

It was found that higher levels of altruism correlated with higher levels of relatedness. The potential cost level impacted the level of help the participant would give to the individual. The higher level of kinship (e.g., full sibling) resulted in the help to be given to increase, while it decreased with nonkin individuals (e.g., friend). Stewart-Williams (2007) considers Korchmaros and Kenny's (2001) notion of emotional closeness impacting altruistic behaviours. With this, it is important to understand that

relationships cannot rely on altruism and the exchange of favours alone. Other prosocial behaviours are crucial to the development of social bonds as well.

Altruism and Empathy

The ability to understand others emotions is a skill that is beneficial when performing altruistic acts, as it allows the giver to sense the distress of another individual. For this reason, empathy is another social and emotional skill to consider when examining the formation of social bonds. Batson (2016) mentions that empathy is a motivational factor for altruism. Therefore, not only is altruism advantageous in natural selection, but empathy also has phylogenetic support through evolution (de Waal, 2008).

Empathy has been noted in literature as an emotional response to witnessing someone who is in need and promotes other prosocial behaviours (Niezink et al., 2012). Smith (2006) highlights two types of empathy: Cognitive empathy is crucial in identifying the mental states of others, and can drive us to interact with others; emotional or affective empathy is what drives us to act altruistically, and supports inclusive fitness.

However, another component to consider is empathetic concern. Jordan et al., (2016) conducted three studies to highlight the differences between empathy (emotional congruence) and concern. When looking at altruism specifically, they found that participants who had concern were more likely to give a donation, compared to those who showed empathy (Jordan et al., 2016). This highlights that although affective empathy may allow us to feel the emotional distress of others, it may also lead to unwillingness to share resources. In contrast, having an empathetic concern for others may act as more of a motivation to help someone in need.

The empathy altruism hypothesis (EAH) supports the notion that empathy and altruism coexist. This theory presents three benefits for the giver that prompts altruistic

motivation. These benefits include the decrease of empathetic arousal, avoiding social and/or self-blame for failure, and to gain social and/or self-rewards (Batson, 2016). This perspective supports the evolutionary cost versus benefit perspective when examining why individuals help one another. Society often attaches empathy with “putting oneself in another person’s shoes”; however, de Waal (2008) addresses the human capacity for pre-concern, in which we are attracted to those whose distress may attract us. In theory, this idea also supports the EAH, viewing empathy as an instinctual process. Humans have the ability to address this empathic arousal, think about our next steps, and then decide what our final action will be (Bloom, 2016). It is this concept that separates altruistic behaviours of nonhuman primates from empathy in humans.

Altruism and Theory of Mind

Theory of mind (ToM) is a psychological phenomenon that describes one’s ability to think about how other individuals may be thinking. This allows for furthering prosocial behaviours since an individual can exhibit behaviours towards others based on these thought processes. For this reason, altruism has been connected to ToM because we may choose to act altruistically in response to what we think an individual may need (Moore & Macgillivray, 2004).

For example, if Student A thinks that one of their peers needs help with solving a problem, they may choose to interact with Student B and provide assistance. At no point did Student B state that they required help. However, Student A may have considered body language, facial expressions, and other behaviours from Student B to conclude that they were struggling. Moore and Macgillivray (2004) also mention that by understanding

others, we are more likely to facilitate helping and sharing behaviours that are connected to altruism.

A major component to ToM is perspective-taking, as this will aid in planning for future actions (Moore & Macgillivray, 2004). In connection to reciprocal altruism, an individual may choose to help based on the benefit of receiving help in the future. The altruistic behaviour, in this case, is done with the idea of achieving the goal of receiving help in exchange in mind.

Altruistic behaviours can be presented in current or future situations (Thompson et al., 1997). This connection has been examined in literature to examine how preschool children consider the well-being of others when there is a problem presented (Thompson et al., 1997). The participants (52 children between ages 3–5) of the study completed three altruism tasks and one prudence task that looked at gratification and cost. The researchers found age effects within their findings. The 4- and 5-year-old children presented more altruism and prudence in the future-oriented tasks (Thompson et al., 1997). This finding has the potential to be further supported by looking at middle childhood, and how altruism and prudence impact prosocial decision-making.

Behaviours can also be considered a reflection of genetics. Evolutionarily, human genes have been selected for over time due to the advantages that have aided in our survival. ToM also has been linked to a genetic component. Hughes and Cutting (1999) utilized twin studies to highlight this. Twin studies are used to address the nature versus nurture debate, and give insight as to how genetics and/or the environment may impact particular behaviours.

To study this, Hughes and Cutting (1999) presented eight false belief tasks and two deception tasks to test for ToM in their participants. One hundred nineteen 3-year-old twin pairs were taken as a sample from the TRACKS study in England. It was found that monozygotic twins had a higher correlation of ToM compared to fraternal twins. Other results reflect that genetic factors play a key role in understanding of ToM, with some influence from non-shared environmental factors (but none from shared environmental factors; Hughes & Cutting, 1999). This would support the strength of the influence of genetics on ToM. Since there is a connection between altruism and ToM, there is a possibility that altruistic behaviour may also be impacted by genetics.

When considering ToM, researchers also look at the regions of the brain that relate to this cognitive domain. For example, Kanske et al. (2015) used fMRI technology to see how the brain would react or "fire" upon the presentation of ToM-based stimuli. To measure ToM, the researchers used a False Belief Task. Kanske et al. found that ToM-based stimuli lit up the ventral temporalparietal junction in the brain.

Studying ToM and altruism allows us to better understand why specific behaviours are selected to extrinsically demonstrate. In some cases, the environment may influence prosocial behaviours. Considering the classroom environment is a good example. Student–student interactions occur daily and schools constantly promote respect amongst peers and anti-bullying policies to further promote positive relationships. Prosocial behaviours can also go beyond the environment, thus also supporting the theory of certain genes flourishing through natural selection and contributing to our existence.

Middle Childhood

Middle childhood is a critical stage of development as noted by theorists such as Piaget (1965) and Erikson (1950). Piaget considered cognitive development and how it is applicable to more than just learning. When children reach the concrete operational stage,

they begin to enter into a state of more logical thought processes. Children in this stage are able to work out problems internally. Furthermore, they begin to withdraw from egocentric thought processes often seen within the preoperational stage (Piaget, 1965). Erikson (1950) also developed stages of development, but highlighted psychosocial crisis that a child would encounter during certain periods of time. During middle childhood, the dilemma is considered to be the idea of industry versus inferiority (Erikson, 1950). This is when the child must deal with competencies, and is prevalent when looking at the combination of social relationships and schooling together.

Another reason why prosocial behaviours in children are researched is to further analyze this social development so that we can gain a further understanding of children's play, interactions, thinking, and motivation. Eisenberg et al. (2019) state that adjustment in childhood has a positive correlation with their prosocial behaviours. For example, children may start to direct their prosocial actions towards those around them. This may allow children to develop prosocial behaviours and direct them to larger bodies of people (Eisenberg et al., 2019). This is crucial in the classroom environment, as there can be constant shifts from the typical daily routine that has been established by the classroom teacher. Those students may adjust to these changes better, thus meaning that their learning would not be compromised compared to those who lack in prosocial development.

The ability to work with others socially has become a sign of school readiness and social development (Ladd, 1999). One study conducted by Wentzel and McNamara (1999) highlighted positive school adjustment as a result of social competence. Questionnaires were completed by 167 Grade 6 students, and tested for peer acceptance, family cohesion, emotional distress, and prosocial behaviour. Peer acceptance was found to be a predictor of prosocial behaviour (Wentzel & McNamara, 1999).

Being able to socially interact with others towards a common goal can be related to our ancestors as well. For example, the dynamics between hunter-gatherer clans would have been crucial in attaining food for survival. These same principles are relevant in the classroom. One study found that when looking at the trajectories of social skills, significant increases occur between Grades 3 and 5 (Berry & O'Connor, 2010), proving that social competencies begin to develop exceptionally during middle childhood.

Gender Considerations

Gender is another element that should be considered. Throughout literature, gender differences are considered to analyze the differences in prosocial behaviours between male and female participants. This is studied not only in humans but in other social species as well. There is a similar reflection that evolutionarily explains why female participants tend to show more empathetic behaviours.

For example, in rhesus monkeys, it has been found that during play, similar play preferences are shown compared to those in children; female monkeys tended to choose play options that resemble empathetic, caregiving practices, much like young girls do when playing games such as “house” or “mommy and baby” (Hasset et al., 2008). Evolutionarily, the responsibility of the “caregiver” role has been placed on women, thus explaining why girls may naturally choose to incorporate it into play (Christov-Moore et al., 2014).

However, it is also possible that gender differences may or may not be prevalent for an alternate reason. Epinosa and Kovářík (2015) analyzed six studies that considered gender differences in prosocial behaviour and found some treatment effects to be different between genders. The researchers highlighted that although gender plays an

important role in the motivation or discouragement in prosocial behaviours, individuals may adjust their prosocial behaviours based on their environment or situation. For example, girls will be more impacted by social and/or emotional stimuli, whereas boys will act more on motivation (Epinosa & Kovárik, 2015). Overall, gender is a key component in this research area, as it connects to the evolutionary–developmental framework as well as depicts differences in similar bodies of research.

Gender and Developmental Biological-Evolutionary Theories

Women have had a motherly role throughout history. Evolutionarily, this was once a crucial component of human survival. Ancestral women held the position of the caregiver, and had to invest time and emotion into their offspring. Because of this, when choosing a mate, women would have to be selective and look for fertility and security so that their offspring could have a better chance of survival (Reiber & Garcia, 2010). Hrdy (1999) explained how the decision-making process in choosing a mate is strategic for this reason. When considering the investment in offspring, women have to dedicate at least 9 months to the child's development. This creates an emotional bond in many cases. Such emotional investments and bonds continue post-labour through processes such as breast-feeding (Hrdy, 1999).

Men, in contrast, held the role of hunter-gatherer. Since ancestral men would constantly be on the pursuit for resources, they spent less energy investing time into their offspring compared to women. Today, this may translate into how males utilize cognitive systemizing strategies to complete a task compared to females (Russell et al., 2007). In theory, men would have had to utilize strategy to carry out a hunt. To ensure the passing of their genes, men would seek out multiple partners, meaning there would be a higher

chance of some of them surviving (Reiber & Garcia, 2010). This also contributes the lack of emotional contribution to the offspring's development from the paternal figure.

Furthermore, to engage in hunter-gatherer practices, men would have required risk-taking behaviours. This practice would have been a cost–benefit situation, as the threat to getting injured, failure to find food, or being preyed on by other species would have had to be considered. This has been reflected in modern-day research as well. In everyday scenarios (e.g., crossing a busy street, catching a bus), males are more likely to participate in these risk-taking behaviours compared to females, and is likely due to a genetic component (Pawlowski et al., 2008). Understanding evolutionary gender roles can help us understand why and how male and female stereotyped behaviours seem to still be evident today.

There is also research that considers gender differences based on the brain, and how this influences motivation, learning, and social dynamics. It is noted that the main difference in this theory is how conscious each gender is in either the physical or mental world (Baron-Cohen, 1999). Women/girls are typically labeled as “empathizers” and are more aware of the mental world (Baron-Cohen et al., 2005). This means that they tend to be more emotional, empathetic, and conscious of the thoughts and feelings of other individuals. In contrast, men/boys are often considered “systemizers,” in which their strongest abilities are found within the physical world. This translates to the ability to critically analyze what they are presented with (Baron-Cohen et al., 2005). This also can be attributed to male brains having a more distributed organization compared to females, thus affecting differences in cognitive styles and behaviours between the two genders (Tomasi & Volkow, 2011).

Zeyer et al. (2012) applied this empathizing–systemizing theory to their study to understand cross-cultural differences in learning science between the two genders. A sample size of 1,300 students (mean age of 16.59) was taken across four countries (Malaysia, Slovenia, Switzerland, and Turkey). Questionnaires were administered to multiple classes that considered the students’ motivation towards learning in science classes. One finding that the researchers highlighted was in support of Baron-Cohen, in which they state “empathizing and systemizing are, according to Baron-Cohen, not cognitive styles but biological abilities” (Zeyer et al., 2012, p. 798). However, it is important to note that the results of the study do support the fact that although gender may not be a specific factor, there are differences between empathizers and systemizers. Higher empathy quotient (EQ) did not influence science engagement, whereas a higher systemizing quotient (SQ) score did reflect more motivation to learn science (Zeyer et al., 2012). Therefore, considerations of these theories are crucial when analyzing gender differences, as results in other domains may not necessarily be dictated by gender but rather by EQ or SQ.

Another component to consider is differentiation between sex hormones. Predominantly, the connections that estrogen and testosterone levels have with how an individual acts have been noted in literature (e.g., Cohen-Bendahan et al., 2005). These hormones are also intertwined with congenital adrenal hyperplasia (CAH), which is a condition in which genes are coded differently in an individual, thus impacting their interactions with the environment. This is something to note as we often regard gene–environment interactions within socio-biological literature.

CAH has been found to explain specific behaviours associated in males, mainly

aggressive and sensation seeking behaviour (Cohen-Bendahan et al., 2005). It is also connected to why some females may show interest in “masculine” play behaviours and motivation (Cohen-Bendahan et al., 2005). Understanding that other genetic components may reflect differences in gender is important, as it not only highlights genes that have been selected for but can also help explain reasons why gender differences may not be as obvious as we expect them to be.

Gender Differences in Middle Childhood

Looking to reproductive roles of men and women from an evolutionary perspective is a crucial way to analyze human behaviour today. This was noted in Gunnerum et al.’s (2009) study in which they analyzed the altruistic behaviours in both adult and children. For those participants in the Grade 6, it was found that females were more likely to share in the dictator game compared to males. This was attributed to the fact that “helpful and altruistic behaviour is generally considered more appropriate for girls than for boys” (Gunnerum et al., 2009, p. 312).

This aligns with the roles ancestral women would have had to uphold. Labels such as the “caregiver” that have been administered to women over time have come from a direct reflection of gendered roles. This can be considered an evolutionary adaptation, as women and girls would have been more likely to help their offspring survive by showing care and empathy—which are now deemed to be typical feminine behaviours.

However, it is also possible that at this age, gender differences are not relevant. For example, Klaczynski et al. (2020) found that gender intensification was more evident in young adolescents (age 15) compared to children (age 9). In furthering this, while gender may play a role in some behaviours, it is also important to consider that one’s

environment may have more of an impact in this (Epinosa & Kovářík, 2015). This is relevant in middle childhood, as they are in a similar classroom environment.

In-group bias may also be a cause for altruistic behaviours among children. Evolutionarily, helping those individuals who were a part of your family, tribe, or clan would have meant that you would have been aiding those who would be more likely to help you in surviving. Bigler and Liben (2007) have discussed the fact that in-group biases can come from social categories that have been established within modern society (e.g., gender and ethnicity).

Although this development of social categories can lead to negative impacts, it is also important to understand why we have adapted these behaviours. In some cases, sharing with those in one's in-group can lead to a higher likelihood of shared resources, meaning a better chance of survival. These adaptive behaviours are still relevant today, and have been depicted through research (e.g., Gunnerum et al., 2009). Therefore, gender effects in middle childhood are a reflection of social categories and stereotypes that have developed from our evolutionary history.

Classroom Context

Social interactions amongst peers are a critical part of learning. Student–student interactions have been incorporated as a learning strategy within many Western classrooms. Cooperative learning is a good example of this. This strategy allows for students of various skills to work together in small groups. Similar to how our ancestors would have to work together within a tribe, there are benefits to working collaboratively. Student–student interactions have been found to positively impact both academic achievement and social personal gains (Hertz-Lazarowitz, 1983). This style of learning gives students an opportunity to work on their interpersonal skills. In doing so, they are

able to feel as though they belong to a collaborative group while working towards a common goal. Working in this way can increase cooperative behaviours among students (Gillies, 2004).

Furthermore, it also encourages acceptance towards students who are accommodated with a Special Education program (Putnam et al., 1996). Student–student interactions can promote academic achievement, making the argument for the connection between altruism and academic achievement favourable. With cooperative learning, students can use their strengths to support others within the group. Jigsaw cooperative learning works with this principle and has been found to have a positive effect on academic achievement (Lucker et al., 1976), as well as improve scores pre- versus post-test in a study conducted by Göçer (2010).

Positive and Negative Classroom Stress

Coping with stress is one component of life that humans have always faced; however, daily potential threats that cause stress have drastically changed over several decades. During the time of the EEA, our ancestors faced life or death situations that threatened their survival. For example, one stress would have come from an increase in population density, as it would have led to a greater need for resources such as food. If there was not an abundance of food, however, it would have caused nutritional stress for our ancestors, leading to population extinction (Foley, 1995). Other stresses may have come from social interactions, including intergroup conflict and hostile encounters with other tribes or out-groups (Foley, 1995).

To survive, our ancestors would have adapted certain tactics to deal with these situations. This means that responding to stress is a product of natural selection (Nesse & Young, 2000). The stress responses to these threats are often referred to today as a “fight

or flight” response. Fight responses are composed of the impulse to aggressively address an issue. In contrast, flight responses are composed of avoidance tactics.

Today, although threats may not be considered “life-threatening,” we naturally have the same stress responses when faced with a challenge, fear, or hardship. However, learning to respond to stress has advantages. The arousal that comes from stress in some cases is beneficial, when it is not debilitating (Nesse & Young, 2000). A good example of this would be the stress or anxiety students may feel regarding an upcoming test. Stress, in this case, may act as a signal that the student wants to achieve a desirable grade on the test. This would then lead the student to have a sense of intrinsic motivation to study to achieve a good mark.

The life history theory (Ellis & Del Giudice, 2019) also supports this notion. This theory provides an explanation as to how organisms will give their time and energy to different activities (Ellis & Del Giudice, 2019). Devoting time and energy is also a process that relies heavily on the perception of cost versus benefit. Therefore, when dealing with stress, children need to learn to understand the potential advantages or benefits of coping with stressful scenarios. For example, students who may experience feelings or anxiousness prior to a test may choose to invest their energy into studying, leading to a potential benefit of passing the test.

The way in which stress is perceived can elicit potential benefits in this case. When stress is seen as a challenge rather than a threat, it is likely that an individual is more likely to approach the stressor with the motivation to conquer it (Dhabhar, 2019). In the context of the classroom, we may consider how a student would view a test or assignment. An acute amount of stress towards a task such as this would motivate the student to do better, leading to that student possibly working harder to achieve his/her goal.

In contrast, stress in the classroom can also pose a negative impact. Peer and school conflicts are a predictor of changes to self-worth (Fenzel, 2000). Long-term or chronic stress may elicit harm on the immune system (Dhabhar, 2019). For this reason, students who struggle with persistent test anxiety may experience signs of fatigue or ailment. Chronic stress can also be connected to certain reactions. The “fight versus flight” response may not always be the most advantageous approach. This is because this response is heavily influenced by our limbic system (or “caveman brain”) rather than the frontal cortex, which is responsible for decision making processes and reasoning.

Prosocial Behaviours and Well-Being

Prosocial behaviours have a lot of benefits, and allow us to deal with stress in a way that is not reliant on impulse. Evidently, altruism and empathy must have had some means of evolutionary advantage. Altruism has been noted to be evolutionary advantageous (Carlo & Randall, 2002), possibly due to fitness being dependent on group sizes (Cavalli-Sforza & Feldman, 1978). Since altruism can increase group fitness (Haldane, 1932), these behaviours would have allowed our ancestors to survive. In terms of empathy, Batson (2016) highlights that a “lack of evolutionary advantage in early human hunter-gatherer bands for strict limitation of empathetic concern” (p. 168), meaning that early humans who did not encompass these behaviours were not selected for throughout natural selection.

These prosocial behaviours and attitudes continue to have intrapersonal benefits today. The ability to help others can enhance one’s meaning in life, thus promoting not only social integration, but also personal well-being (Midlarsky, 1991). Prosocial behaviours have been known to promote acceptance within groups (Layous et al., 2012).

These behaviours can also have intrapersonal benefits. Mood enhancements can

result in what is known as “helper’s high” (Luks, 1988), which is the feeling of fulfillment upon helping another individual. One’s psychological well-being can also improve when he/she is able to successfully focus on a situation and adapt affectively to those demands (Ingam, 1990).

Establishing and partaking in relationships can impact one’s work ethic in a positive way, as they can increase one’s engagement in his/her work setting (Rath & Harter, 2010). Further, there is potential that this impact is also prevalent in the classroom. Caprara et al. (2000) conducted a study in which they found that prosocial behaviours predicted academic achievement across six different academic courses. The results were supported by social learning theories, prosocialness is related to academic and social efficacy, thus contributing to academic achievement (Caprara et al., 2000). Caprara et al. also noted that prosocialness is multidimensional, and can connect to social competencies, moral values (e.g., altruism), social problem solving, and perspective taking.

Prosocial behaviours have also been linked to health benefits. Cutrona (1986) analyzed 14 diary entries from 43 psychology undergraduates and found that more helping behaviours were noted after stressful events. In a later review, Cutrona and Russell (1987) acknowledged this finding, and noted that higher levels of social support resulted in less negative impacts on health after stressful situations. Since prosocial behaviours have so many benefits, it is possible that they can be advantageous in the classroom environment in middle childhood, specifically in student academic achievement.

Evolutionary Psychology in Education

Because development is related to genotypes and phenotypes (Geary, 2006), it is reasonable to utilize evolutionary psychology to understand development. The

adaptations that have presented themselves throughout human evolution are expressed through natural selection to help us survive (Foley, 1995). Survival is often considered in the “life or death” context, but it can also be defined as succeeding in daily practices.

Antisocial behaviours can be analyzed through an evolutionary lens within the classroom. Volk et al., (2016) note that bullying in the classroom can be related to this evolutionary perspective. For example, our ancestors may have become defensive upon having a lack of resources. In the classroom context, those may choose to act in antisocial ways (e.g., teasing) because of a lack of resources as well (e.g., grades are threatened due to a lack of help from the teacher, leading to stress and aggression). Volk et al., (2016) also consider goal-directedness, the influence from peers and parents, and the classroom environment to argue that bullying may be an adaptive process. However, bullying is not something we would want to encourage in our classrooms. Therefore, educators can consider evolutionary psychology in their classrooms to address student dynamics.

This is why applying evolutionary psychology can help us understand why specific behaviours help students “survive” in the classroom environment. Natural selection has also played a crucial role in the shaping of how we are able to learn (Gruskin & Geher, 2018). Because of this, evolutionary educational psychology is becoming a growing field (Geary & Berch, 2016).

One way in which evolutionary educational psychology is being applied in the classroom today is implementing natural ways of learning in the classroom environment. Muller (2010) has expressed the fact that the way children are expected to learn today has become unnatural. Our ancestors used to learn through the influence of others, whether through play or mimicry. Since a part of this would be social interaction, prosocial behaviours and social cognition have played a major role in learning and development.

Relevance to the Classroom

Pellegrini et al. (1987) identified a relation between social and academic competence in middle childhood. Higher levels of social comprehension were a significant predictor of academic achievement (potentially indirectly enhancing academic competence). They also noted that academically intelligent children were more likely to succeed in their social experiences. The researchers attributed this to a possible “general social comprehension factor” (p. 709). When looking at a study like this, we can argue that this possible factor is an evolutionary adaptation.

Because forms of prosociality have been selected for over the course of human existence (Simpson & Beckes, 2010), it can be contested that having a common disposition of social cognition (including social comprehension and prosocial behaviours) has become a survival strategy within modern contexts. Another example of this is our ability to establish and work in cooperative groups (Simpson & Beckes, 2010).

Geary (2006) addresses how the human mind works as a product of evolution. If this idea were brought into the classroom context, it would support how social strategies lead to success within academia. In general, evolutionary advantageous adaptations (e.g., social cognition, prosocial behaviours) may be linked to surviving one’s classroom environment, and the stresses that students may have to face.

Pressure within the classroom varies in type, severity, and result. Some common school pressure may include come from anxiety regarding school, competition amongst peers, and poor grades (Fallin et al., 2001). The ability to cope with such pressure is related to one’s personal and environmental factors (Fallin et al., 2001). This can be related to ontogenetic and phylogenetic factors that have continued throughout our existence, as genes and the environment have played a significant role in human survival.

Therefore, when students are unable to successfully survive these stressors, it can have adverse effects on their well-being. In one study, students perceiving their academic work as a high demanding, having little control over their work, and low social support had lower levels of general well-being (e.g., self-esteem; Chambel & Curral, 2005). One way to cope with such stress would be to have strong peer support, which can be developed through interpersonal relationships and acting prosocially. This would also reduce physiological stress responses (a reflection of our innate fight versus flight response) that may also come from exposure to stress.

Altruism has also been linked to self-regulation in young children. Self-regulation can contribute to moral and prosocial interactions (Bajovic & Rizzo, 2021). This is important to consider as self-regulation in a classroom environment can be connected to a student's ability to control emotions, be attentive, and avoid distractions. Guhn et al. (2020) conducted a variation of the "marshmallow task" that included a self-condition, prosocial condition, and nonsocial condition. Their primary focus was to see if children would show self-regulation to benefit someone else. In the study, children who were in the prosocial and self-conditions waited longer than in the nonsocial condition. One motivation that was highlighted by the researchers was happiness that stems from the act of generosity (Guhn et al., 2020). We can relate this to Luk's (1988) helper's high theory in which individuals are more willing to help to feel a sense of gratification.

Malti (2020) also made notes regarding the connections between emotional regulation and kindness. Since acts of kindness can also be considered prosocial and altruistic behaviours (e.g., comforting a peer whom exhibits signs of emotional distress such as fear, stress, or worry), it is important to note that the ability to perform kind acts can contribute to socio-cognitive development. Furthering this, empathy, which also

connects to altruism, contributes to emotional regulation skills (Malti, 2020). Therefore, the ability to act altruistically is interwoven with self-regulation, a critical skill that can benefit a student in the classroom.

Summary

Human behaviour can be analyzed through a developmental evolutionary perspective to understand why certain behaviours can be advantageous. One of the leading prospectors in theories of adaptation was Charles Darwin. Many confuse Herbert Spencer's (1864) survival of the fittest theory with Darwin's discoveries. This framework outlines how only the strongest of individuals pass on their genes. However, Darwin (1859) believed that an animal's ability to adapt to changing environments or exposure to threats was what led to survival. This notion allows for an understanding of why humans act the way they do in certain situations.

Altruism, for example, is one aspect of human behaviour that can be viewed with this lens. For an individual to perform an act of kindness, help, or volunteer, there has to be some sort of reward (whether implicit or explicit) that will outweigh the cost of performing the act (Trivers, 1971). In an explanation of his research, Dacher Keltner (2009) focuses on the development of selfless behaviours such as compassion and gratitude. Keltner relates this to Jen science, or the study of how kindness occurs between individuals using a Darwinian lens.

By studying altruistic behaviours and attitudes using an evolutionary theoretical framework, we can learn more about why they are evolutionarily advantageous, and why such advantages are still relevant today. This can also be related to the theory of "survival of the kindest" (Keltner, 2009). This theory works in the same manner as survival of the

fittest, but rather the strongest individuals thriving, those who are kind are the ones to thrive. Essentially, altruism is evolutionary adaptive (Carlo & Randall, 2002), meaning that there is some kind of benefit to these attitudes.

These behaviours can be seen as early as infancy. One reason for this is due to children favouring those who are kind to them as well as in-group members (Wynn et al., 2017, p. 3). A key component to this theory is reciprocal altruism. Acts of reciprocal altruism have been observed throughout literature (Goetz et al., 2010; Warneken & Tomasello, 2009). Some researchers have looked at altruistic behaviour in future-oriented situations in which young children had to make a choice between self-gratification or shared gratification in four different scenarios (Thompson et al. 1997). In Thompson and colleagues' (1997) study, children ages 4 and 5 showed higher altruism than the 3-year-olds. This shows that there is change over time with altruistic behaviours and attitudes (Thompson et al., 1997).

Age related effects can be extended into middle childhood, considering if there is an age factor, we should be able to note further development of altruistic behaviours. Literature has also regarded common behaviours including sharing, helping and comforting often begin to develop and strengthen during middle childhood (Warneken & Tomasello, 2009). That is, such behaviours depend on one's ability to understand the perspective and emotions of another person (e.g. a child who comforts their peer must first recognize their peer's emotional discomfort).

The Present Study

An evolutionary–developmental perspective can give insight as to how the behaviours of today are a result of natural selection and adaptation. Essentially,

behaviours that were once advantageous to our ancestors are still crucial to modern-day human survival.

The purpose of this study is to explore the relations among prosocial behaviour, social cognition, self-perceived stress, self-perceived pressure, and self-perceived academic competence while utilizing an evolutionary developmental framework. There is a great deal of research that supports the connections between interpersonal relationships and positive impacts on work ethic and learning (Rath & Harter, 2010).

This has also been explained through various frameworks; however, very little explanation has been done through an evolutionary lens (Ellis & Bjorklund, 2005). By implementing this into the classroom, we can develop pedagogy further to support student success. The explanation as to why prosocial behaviours (e.g., altruism) and social cognition (empathy, ToM) through this framework supports Dacher Keltner's (2009) notion of the "survival of the kindest" theory.

Various theories can explain why we choose to be kind to one another. Dacher Keltner (2009) considered Herbert Spencer's (1864) survival of the fittest theory and developed it into what he calls the survival of the kindest. He emphasizes the importance of social behaviours and how it has been connected to early humans and selected for through the genes that have been passed on over multiple generations. The reasoning for this is the evolutionary advantages that are associated with them.

Altruism and empathy are important prosocial behaviours to consider in this case. For example, the empathy altruism hypothesis highlights three benefits that can come from partaking in prosocial behaviours, including social/self-rewards, avoiding social/self-blame, and decrease empathetic arousal (Batson, 2016). This, along with

“helper’s high” or the positive emotions associated when helping another person (Luks, 1988) support how prosocial behaviours are beneficial to human survival. There are also theories that support the idea that we help one another in hopes that we receive some benefit in the future as well, such as the tit-for-tat principle (Pradel, 2008).

By helping others, we also help ourselves, hence why helpful behaviours have become evolutionarily advantageous. Part of being able to recognize when an individual needs assistance is being able to understand when help is needed. Theory of mind (ToM) is a crucial element in this, as it highlights the ability to think about what others are thinking. ToM has been connected to both empathy and altruism (Moore & Macgillvray, 2004), which is why it also is considered in the present study.

The reason why prosocial behaviours are advantageous today is that they can assist in multiple domains of human life. During the time of our ancestors, prosocial behaviours were a reflection of how tribes would interact with each other, creating in group bias and trust (Foley, 1995). Today, it is evident that prosocial behaviours encourage acceptance (Putnam et al., 1996) and cooperative behaviours (Gillies, 2004) among students. Therefore, the benefits from these behaviours throughout multiple generations are why they have been selected for over time; they not only pose social advantages but also promote personal well-being (Midlarsky, 1991). Since students are likely to face academic stress due to upcoming tests and assignments, a good social environment can also aid in this. They also have been shown to provide benefits within the classroom, as student–student interactions during learning can positively impact academic achievement (Lucker et al., 1976). Therefore, prosocial behaviours are critical

within the classroom as they can create a positive social environment while benefitting the success of students.

The age range of middle childhood (9 to 11) was selected for this study as children during this time are at a critical developmental age in which social behaviours become more prevalent. They are able to combat egocentric thought processes that are seen in younger children (Piaget, 1965), and can therefore begin to think about other individuals. Because of this, we also see positive adjustments in play, thinking, motivation, and social interactions during this stage (Eisenberg et al., 2019). Berry and O'Connor (2010) found that because of the increase in social skills in middle childhood, there were significant increases in grade scores between Grades 3 and 5.

The present study focuses on Grade 4 students as a sample population. The study addresses two major research questions, including:

1. What are the relations among children's altruistic thinking, ToM, empathy, perceived academic competence, school-related perceived stress, and global self-worth?
2. Are there gender differences among children's altruistic thinking, ToM, empathy, perceived academic competence, school-related perceived stress and global self-worth?

CHAPTER THREE: METHODOLOGY

The purpose of this study was to explore the relations among prosocial behaviour, social cognition, self-perceived stress, and self-perceived academic competence while utilizing an evolutionary developmental framework. In this Chapter, I outline the ethical procedures, the measures of the study, the process for data collection, and plans for data analysis.

Research Design

The study was conducted using a cross-sectional research design. This means that data was collected from a representative sample at one point in time, which is a common method within the field of educational research (Creswell, 2012). I chose this method as I had a limited time to complete the study. Quantitative data was collected from student participants via Qualtrics, and online survey platform that included measures that tested for main study variables. Data was analyzed through descriptive and inferential statistics using SPSS. Correlations were considered in the present study, as this is one way of identifying relationships among variables (Creswell, 2012).

Ethics

After receiving ethics clearance from Brock University's Research Ethics Board (REB) and the school board's REB (#19-146), the Director of a Northern Ontario school board was contacted for approval of the study. Due to COVID-19, revisions to the original procedure were made to ensure the health and safety of the participants and researcher. To avoid face-to-face or in-person contact between the researcher and student participants, the original study was adapted to an online version. The Director of Education approved of this change, and a call for participants (see Appendix A) was posted on the school board's social media accounts (e.g., Instagram, Facebook).

To obtain parental/guardian consent, an information letter and consent form was created via Google Form. This document included an outline of the study and the student researcher's contact information. Parents/guardians could receive this form by either directly contacting the student researcher via email, or through Google Form via a link distributed by teachers from the board. The parent/guardian of the student participant was asked to complete the form, save it for their files, and include their email and the name of the student participant. This information remained confidential to the student researcher. The student researcher made a list of students who obtained parental/guardian consent and provided these names to the classroom teacher so the study could be done during class time. Due to COVID-19 safety protocols and the restrictions to face-to-face data collection, all data were collected remotely (via Qualtrics).

Procedure

Once consent was given, data collection began. Each student was provided an online link to a Qualtrics survey consisting of: the adapted altruism scale; student life stress inventory; empathetic concern subscale of the interpersonal reactivity index; two of Harter's subscales (scholastic competence and global self-worth); theory of mind task; and a demographics questionnaire (see Appendix B). The survey was either filled out at home with a parent/guardian present, or in the classroom with the classroom teacher present. The student researcher was available for conferencing and to answer any questions via email and Google Meet; however, no parents/guardians or teachers contacted the student researcher during the administration and facilitation of the study. Prior to filling out the survey, students had the chance to give their assent and indicated "yes" or "no" at the start of the Qualtrics survey to ensure that they were still willing to participate in the study.

Qualtrics is an online data collection website that allows researchers to create and distribute surveys via custom URL. Due to COVID-19 restrictions, all measures of data collection were through virtual delivery on this platform. Only those who received the URL has access to the survey, meaning that anyone who did not represent the sample did not have access.

Students participating in the study in the classroom were given time during class to complete the survey at the discretion of the classroom teacher. Students who did not receive consent were not included in the study; those students were given other tasks provided by the teacher. Once the survey had been completed, the data was submitted into Qualtrics so the student researcher could analyze the data.

Qualtrics is an online survey platform in which the student researcher was able to input all the measures into. Students who received consent and assented to participation were able to access an URL link to the study that the student researcher provided to the respective classroom teacher or parent/guardian. Once the student participant completed the survey, the results were submitted for the student researcher to access.

The researcher was available to answer any follow-up questions from the parents, teachers, or students. The student researcher sent out a letter to personally thank the participants of the study via the parent's email addresses. Thank-you letters were also sent to the teachers, principals, and the board Director. These included a link to the final study from the Brock databases.

Participants and Recruitment

The researcher worked collaboratively with the school board to send a call for participants on the school board's social media accounts. The student researcher provided

links to a Google consent form to those teachers or parents/guardians who were willing to have the students voluntarily participate in the study. Convenience sampling was taken into account during this process, as those parents/guardians who gave consent allowed their child to have the opportunity to participate. The completed consent forms were submitted and received by the student researcher. Upon the distribution of the survey, the student participants provided voluntary assent by checking “yes” or “no” in Qualtrics if they were still willing to participate. The survey was completed at home or in the classroom.

Students who did the survey at home had the chance to complete the survey with their parent/guardian. Students who completed the survey at school were given time in class to complete the survey, which was facilitated by the classroom teacher. The student researcher provided a list of students who received parent/guardian consent to the respective teacher to ensure that those who participated in the study had consent to do so.

The final sample consisted of 70 students in middle childhood from Northern Ontario classrooms. Demographics are included in the student booklet to account for other variables such as age, gender, ethnic background, and school experience (e.g., how long they have been attending the school). The sample included 40 boys, 27 girls, one non-conforming individual, one who preferred not to say, and one who did not report. The age range of the sample was between the ages of 9–11 ($M=10.04$, $SD=0.770$).

Measures

Quantitative data was collected from the students of the classroom. Each student completed an online survey consisting of the following measures to measure prosocial behaviours, stress levels, and self-perception: adapted altruism scale; student life stress inventory; empathetic concern subscale of the interpersonal reactivity index; two of

Harter's subscales (scholastic competence and global self-worth); theory of mind task; and a demographics questionnaire (see Appendix B).

Adapted Version of the Self-Report Altruism Scale

This 14-item scale was created by Witt and Boleman (2009) for children based on Rushton et al.'s (1981) original version. This scale consists of several statements related to altruistic actions and asks students to rate their likelihood on these behaviours on a 5-point scale ranging from "never" to "very often." The adapted version of the original measure was chosen because students will be able to choose whether they would act altruistically within each hypothetical situation. Examples of items included "I would help a classmate who I did not know well with a homework assignment when my knowledge was greater than his or hers" and "I would give money to a charity." The original measure required the individual to have had performed these acts, that of which a child would have not yet encountered in his/her life. There was no information on the reliability and validity tests performed on the adapted measure; however, Rushton et al.'s (1981) original version has been tested for both reliability and validity. Discriminant and predictive validity were found to be good through the examination of correlations of this measure and an alternative personality measure. Validity was also assessed via peer ratings, and comparing them to the self-report ratings. Significant interrater reliability was found for this measure $r(78) = +0.51$ ($p < 0.01$) (1991). Reliability was tested with Cronbach's α at 0.837.

Student Life Stress Inventory

Two subscales including stress (14 items) and pressure (4 items) were selected to measure when students feel pressure and experience physiological responses to stress.

The scale works on a 5-point Likert scale ranging from “never” to “most of the time” (Gadzella, 1994). This measure was chosen because it relates to evolutionary theories regarding fight versus flight responses. Example items included in the stress subscale included “sweating,” “headaches,” and “exhaustion”. Example items in the pressure subscale included “as a result of competition (on grades, work)” and “due to deadlines (project due, test coming up).” Reliability was tested using Cronbach’s α and Pearson correlations on all subscales (1994). For the stress subscale, Cronbach’s α was measured at 0.740. For the pressure subscale, Cronbach’s α was measured at 0.594.

Empathetic Concern Subscale of the Interpersonal Reactivity Index (IRI)

This 7-item 5-point Likert scale was created by Davis (1980) and measures students’ prosocial behaviours. This is important because prosocial behaviours are linked to altruism, such as empathetic concern. For this study, the empathetic concern (EC) subscale was used as a reflection of empathy in the participants. An example from this subscale would be “I feel bad for those who have less than me,” to which the participants would have to indicate how well the statement describes them. Convergent validity was tested by comparing the scale to other empathy measures. Reliability for this subscale has been tested using Cronbach’s α and was measured at 0.80 (Pulos et al., 2004).

Harter’s Self-Perception Scales (Perceived Scholastic Competence and Global Self-Worth)

Two subscales of Harter’s (1985) measure was used for the study. The two 6-item subscales that were included were the scholastic competence subscale (ScC), and global self-worth subscale (GSW). Participants had to select which box best described them for each scenario, indicating if the description was “sort of true” or “really true” for them.

For example, the participant had to choose between “some kids do very well at their classwork” but “other kids don’t do very well at their classwork” in for the ScC subscale. For the GSW subscale, an example scenario was “some kids don’t like the way they are leading their life” but “other kids do like the way they are leading their life.” ScC was included as it will measure the students’ self-perceptions regarding their academic performance. GSW was also included as this subscale to account for self-esteem. This measure scored high Cronbach’s α when testing for internal reliability. ScC had an average reliability of 0.81 across eight samples, and GSW had a reliability of 0.82.

Advanced Theory of Mind Task

This measure was used to test for advanced theory of mind (ToM), as it is used to evaluate children’s “social reasoning abilities,” such as the ability to take the perspective of another person (Osterhaus et al., 2016). A series of four short stories that involved social scenarios (such as one story entitled “Lisa and Tom”) were included. This story encompassed the following:

Lisa and **Tom** are friends. They are playing together in Tom’s room. **Tom** has a **letter** from his friend Susan. **Lisa** really wants to know what the letter says but **Tom** does not want her to read it. Tom’s mom calls him. **Tom** puts the letter under his blanket and leaves the room. While **Tom** is gone, **Lisa** takes the letter and reads it. Then she puts it away in Tom’s **desk**. But **Tom** finishes talking to his mom and comes back. He sees **Lisa** putting the letter in the desk. **Tom** watches **Lisa**, but **Lisa** does not see **Tom**.

Two questions followed the story, including “Does Lisa know that Tom saw her?” and “Where does Lisa think Tom will look for the letter?” With the correct scores being “in the desk.” Other stories included “Nick and David,” “Ben and Anna,” and “Aliens

and Astronauts” and were given to the student with follow-up questions that tested their understanding of how the characters of the story think (Osterhaus et al., 2016). This task allows for insight to the participant’s social reasoning or the ability to take the perspective of another person.

Coding instructions for this measure were adapted from Osterhaus et al.’s (2016) study. This task was included as a cognitive measure of one dimension of ToM. This measure scored for moderate reliability through Cronbach’s α at 0.51, making it a valid assessment for children’s ToM (Osterhaus et al., 2016).

Data Collection

To collect data, the student researcher administered a Qualtrics survey of the measures to each student who agreed to participate voluntarily. Once the students complete the survey, they submitted it into Qualtrics and the data was accessible to the student investigator. A demographics questionnaire was included in the survey to see if there would be other trends within the data.

Prior to COVID-19, it was anticipated that data collection would occur face-to-face and the delivery of the measures would be on paper. To ensure proper safety, precautions were followed as the student researcher adapted the study to virtual delivery via Qualtrics. Qualtrics allowed the researcher to format and implement the original measures into the website, which created a survey that was only accessible via the URL that the student researcher provided parents/teachers to access the survey for the respective participant(s).

Once all of the data was collected, the score for each measure and demographics was inputted into SPSS for each student. For each measure, a total score was given for each participant.

Data Analysis

The data was inputted into SPSS (version 26) software and cleaned for any errors. For each measure, a total score was given for each student. Descriptive and inferential statistics were explored. Participant numbers were assigned for confidentiality. Differential statistics included means, standard deviations, frequencies, and ranges. The variables were also tested for skewness and kurtosis. Inferential statistics included an independent samples t-test and Pearson correlation to address two research questions, including:

1. What are the relations among children's altruistic thinking, ToM, empathy, perceived academic competence, school-related perceived stress, and global self-worth?
2. Are there gender differences among children's altruistic thinking, ToM, empathy, perceived academic competence, school-related perceived stress, and global self-worth?

Chapter Summary

Chapter 3 provided an overview of the methods of the current study. Participants included students enrolled in a Northern Ontario school board. They were able to complete an online survey consisting of multiple measures either at school or at home. An adult was present during the time of data collection. To explore relations among social cognition, prosocial behaviours, self-perceived academic competence, and self-perceived stress, data analysis was conducted through descriptive and inferential statistics. The findings of the current study aim to connect social dynamics within the classroom to evolutionary–developmental theories.

CHAPTER FOUR: RESULTS

This chapter includes the quantitative analysis of the data and the research results. The analysis for the current study aims to consider variables measuring altruistic thinking, social reasoning skills, perceived academic competence, and school-related perceived stress and pressure.

The first section of this chapter outlines the descriptive data including demographics of the sample (age, self-identifying gender, and ethnicity) descriptive statistics for all of the main variables. The second section of this chapter describes the inferential statistics that aim to answer the following two research questions:

1. What are the relations among children's altruistic thinking, ToM, empathy, perceived academic competence, school-related perceived stress, and global self-worth?
2. Are there gender differences among children's altruistic thinking, ToM, empathy, perceived academic competence, school-related perceived stress, and global self-worth?

The final section of this chapter presents a general summary of the findings. Preliminary analysis included descriptive statistics for the study's main variables. Inferential statistics were used to test for the research questions. In relation to Research Question 1, Pearson correlations were conducted with all main variables. For Research Question 2, t-tests were conducted using gender to test individual differences. Participants who reported identifying as a "boy" or "girl" were included in this analysis ($n = 67$).

Descriptive Statistics

Study participants ($n=70$) were students within the age range that would be

classified under middle childhood (ages 9–11, $M=10.04$, $SD=0.770$). All students were enrolled in the same Northern Ontario school board, attending different schools within the district. The sample included 40 boys, 27 girls, one non-binary/non-conforming individual, one who preferred not to say, and one who did not report. The majority of the sample (95.7%) reported English as their first language. Ethnic background was also considered, and included those who identified as Caucasian (80%), Indigenous (7.1%), Indian (4.3%), European (2.9%), and other (2.9%). A majority of the students have always attended school in Canada (95.7%).

Total scores for each measure were calculated so each participant had a designated total score. The following section outlines the means, standard deviations, ranges of the test scores (minimum-maximum), and skewness for each variable (see Table 1).

Inferential Statistics

Research Question 1 asks: What are the relations among children's altruistic thinking, ToM, empathy, perceived academic competence, school-related perceived stress, and global self-worth? To answer this question, I explored correlations among all the variables through a Pearson correlation test. Significance was tested at the ($p<0.05$) level. Multiple correlations were found among the main study variables (Table 2).

Scholastic competence was found to have a positive correlation with global self-worth ($r = 0.387$). This means that those who have a higher self-esteem also perceive themselves as academically strong, and vice versa. Scholastic competence was negatively correlated with self-perceived pressure ($r = -0.403$) and self-perceived stress ($r = -0.319$).

Table 1*Descriptives of All Variables*

Variable	N	Mean	SD	Min	Max	Skewness
1. Altruism	69	30.551	9.224	10.00	51.00	-0.258
2. Scholastic competence	62	16.629	4.646	6.00	23.00	-0.415
3. Global self-worth	61	18.771	3.698	9.00	23.00	-1.304
4. Empathy	68	17.191	3.899	9.00	28.00	-0.094
5. Theory of mind	67	2.522	0.859	1.00	4.00	-0.219
6. Pressure	70	12.357	3.088	5.00	18.00	-0.331
7. Stress	69	28.536	7.929	14.00	53.00	0.432
8. Global self-worth (cosine transformation)	61	-0.264	0.652	-1.00	0.99	0.934

Table 2*Correlations Among All Variables*

Variable	1	2	3	4	5	6	7
1. Total altruism		0.201	0.002	0.456**	0.283*	0.148	0.084
2. Scholastic competence			0.387**	0.010	0.117	-0.403**	-0.319*
3. Global self-worth				0.032	-0.105	-0.358**	-0.388**
4. Empathy					-0.001	0.359**	0.260*
5. Theory of mind						-0.062	-0.017
6. Pressure							0.451**
7. Stress							

Note. * $p < .05$; ** $p < .001$

It is also important to note other correlations found among other test variables. Altruism and empathy showed a positive correlation ($r = 0.456$). Altruism and ToM showed a positive correlation ($r = 0.283$), meaning those who reported that they would act altruistically in certain situations (e.g., donating to a charity) more often also scored high in empathy and ToM. However, ToM and empathy were not related ($r = 0.001$).

Empathy was also positively correlated with perceived pressure ($r = 0.359$) and positively correlated with perceived stress ($r = 0.260$), whereas no correlations were found between perceived stress and/or pressure and ToM. These findings imply that those students who feel more stress and pressure may also show more affective empathy compared to those who do not feel stress/pressure. This could be because they are able to perceive emotional distress based on the ability to compare it to their own perceptions of stress/pressure. For example, a Grade 4 student who feels pressure to complete homework on time may also empathize with others who may be worried about homework deadlines. Because of this, there may be affective component to feelings of distress and empathy.

Perceived stress and pressure had a positive correlation ($r = 0.451$). This finding is expected, as how one perceives school-related pressure may influence physiological stress responses (e.g., sweating). High perceptions of pressure related to low levels of perceived global self-worth ($r = -0.388$). This means that amount of pressure that a student perceives in school may influence or be influenced by how a student feels about her/himself.

To answer Research Question 2, an independent samples t-test using gender was used to test for individual differences among all the main study variables (Table 3). No significant differences were found among test variables.

Table 3*Independent Samples T-Test*

Variable	Boys		Girls		<i>t</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Altruism	30.325	9.390	31.231	9.262	0.385	0.702
Academic competence	16.771	5.006	16.875	4.153	0.830	0.934
GSW	18.371	3.590	19.696	3.417	1.400	0.167
Empathy	16.539	3.906	18.078	3.588	1.606	0.113
ToM	2.526	0.797	2.500	0.990	-0.118	0.907
Pressure	11.875	3.391	12.926	2.303	1.511	0.136
Stress	27.025	7.223	29.577	7.162	1.407	0.164

Chapter Summary

Chapter 4 presented the main findings of the current study. The study included 70 student participants aged 9–11 years old. Students in this study were enrolled under the same school board in Northern Ontario. Through self-report measures, two research questions were addressed:

1. What are the relations among children’s altruistic thinking, ToM, empathy, perceived academic competence, school-related perceived stress, and global self-worth?
2. Are there gender differences among children’s altruistic thinking, ToM, empathy, perceived academic competence, school-related perceived stress, and global self-worth?

Through statistical analysis, main findings included positive correlations between many of the main variables. For example, high levels of altruism scores correlated with high levels of global self-worth, as well as with high levels of scores in self-perceived academic competence, empathy, and ToM. High levels of empathy scores related to high levels of perceived pressure and stress. Negative correlations were found between perceived academic competence and perceived pressure in that high levels of perceived academic competence related to low levels of perceived pressure and stress, or vice versa (high scores in perceived stress and pressure related to low scores in perceived academic/scholastic competence).

Chapter 5 explains these findings through an evolutionary–developmental perspective while considering theories that relate to prosocial behaviours such as Keltner’s (2009) “survival of the kindest” theory and Luks’s (1988) “helper’s high”

theory. These theories connect to the present study as they can be connected to altruistic behaviours, as such behaviours often involve helping another individual. The findings will also be compared to past and current literature surrounding prosocial behaviours, social cognition, and well-being. Chapter 5 also will highlight limitations of the study, implications for theory and pedagogical practice, as well as researcher reflections.

CHAPTER FIVE: DISCUSSION

Chapter 5 highlights main findings found through the analysis of two research questions, including:

1. What are the relations among children's altruistic thinking, ToM, empathy, perceived academic competence, school-related perceived stress, and global self-worth?
2. Are there gender differences among children's altruistic thinking, ToM, empathy, perceived academic competence, school-related perceived stress, and global self-worth?

To explain the findings of these research questions, I will connect them to previous literature and different theories through an evolutionary–developmental perspective. These findings will also be connected to theory and practice. More specifically, I will discuss how the current study adds to existing literature, and how educators can consider these findings to aid in student well-being. Limitations of the study as well as researcher reflections will also be included.

The current study also highlights many correlations among the variables. Perceived academic competence was positively correlated with global self-worth. Altruism was positively correlated with empathy and ToM. Empathy was positively correlated with school-related perceived pressure/stress, and altruism. Perceived school related stress and pressure were also positively correlated. Perceived academic competence was negatively correlated with school-related perceived stress/pressure. Global self-worth was negatively correlated with school-related perceived stress/pressure. No gender differences were found in the present study.

Altruism and Mentalizing: Links With Empathy and Theory of Mind

The study found a statistically significant difference between groups when considering altruism and empathy. This was found through analysis of Research Question 1: What are the relations among children's altruistic thinking, ToM, empathy, perceived academic competence, school-related perceived stress, and global self-worth? A positive correlation among altruism and empathy indicates that those who scored high in altruism also scored high in empathy. Furthermore, those who scored low in altruism also scored low in empathy. This finding supports the empathy altruism hypothesis (EAH), which indicates that empathy and altruism must coexist due to decreases in empathetic arousal, avoiding social/self-blame, and to gain social/self-rewards (Batson, 2016).

This finding would also support the notion that to demonstrate altruistic behaviours (e.g., helping), a child may also have the ability to understand another person's emotional state or have affective empathy (Smith, 2006). Like other prosocial behaviours (behaviours that support positive relationships with others such as kindness and compassion), to behave in this way, a child must be able to recognize when someone may need help or support (e.g., emotional support, physical support). To understand this, social cognitive or social reasoning skills need to be well developed to consider the perspectives of another individual and to take action. This was supported by the positive correlation among altruism and ToM.

In the classroom, students are often presented with opportunities to help their peers (e.g., help solve an academic problem, managing social interactions). Students who act altruistically towards each other (e.g., share, help, comfort) may also understand another person's emotions. This may lead them to help a friend in need of support or

assistance, as well as be able to plan how to help them. Therefore, students who have developed the ability to take another's perspective might be more likely to demonstrate altruism, as they would be able to consider the perspective of someone in distress.

However, the ability to understand the emotions and thoughts of others may be separate skills that exist independently of one another. Accordingly, studies show mixed findings on the interconnections among social cognitive skills. For example, some studies show positive relations between affective and cognitive components of ToM and empathy (e.g., Devine & Hughes, 2013; Weimer et al., 2021), whereas some studies show no correlation between affective and cognitive components (Klimecki et al., 2014). The current finding supports this lack of connection between affective and cognitive components as no relations were found between the measure of cognitive ToM and affective empathy. Results showed high levels of altruism correlated with high levels of empathy and ToM. This could mean that cognitive ToM and affective empathy relate to altruism, despite not being connected to one another in the present study.

Altruistic behaviours such as sharing have been studied in primates (Warneken & Tomasello, 2006). However, there seems to be conflicting evidence when considering whether primates possess social understanding (e.g., theory of mind). It has been noted that through the observation of behaviours, chimpanzees may be able to understand the potential goals and attention of others (Call and Tomasello, 2008). In contrast, other studies would suggest that primates elicit altruistic behaviours based on other motives (e.g., Muller & Mitani, 2005).

Reasons for altruistic behaviours in primates can be attributed to the cooperative hunting hypothesis, which is when primates demonstrate selective sharing to survive (Muller & Mitani, 2005). Primates also act in ways that will amplify cooperative behaviours of other primates they interact with (Muller & Mitani, 2005). Therefore, it is

possible that although early humans may have acted altruistically, they may not have yet developed an understanding that other beings have mental states.

Primates having the ability to act altruistically without having the development of ToM and empathy coexisting with one another, could be a potential reason for why ToM and empathy did not relate in the present study. To explain this further, de Waal's (2008) definition of intentional or reciprocal altruism can be applied. This form of altruism is based on the notion of an individual acting altruistically in hopes for personal gain later. While a student may need either ToM or empathy to recognize emotional distress, reciprocal altruism does not require both, as it primarily demonstrated for personal gain.

Furthermore, Foley (1995) highlights that early humans would have had to act altruistically towards those within their groups/tribes to form strong bonds. This idea is supported further in Warneken and Tomasello's (2006) study, in which chimpanzees demonstrated helping behaviours (e.g., retrieval of out-of-reach objects). Because primates are one of the only species that have also derived from early humans, acknowledgement of similar behaviours among species could indicate that they have, in fact, continued throughout our evolution.

Another possible explanation for the lack of correlations among the cognitive dimension of ToM and affective empathy could be due to these cognitive processes occurring in separate neural pathways in the brain. Kanske et al. (2015) used fMRI technology to analyze regions of the brain to see which regions lit up dependent on ToM based stimuli or empathy-based stimuli. Findings showed that empathy was related with the anterior insula region of the brain, whereas ToM was related to the ventral temporoparietal junction (Kanske et al., 2015). In another study, empathy training also activated regions of the brain such as the insula, temporal gyrus, operculum, posterior

putamen, pallidum, thalamus, and the caudate (Klimecki, et al., 2014). What is interesting to note is that empathy, in this study (Klimecki, et al., 2014), was still not related to the ventral temporoparietal junction. Empathy and ToM processes coming from two separate neural pathways can provide explanation as to why ToM and empathy were not correlated in the present study, as they may not have to coexist for an individual to act altruistically.

Zhao et al. (2021) also note that “socially-mindful actions” (p. 2) may be carried out despite not knowing one’s underlying needs. Essentially, helping others is dictated through a balance of both the needs of ourselves and others. The findings from Zhao et al.’s studies showed that by the age of 6, children from two cultural backgrounds (United States and China) were able to understand that prosocial acts can aid another individual despite not knowing the specific needs of that person. This connects to the present study, as ToM and empathy would help in someone acting altruistically towards another individual, but both may not necessarily have to coexist for someone to perform socially mindful acts (e.g., altruistic acts).

Social-cognitive development relates to how students will feel towards themselves and their peers. When considering student–student interactions, it is important for students to be able to act kindly and respectfully towards their peers, as demonstrating altruism can lead to the gain of social rewards (e.g., acceptance; Batson, 2016). In furthering this, one’s well-being can be connected to the ability to regulate emotions and mindfulness (Malti, 2020), thus contributing to positive self-perceptions. In the academic context, we can consider how prosocial behaviours predict subjective well-being in school, as well as

satisfaction of relatedness needs at school (Su et al., 2019). This means that students would have a positive view of others, themselves, and their academic environment.

Classroom Context: Connections to Self-Perceived Academic Competence

The present study utilized self-perceived academic competence as the measure that relates to academia, and how students perceive themselves in that environment.

Research Question 1—What are the relations among children’s altruistic thinking, ToM, empathy, perceived academic competence, school-related perceived stress, and global self-worth?—provided context as to what variables correlated with academic self-perceptions, which can be applied to the classroom environment. High levels of perceived academic competence were correlated with high levels of perceived global self-worth (GSW). This finding suggests that the higher that students perceive themselves academically, the higher their feelings of self-worth. It also means that the lower that students perceive themselves academically, the lower their self-esteem.

Previous literature has highlighted that academic performance is related to positive self-esteem. Jayanthi et al. (2018) found a positive association among self-esteem and academic performance. This can relate to the present study as academic performance would relate to how students perceive themselves academically. If a child is doing well in school, it would likely result in positive self-concept in that domain, thus also improving overall global self-worth.

Luks (1988) explains that helping others can release endorphins, thus contributing to positive emotions that can help boost self-esteem and motivate strong work ethic (e.g., efficiency in the workplace). In the classroom context, this work ethic could be related to better school performance, which would influence academic self-perceptions. Kindness

and compassion can also relate to this, as Malti (2020) notes that social-emotional development can be achieved in the classroom environment through individual and group-level kindness. Therefore, if students are being kind and acting altruistically, this may be eliciting positive emotions that would enhance school performance, which help them recognize their strengths as a student and contribute to academic self-competence and global self-worth.

In connection to helper's high theory (Luks, 1988), students may be motivated to act altruistically based on positive emotions they feel when helping another individual. This could also be a personal gain if a student is demonstrating reciprocal altruism (de Waal, 2008). If the release of endorphins aid in work ethic, then perhaps students are also perceiving themselves as succeeding in their academics as well.

Perceived academic competence was negatively correlated with perceived stress and perceived pressure. This could mean that students in Grade 4 who are perceiving school-related stress/pressure view themselves as less academically competent compared to those who do not feel stress/pressure. This could also mean that viewing oneself as less academically competent may lead to feelings of school related stress/pressure.

This finding has been noted in previous literature, as Chambel and Curral (2005) found that students who perceived their academic environment as high demanding with low levels of social support demonstrated lower levels of overall well-being. This is important to note, as long-term stress can harm the immune system (Dhabhar, 2019). Since children spend a long period of their development within school, stress in this environment could be detrimental to their well-being.

When considering evolutionary theory, self-perceived stress and self-perceived pressure can be related to “fight or flight” responses. Responding to threats through an inherent stress response is a result of natural selection (Nesse & Young, 2000). These are reactions to threats within the environment, but can be physiologically demanding. Another explanation to consider is the possibility that those who are sensitive to school-related stress and pressure might be hindered by such physiological responses (e.g., sweating, changes in hunger, etc.), thus affecting academic competence.

Empathy was positively correlated with perceived stress/pressure in the current study. Empathy and stress have been connected through a genetic variation of oxytocin, which can be considered both a hormone and neurotransmitter (Rodrigues et al., 2009). Farina et al. (2020) note that empathy was related to both satisfaction of school relationships and burnout (e.g., exhaustion, fatigue, lack of motivation) with satisfaction of school relationships being a mediating factor. Therefore, if students do not have positive relationships in school, striving for these relationships through affective empathy may lead to burnout, thus negatively affecting their school performance due to potential fatigue or exhaustion. This burnout could also be a result of school-related stress, which negatively correlated with academic competence in the present study.

Klimecki et al. (2014) hypothesized that the ability to empathize with others may also be related to regions of the brain that allow us to experience negative states (e.g., pain). It was noted that regions of the brain that fired through empathy training were the insula and aMCC (anterior mid-cingulate cortex), which also activate in perceived pain (Klimecki et al., 2014). In relation to the current study, it is possible that students who are faced with school-related stress/pressure may also be highly empathetic, as similar

regions of the brain may be activated. This would allow students to perceive emotional and physical distress in their peers, as they would be able to recognize mental states/emotions similar to ones that they feel themselves (e.g., recognizing when others are feeling stressed about homework because they are also feeling stressed about homework).

School-related perceived stress/pressure negatively correlated with global self-worth. In previous research, it has been noted that high-demanding academic environments can be detrimental to student well-being (Chambel & Curral, 2005). This is important to consider as components to schooling such as homework, assignments, tests, and relationships with the teacher and/or peers can be factors that may lead to school-related stress/pressure. Other potential contributors to school-related stress/pressure may include anxiety regarding school, competition amongst peers, and poor grades (Fallin et al., 2001). Peer and school conflicts such as these have been noted to predict changes in self-worth particularly in those mid-transition into middle school (Fenzel, 2000).

However, Fenzel (2000) found that those who had strong social support did not have the same damaging effects to their self-worth compared to those who did not have strong social support. Therefore, positive peer-to-peer relationships can have positive effects for student well-being. One way to foster this would be to encourage altruistic behaviours amongst students.

Students who act altruistically might have an advantage in the classroom, as positive emotions and self-perceptions can be further connected to stress management and emotional regulation. Empathy is an important aspect to this, as positive interpersonal behaviours are connected to emotional regulation skills (Malti, 2020). To further this, prosocial behaviours have shown positive relations to academic achievement

in relation to social-emotional learning (Caprara et al., 2000). Therefore, positive emotions derived from strong interpersonal relationships could support students by contributing to their self-perceptions, thus promoting well-being. Within the classroom, this can be done through the proposed affective strategy by Bajovic and Rizzo (2021), in which safe spaces can be facilitated through a sense of inclusive classroom dynamics.

Gender Differences

The present study found no significant gender differences among the altruism, ToM, empathy, or self-perceptions (GSW, academic competence, stress, pressure). This was found through the analysis of Research Question 2: Are there gender differences among children's altruistic thinking, ToM, empathy, perceived academic competence, school-related perceived stress, and global self-worth?

This contrasts previous literature that has found gender differences between male and female participants in regards to prosocial behaviours (e.g., Baron-Cohen et al., 2005; Espinosa & Kovářík, 2015; Gunnerum et al., 2009). For example, one study found that female participants in the Grade 6 were found to act more altruistically compared to male participants (Gunnerum et al., 2009). Boschini et al. (2018) also found that female participants acted more altruistically in the dictator game. Baron-Cohen et al. (2005) have also noted that women/girls tend to be labeled as “empathizers” (able to understand the mental states and elicit emotional responses), while men/boys are labelled as “systemizers” (able to understand the physical world and elicit a functional response).

While some studies show girls score higher than boys on ToM (e.g., Calero et al., 2013), other studies have found that the type of ToM (affective versus cognitive) may play a role in possible gender differences. For example, Gabriel et al. (2019) found that females scored higher than males in cognitive ToM but not in affective ToM. In contrast,

a study conducted by Russell et al. (2007) found that men performed better in a ToM task compared to women. Through the Happé's cartoon task, males performed better than females, which was attributed to the ability to use cognitive systemizing strategies to complete the task (Russell et al., 2007).

The present study found no gender differences in cognitive ToM, which contradicts the findings of Gabriel et al. (2019) and Russell et al. (2007). This means that self-identifying boys and girls in the present study are both able to consider the mental states of others. Through looking at ToM-related research, there seems to be a variety of results regarding gender differences. While some research supports one cis-gender having better developed ToM compared to another, there does not seem to be research that supports the finding of no gender differences in cognitive ToM. Further research may consider gender differences in cognitive ToM in relation to altruism.

Espinosa and Kovářík (2015) noted that within their study, gender may play a role in prosocial behaviours; however, another factor is how an individual adapts to his/her environment and/or situation. There is potential for the classroom to be one of these environments in which girls and boys have similar goals or needs (e.g., achieving good grades, feeling a sense of belonging) and thus their behaviours are a reflection of this.

The age group of this sample may also be a contributing factor to the lack of gender differences. A recent study found that gender intensification was more prominent in the adolescent years (15 years old) compared to children (9 years old; Klaczynski et al., 2020). For both boys and girls, more gender stereotypes were adopted in middle adolescence. Therefore, the age demographic in the present study may be a contributing factor as to why no gender differences were noted in altruism, social cognition, and self-perceptions.

In relation to evolution, Šimić et al. (2020) highlight that modern-day humans have gone through the process of self-domestication, which has changed our means of socialization. This means that the social dynamics in middle childhood have changed over time, thus potentially justifying a lack of gender differences in the present study.

Limitations

The current study was limited to one school board in Northern Ontario. This means that there was minimal cultural diversity within the sample. Data was also collected at one time. The COVID-19 pandemic also began to affect Ontario prior to data collection. This meant that adjustments had to be made to carry out data collection. The pandemic resulted in limitations to face-to-face data collection, and restricted the study to online means only. Due to the size of the sample and the cross-sectional design, there was an inability to analyze the data through causal statistical methods (e.g., regression).

Implications for Education/Pedagogical Practice

The present study supports facilitating prosocial behaviours and kindness in one's classroom. There are many benefits to this, such as positive implications for student well-being. Educators should encourage altruistic or kind behaviours (e.g., sharing, caring, helping) within their classrooms to aid in empathetic development. This would contribute to students' social-emotional development, ability to self-regulate, and their intra/interpersonal relationships (Malti, 2020). By creating what we evolutionary view as an "in-group bias" within the classroom, students can view their peers as part of an inclusive, collaborative group, rather than competition.

Muller (2010) expresses that the way in which children learn in the classroom environment is unnatural, and should instead include play-based or mimicry-based activities. To do this, educators should consider activities that will promote acts of

kindness and other social-emotional skills in their classrooms. For example, jigsaw-style learning involves working with others, thus promoting cooperative learning and academic achievement (see Göçer, 2010; Lucker et al., 1976). This cooperative engagement among students can facilitate acts of altruism and kindness within the group, as prosocial skills would aid in groups working towards a common goal (e.g., completion of an assignment).

Furthering this, it is important that educators are made aware of resources that will also benefit student well-being through stress management strategies throughout their development. In early years, programs such as Wingspan's (2013) "AI's Pals" can be utilized to help develop social-emotional skills through play. This particular program emphasizes acts of caring, kindness, cooperation, and respect, which are altruistic behaviours that can be connected to well-being.

As development continues, educators can consider resources that aid in student mental health along with social-emotional development. Websites such as WellAhead.ca (n.d.) include articles that discuss topics such as social-emotional learning (SEL), the importance of social and emotional well-being, and ways to promote positive mental health. Resources on the WellAhead website also include ways to plan and implement strategies for student well-being in schools through "Every Day Practices" such as "Talking Circles," "Mindful Pause," "Monday Morning Connection," and "Wellness Wednesday" (WellAhead, n.d.). By including these strategies, educators can aid in student well-being throughout development.

Continuing through student development, websites such as BounceBackOntario (n.d.) offer resources for youths ages 15–18 and adults above the age of 19. BounceBack programs offer tools and information regarding mental health topics such as anxiety,

depression, stress, and anger. Teachers can use this to not only better understand the possible mental health concerns of their students, but also learn how to incorporate helpful tools in the classroom that will aid in student well-being. For example, working one-on-one with a BounceBack coach can give students struggling with mental health the tools they need (e.g., ways to change thinking patterns) to cope with what could be causing them stress.

In consideration of the present study, tools and resources found on the BounceBackOntario (n.d.) website should be modified to help students in middle childhood as well. Students can learn more about their mental health, and potentially learn how to navigate through the stress and pressure they feel in the classroom (e.g., test anxiety). By incorporating mental health resources earlier in their development, educators can better prepare students for future stresses across the lifespan.

Theoretical Implications

Evolutionary theories are usually used to explain development in infancy and adulthood (Ellis & Bjorklund, 2005). The present study applies an evolutionary–developmental perspective to middle childhood, which expands this field of research. During this developmental stage, children are phased with psychosocial dilemmas (Erikson, 1950), hence why social-cognitive development during this stage is critical. When considering social-cognitive development, one may consider Kohlberg’s (1969) theory on moral development, but this can extend into emotional experiences, perspective-taking, mindfulness, and kindness (Malti, 2020). When children are able to consider the feelings of others, they are then able to act altruistically. Since altruistic tendencies have been noted in primates (Warneken & Tomasello, 2006), altruism in children can be theoretically connected to evolution.

Furthermore, evolutionary theories within education is a growing field of research (Geary & Berch, 2016), as natural selection can be connected to learning (Gruskin & Geher, 2018). The present study utilizes various evolutionary theories and connects them to social-emotional development. This brings to consideration the notion that prosocial behaviours and social cognition are evolutionary advantageous, as they aid in well-being and stress management.

Researcher's Reflections on Educational Research in Era of COVID-19

As with many research studies, various changes and obstacles will occur throughout the process. The start of this study was originally going to involve EQAO test scores, a self-report on altruism by students, and academic performance ratings from teachers. Over time, and while looking through various literature, it was clear that this idea needed to expand and shift. I still wanted to use the evolutionary perspective to reflect on the data, but this perspective could have been applied to so much more. With this, other measures were included and eliminated until we felt as though the measures could reflect various domains to support the literature (e.g., social cognition, prosocial behaviours, fight vs. flight responses to stress, academic competence, and self-esteem).

However, factors arose when it came time to data collection. These external factors caused a major delay in the student researcher's ability to recruit participants, obtain parental consent, and conduct the study. The factors that were out of the researcher's control included a province-wide labour action and the global pandemic of COVID-19.

The province-wide labour action that began in January resulted in ethical issues regarding contacting the school board and teachers. Although I had been in contact with

the board prior to the labour action, and they had shown interest, it would not have been fair to proceed with data collection during this time frame. It was then that I tried to explore other potential options, including collecting data from private schools, library groups, and recreational centres. These institutions either declined the offer to be a part of the study, or offered modified means of data collection that would not be accessible for the student researcher.

In the midst of the transition of resolving the labour action, a global pandemic had escalated, and by March, all non-essential institutions had been shut down. During this time, students and teachers were on their March Break. With COVID-19 becoming a serious issue, everyone was encouraged to stay indoors, and it was mandated that elementary schooling would move to online forums until May at the very least.

With this, there came many uncertainties throughout the summer. By July, there were several potential options for what the elementary school year would be like in September 2020. To respect social distancing protocols, the student investigator began the process of converting the paper booklet of student measures to an online platform via Qualtrics. Information and consent forms for parents/guardians were also modified to be done via email at this time. This process entailed revisions to the Brock REB which were approved in August 2020. By the end of August, the student researcher was able to successfully receive an official letter from the Director of Education as proof of consent to work with the schools in the respective school board.

Multiple teachers—along with their respected principals—offered to aid in the data collection process. They were willing to have the students in their classes who received parental/guardian consent to complete the survey during class time. This meant

that once consent was given, the teachers were able to allow students to access the study via school provided laptops. The teacher was present with their students if they had questions, and the student researcher was also available for questions via Google Meet. The majority of participants completed the study within their classroom.

Overall, one of the biggest hurdles faced as a student researcher was navigating through the obstacles (e.g., labour action, COVID-19) that put the process of data collection on pause. This meant that from the months of January 2020 to September 2020, the project was not able to move forward in any way, other than adjusting the procedure to accommodate COVID-19 restrictions in August 2020.

Conclusions

An evolutionary-developmental perspective highlights how the behaviours of our ancestors are still advantageous to the modern-day human. Social cognition and prosocial behaviours would have been utilized by our ancestors to assist those within their group/tribe, as well as work together to survive. Similarly, social cognition and prosocial behaviours continue to benefit us within a multitude of contexts. The present study aimed to highlight how altruism, empathy, and theory of mind are beneficial within the classroom setting for students in middle childhood. Social cognition and prosocial behaviours not only relate to students' academic self-perceptions but also connects to their self-perceived stress/pressure. This continues to support previous literature, while applying an alternate framework to explain why this occurs. Educators can utilize this study to further promote cooperative learning strategies and social-emotional learning among their students, thus potentially improving student well-being.

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Appendix A

Call for Participants



Call for Participants

RESEARCH STUDY TITLE:

An Evolutionary-Developmental Perspective on
Prosocial Behaviours, Social
Cognition, and the Self-Perceptions on Stress
and Academics in Middle Childhood

STUDENT RESEARCHER:

Maria Coccimiglio, M.Ed. Candidate, Brock University

SUPERVISOR:

Dr. Sandra Bosacki, Department of Education Studies,
Brock University

BROCK REB CLEARANCE #19-146

REQUIREMENTS:

Students ages 9 to 11 who are enrolled in a school under
the _____ School Board

ABOUT THE STUDY:

I am looking at the connections among things like empathy, altruism (kindness towards others), and how children think in relation to how they view their stress and their academics.

The student participant will be asked to fill out a self-report questionnaire of different measures that consider these factors. The measures are based on self-reports and will take about 30 minutes to complete. Data will remain confidential.

CONSENT/ASSENT:

The Google Form includes an information letter for parents/guardians and consent form. By filling this out, you give your child consent to voluntary participation and you will be sent a link to the email you provide with the online self-report questionnaire via Qualtrics. The student will be asked for their assent to participate voluntarily in the study at the start of the Qualtrics self-report questionnaire. They are permitted to withdraw at anytime if they choose to without consequence.

FOR FURTHER INQUIRIES EMAIL: mc18ck@brocku.ca

Appendix B

Qualtrics Survey

Q2 Click the circle to tell how often you would show the following behaviours.

	Never (1)	Once (2)	More Than Once (3)	Often (4)	Very Often (5)
I would give directions to someone I did not know. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would make changes for someone I did not know. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would give money to a charity. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would donate clothes or goods to a charity. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would help carry belongings of someone I did not know. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would delay an elevator and hold the door for someone I did not know. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would allow someone I did not know to go in front of me in line. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would point out a clerk's error in undercharging me for an item. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I would let a
neighbour I did
not know well
borrow an item
of value to me.
(9)

☐☐☐☐☐

I would help a
classmate who I
did not know well
with a homework
assignment when
my knowledge
was greater than
his or hers. (10)

☐☐☐☐☐

I would
voluntarily look
after a
neighbour's pet
or children
without being
paid. (11)

☐☐☐☐☐

I would offer to
help a
handicapped or
elderly person
across the street.
(12)

☐☐☐☐☐

I would offer my
seat on a train or
bus to someone
who was
standing. (13)

☐☐☐☐☐

I would help an
acquaintance
move houses.
(14)

☐☐☐☐☐

Q3 Check the circle that indicates when you have experienced *pressure*.

	Never (1)	Rarely (2)	Sometimes (3)	Often (4)	Most of the Time (5)
As a result of competition (on grades, work) (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Due to deadlines (project due, test coming up) (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Due to an overload (too much work) (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Due to relationships (with friends and/or family) (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q4 Check the circle that indicates when you have experienced the following during stressful situations.

	Never (1)	Rarely (2)	Sometimes (3)	Often (4)	Most of the Time (5)
Sweating (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Stuttering (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trembling (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rapid Movements (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Exhaustion (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bathroom Trouble (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Asthma (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Backaches/cramps (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hives/itchy skin (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Headaches (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
All-over pain (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cold/flu (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Not hungry (can't eat) (13)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Very hungry (eat a lot) (14)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q5 The following statements are about your thoughts and feelings in different situations. For each statement, indicate how well it describes you by circling the number that best matches how you feel. Read each statement carefully!

	Does not describe me at all (1)	Describes me a little (2)	Somewhat describes me (3)	Describes me well (4)	Describes me very well (5)
A) I feel bad for those who have less than me (EC). (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B) Sometimes I don't feel very sorry for other people when they are having problems (EC). (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C) When I see someone being taken advantage of, I feel protective towards them (EC). (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
D) Other people's problems do not usually bother me a lot (EC-). (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
E) When I see someone being treated unfairly, I sometimes don't feel bad for them (EC-). (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
F) I am often touched by things that I see happen (EC). (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
G) I would describe myself as kind-hearted (EC). (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Decide which type of kid you are most like (the ones on the left or the ones on the right). Then check ONE box that best describes whether it is “sort of true” OR “really true” for you.

Really True for Me	Sort of True for Me				Really True for Me	Sort of True for Me
<input type="checkbox"/>	<input type="checkbox"/>	Some kids feel that they are very good at their school work	BUT	Other kids worry about whether they can do the school work assigned to them	<input type="checkbox"/>	<input type="checkbox"/>

SC1+

Decide which type of kid you are most like (the ones on the left or the ones on the right). Then check ONE box that best describes whether it is “sort of true” OR “really true” for you.

Really True for Me	Sort of True for Me				Really True for Me	Sort of True for Me
<input type="checkbox"/>	<input type="checkbox"/>	Some kids feel like they are just as smart as other kids their age	BUT	Other kids aren't so sure and wonder if they are as smart	<input type="checkbox"/>	<input type="checkbox"/>

SC7+

Decide which type of kid you are most like (the ones on the left or the ones on the right). Then check ONE box that best describes whether it is "sort of true" OR "really true" for you.

Really True for Me	Sort of True for Me				Really True for Me	Sort of True for Me
<input type="checkbox"/>	<input type="checkbox"/>	Some kids are pretty slow in finishing their school work	BUT	Other kids can do their school work quickly	<input type="checkbox"/>	<input type="checkbox"/>

SC13-

Decide which type of kid you are most like (the ones on the left or the ones on the right). Then check ONE box that best describes whether it is "sort of true" OR "really true" for you.

Really True for Me	Sort of True for Me				Really True for Me	Sort of True for Me
<input type="checkbox"/>	<input type="checkbox"/>	Some kids often forget what they learn	BUT	Other kids can remember things easily	<input type="checkbox"/>	<input type="checkbox"/>

SC19-

Decide which type of kid you are most like (the ones on the left or the ones on the right). Then check ONE box that best describes whether it is "sort of true" OR "really true" for you.

Really True for Me	Sort of True for Me				Really True for Me	Sort of True for Me
<input type="checkbox"/>	<input type="checkbox"/>	Some kids do very well at their classwork	BUT	Other kids don't do very well at their classwork	<input type="checkbox"/>	<input type="checkbox"/>

SC25+

Decide which type of kid you are most like (the ones on the left or the ones on the right). Then check ONE box that best describes whether it is "sort of true" OR "really true" for you.

Really True for Me	Sort of True for Me				Really True for Me	Sort of True for Me
<input type="checkbox"/>	<input type="checkbox"/>	Some kids have trouble figuring out the answers in school	BUT	Other kids almost always can figure out the answers	<input type="checkbox"/>	<input type="checkbox"/>

SC31-

Decide which type of kid you are most like (the ones on the left or the ones on the right). Then check ONE box that best describes whether it is “sort of true” OR “really true” for you.

Really True for Me	Sort of True for Me				Really True for Me	Sort of True for Me
<input type="checkbox"/>	<input type="checkbox"/>	Some kids are often unhappy with themselves	BUT	Other kids are pretty pleased with themselves	<input type="checkbox"/>	<input type="checkbox"/>

GSW6-

Decide which type of kid you are most like (the ones on the left or the ones on the right). Then check ONE box that best describes whether it is “sort of true” OR “really true” for you.

Really True for Me	Sort of True for Me				Really True for Me	Sort of True for Me
<input type="checkbox"/>	<input type="checkbox"/>	Some kids don't like the way they are leading their life	BUT	Other kids do like the way they are leading their life	<input type="checkbox"/>	<input type="checkbox"/>

GSW12-

Decide which type of kid you are most like (the ones on the left or the ones on the right). Then check ONE box that best describes whether it is "sort of true" OR "really true" for you.

Really True for Me	Sort of True for Me				Really True for Me	Sort of True for Me
<input type="checkbox"/>	<input type="checkbox"/>	Some kids are happy with themselves as a person	BUT	Other kids are often not happy with themselves	<input type="checkbox"/>	<input type="checkbox"/>

GSW18+

Decide which type of kid you are most like (the ones on the left or the ones on the right). Then check ONE box that best describes whether it is "sort of true" OR "really true" for you.

Really True for Me	Sort of True for Me				Really True for Me	Sort of True for Me
<input type="checkbox"/>	<input type="checkbox"/>	Some kids like the kind of person they are	BUT	Other kids often wish they were someone else	<input type="checkbox"/>	<input type="checkbox"/>

GSW24+

Decide which type of kid you are most like (the ones on the left or the ones on the right). Then check ONE box that best describes whether it is “sort of true” OR “really true” for you.






Really True for Me	Sort of True for Me				Really True for Me	Sort of True for Me
<input type="checkbox"/>	<input type="checkbox"/>	Some kids are very happy being the way they are	BUT	Other kids wish they were different	<input type="checkbox"/>	<input type="checkbox"/>

GSW30+

Decide which type of kid you are most like (the ones on the left or the ones on the right). Then check ONE box that best describes whether it is “sort of true” OR “really true” for you.

Really True for Me	Sort of True for Me				Really True for Me	Sort of True for Me
<input type="checkbox"/>	<input type="checkbox"/>	Some kids are not very happy with the way they do a lot of things	BUT	Other kids think the way they do things is fine	<input type="checkbox"/>	<input type="checkbox"/>

GSW36-

<p>Lisa and Tom are friends.</p> <p>They are playing together in Tom's room.</p>	
<p>Tom has a letter from his friend Susan.</p> <p>Lisa really wants to know what the letter says but Tom does not want her to read it.</p>	
<p>Tom's mom calls him. Tom puts the letter under his blanket and leaves the room.</p>	
<p>While Tom is gone, Lisa takes the letter and reads it.</p> <p>Then she puts it away in Tom's desk.</p>	
<p>But Tom finishes talking to his mom and comes back.</p> <p>He sees Lisa putting the letter in the desk.</p> <p>Tom watches Lisa, but Lisa does not see Tom.</p>	

Q19 Does Lisa know that Tom saw her?



☐ Yes (1)

☐ No (2)

Q20 Where does Lisa think Tom will look for his letter?

☐ under his blanket (1)

☐ in the desk (2)


<p>David and Nick are best friends.</p> <p>They really enjoy playing football together.</p>	
<p>David and Nick both want to play on the school football team.</p>	
<p>Nick thinks that David is a much better football player.</p> <p>Nick thinks that the coach will choose David, but not him, to play on the football team.</p>	
<p>But the coach thinks that both David and Nick are good football players.</p> <p>He wants them both to play on the school team.</p>	
<p>The coach knows that Nick doesn't think he will get on the team.</p>	

Q22 What does the coach believe?

- ☐ The coach thinks that Nick knows that he wants him to be on the team (1)
- ☐ The coach knows that Nick doesn't know that he wants him to be on the team (2)

Q23 What does Nick believe?

- ☐ Nick doesn't know that the coach wants both him and David on the team (1)
- ☐ Nick thinks that the coach wants both him and David on the team (2)

<p>Ben has a big problem on his mind: Tomorrow is his mum's birthday but he doesn't know what to buy.</p>	
<p>Ben remembers that his sister, Anna, had already asked mum what she would like most of all for her birthday.</p> <p>Anna is out riding her bike.</p>	
<p>Ben decides to look around Anna's room to see if he could find what present she has got for their mum.</p> <p>Ben goes into the room and finds a big bunch of beautiful flowers with a little card that said: 'Happy birthday Mum!'</p>	
<p>Ben thought to himself: „Mum must want flowers for her birthday“</p> <p>Just as Ben is leaving the room, Anna is coming up the stairs. But she does not see Ben.</p> <p>Ben doesn't want Anna to know that he has been snooping around her room, so he asks her: "Anna, have you got mum a birthday present?"</p>	
<p>Anna thinks for a minute, she does not want Ben to copy her and get mum the same present. So she says: "Yes, Ben, I have got mum some perfume."</p>	

Q24 What does Ben believe?

- ☐ Ben thinks Anna has bought mum some perfume (1)
- ☐ Ben knows Anna has bought mum some flowers (2)

Q25 What does Anna believe?

- ☐ Anna thinks that Ben believes that she knows that Mum wants perfume for her birthday (1)
- ☐ Anna thinks that Ben knows that he knows that mum wants flowers for her birthday (2)

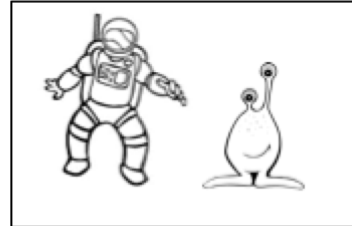
In another universe, the Aliens captured the Astronaut. They want him to tell where Earth is; they know it is near either Mars or Neptune. They know that the Astronaut will not harm them, he will want to save the other Astronauts, so he will lie to them.

The **Astronaut** is brave and very clever; he will not let them find Earth.

Earth is near Mars.

Now when the **Aliens** ask the **Astronaut** where Earth is, he says:

"Earth is near Mars."



Q26 Is it true what the Astronaut says?

- ☐ Yes (1)
- ☐ No (2)
-

Q27 Where will the aliens look for earth?

- ☐ by Neptune (1)
- ☐ by Mars (2)
-

Q28 Why did the Astronaut say what he said?

- ☐ Because he knows that the Aliens will not believe him (1)
- ☐ Because that is where Earth is (2)
-

Q32 I am a...

- ☐ Girl (1)
 - ☐ Boy (2)
 - ☐ Other (e.g., gender neutral, gender fluid, non-conforming) (3)
 - ☐ Prefer not to say (4)
-

Q33 How old are you? (type in your age using number of years)

Q34 Is English your first language?

- ☐ Yes (1)
 - ☐ No (2)
-

Q35 Have you always gone to school in Canada?

- ☐ Yes (1)
 - ☐ No (2)
-

Q36 I identify as:

- ☐ Caucasian (White) (1)
 - ☐ Black Indigenous Person of Colour (e.g., African American, Jamaican) (2)
 - ☐ Asian (3)
 - ☐ European (4)
 - ☐ Indigenous / Metis / Ojibwe (5)
 - ☐ Indian (6)
 - ☐ Hispanic (7)
 - ☐ Other (8)
-

Q37 Have you always been at the school you are at right now?

- ☐ Yes (1)
- ☐ No (2)

End of Block: Default Question Block
