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WHAT ARE THE MOST EFFECTIVE COMPONENTS OF EMPATHY EDUCATION FOR HIGH SCHOOL STUDENTS TO INCREASE THEIR EMPATHY LEVELS?

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ABSTRACT

Activating Empathy is an empathy education program designed for high school participants. This course was taught to 50 students from a Canadian high school. Participants took an Emotional Quotient (EQ) test before, halfway through, and after completing the course. Four independent variables relating to the components of empathy were compared. Those variables included: (1) demographics, (2) the ability to perceive another's emotions, (3) the ability and desire to understand another's emotions, and (4) the ability to feel what another is feeling while differentiating self from others. The dependent variable was the scores on the EQ test and composite scores that generated using a selection of questions from the EQ test. These scores and composite scores were then compared to find the most statistically relevant components for a high school empathy education program. The results found that gender is a significant indicator of empathy levels with females scoring better than males in overall EQ score, specifically the ability to perceive masked emotions and the ability to recognize typical emotions felt in a given situation. The results also found that the ability to perceive typical emotions in common situations and the ability to understand how someone feels during an interaction are both positively correlated with empathy levels. These two components are the most important and necessary parts of an empathy education program for high school students.

Table of Contents

List of Tables.....v
List of Figures.....vi
Acknowledgments.....viii

Chapter 1 - INTRODUCTION.....1

Chapter 2 - LITERATURE REVIEW.....4
Defining Empathy.....4
Defining Community.....5
Schools As Community.....6
The Unique Position Of Schools In Community Development.....6
Empathy's Influence On Community Development.....7
Ability To Improve Empathy.....9
Creating An Effective Curriculum In Empathy Education.....11
Summary.....13
Chapter 3 - RESEARCH METHODS.....14
Purpose, Objective, and Research Questions.....14
IRB Approval.....15
Overview of the structure of *Activating Empathy* Curriculum......15
Research Design.....16
Study Location.....16
Description of Study Population.....16
Dependent Variable.....17
Independent Variables.....18
Scoring of Independent Variables.....19
Demographics.....19
Ability to Perceive Another's Emotions.....19
Ability to Understand Another's Emotions.....20
Ability to Separate Another's Emotions from One's Own Emotions.....20
Limitations.....21

Chapter 4 - ANALYSIS & INTERPRETATION OF RESULTS.....22
Frequency of Responses.....22
Demographic Descriptive Statistics for All Participants.....22
Pre, Mid, and Post-Test Scores.....23
Review of Research Questions.....25
Quantitative Analysis of Research Question 1.....25
Quantitative Analysis of Research Question 2.....28
Quantitative Analysis of Research Question 3.....29
Quantitative Analysis of Research Question 4.....30

Interpretation of Results.....30
Chapter 5 - CONCLUSIONS & RECOMMENDATIONS.....31
Summary.....35
Future Empathy Education For High School Students.....36
References.....37

Appendix A 42

List of Tables

Table 3.1: Pre- and Post- Survey Questions aligned to Empathy Quotient Questions and how they were scored to calculate participant's empathy quotient scores.....12

Table 3.2: Objectives, variables, sources of data, type of data, and analysis technique for quantitative data.....13

Table 4.1: Demographic Statistics.....18

Table 4.2: Pre, Mid, and Post-Test Scores.....19

List of Figures

Figure 4.1: Comparison of Gender and Empathy Quotient Scores.....21

Figure 4.2: Comparison of Gender and Composite Scores of RQ2.1.....22

Figure 4.3: Comparison of Gender and Composite Scores of RQ2.2.....23

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I would like to personally thank my paper advisor Dr. Kate Berardi for the gift that is this research. I always saw my final paper as a "future Alex problem" that was going to take years to complete. I had an idea of what I wanted but no real guarantees that it would work the way I wanted it to. Then all my plans came crashing down around me because of bad luck, bad timing, and of course a global pandemic. Dr. Berardi without hesitation suggested a new direction and throughout the process made me feel supported despite constantly waiting until the last minute to receive submissions from me. I could never have been able to say that I earned my Master's degree by the age of 24 during a global pandemic without her. The nice thing about working with a person who studies empathy for a living is that they truly embody what it means to be empathetic and I hope someday I can be an equally empathetic mentor to someone like she has been to me.

Oh yeah and thanks to my parents cause they were very supportive despite my #NeverGraduate status but for this paper, Kate gets most of the credit. If you're reading this paper you should read her dissertation too because it's like this but better.

Chapter 1 - INTRODUCTION

The purpose of this research is further understand how to best teach empathy within high schools and ultimately increase empathy within a community. Empathy, and the learning of empathy, has been linked with prosocial behaviors that can be beneficial to both individuals and their communities (Hirn et al., 2019, Portt et al., 2020; Vescio et al., 2003; Wilson, 1996). These behaviors include better peer-to-peer relationships, less prejudice, greater social competence, and increased public participation in community. At the end of the day, empathy plays a large role in the act of caring for others. This research makes the simple assumption that if you take the time to teach people how to care for one another (by teaching and working on the components of empathy) then they will be better at caring for one another and the community will see the benefits.

With a majority of nations having compulsory education, high schools can serve as a microcosm of the local community. Every family within the community is required (with limited exceptions) to send their children to a common building where children interact for 9 months of the year. This means that students who may have very different backgrounds are now in a classroom sitting next to one another learning together. These students carry with them all their personal experiences outside of school whether that be their families socioeconomic standing, their racial/ethnic identity, and any other difference that makes them unique. In addition to representing themselves, each student also represents their own family unit when they are alone at school. This means that students may voice the opinions of parents or other family members within the classroom or refute those opinions openly in class. Finally most high schools have some form of extracurricular activities whether that is music, art, sports, clubs, or organizations. It is through school-related activities like these that high schools often serve as a common place where entire families from throughout the community interact. This puts them in a unique position as a potential

source of future changes within a community (Lockwood, 1996; Sanders & Epstein, 2005; Stone, 1993).

By introducing empathy into the classroom just as one learns math or science, students (future citizens of the community) have been shown to be more engaged in the development process (Wilson, 1996). Engagement and public participation are the backbone of community because community can only exist when people want it to. By teaching empathy, members of the community begin to learn new ways to care for one another and then by extension begin to learn new ways to care about the "greater good" (community).

This research is an evaluation of an empathy curriculum (*Activating Empathy*) taught in a Canadian high school. The school that ran the program was the Toronto Montessori School. The course was nine months in total with a half hour lesson each week. The program has demographic considerations as well as four literature-defined dimensions that are evaluated and then ideally, over the curriculum, improved upon. The goal of this research is to answer the question:
What is/are the most important component(s) of an empathy education for high school students?

By answering this question, high school educators can better focus their empathy lessons to meet the developmental stage of their students (Mathews & Hamby, 1995). Determining the order of importance of the four dimensions for specifically high school students is the next stage in tailoring empathy programs for all ages. The eventual goal is to have empathy taught continuously within a community to encourage more prosocial behaviors and a more involved citizenry.

Five more chapters follow. Chapter 2 is a comprehensive literature review of empathy, empathy education, and how it relates to community. This literature review defines both empathy and community, explains how schools are a form of community, explains the role of schools in

overall community development, describes the ability to improve empathy, and finally explains how to create an effective curriculum for empathy education. Chapter 3 describes the research methods used for this study. The study builds off of previous research by Berardi (2020) and tests an existing empathy education curriculum on a high school population. This chapter includes the defining of the independent variables and dependent variable along with the research questions associated with the study. In addition, Chapter 3 describes the limitations that faced this particular study. Chapter 4 is the analysis and interpretation of the results of the study. All four research questions are answered with statistical analysis. Chapter 5 gives the study conclusions and future recommendations for empathy education studies and programs. This final chapter takes the analysis of the results to suggest the future of empathy education for high school students as well as empathy education in community as a whole.

Chapter 2 - LITERATURE REVIEW

Defining Empathy

Empathy is a concept that most people are familiar with even if they are not familiar with the word. Examples can range from crying with a character during a movie or show, feeling the pain of an injury that happened to someone else, or even something as simple as smiling back at a baby. Empathy is the act of identifying another's emotion, understanding why they are feeling that emotion, then experiencing that same emotion, all the while differentiating yourself from that person (Krznaric 2015). Empathy can be summarized using the classic metaphor of walking a mile in another's shoes.

There are two distinct types of empathy; cognitive and affective empathy. Cognitive empathy is the ability to figuratively step into another person's shoes and understand their perspective. Affective empathy is the ability to mimic another's emotion and feel how they feel. The levels of these two types of empathy are shown to differ from person to person (Kerr-Gaffney et al., 2019).

Cognitive empathy is developed from increased exposure to understanding the lives of others (Dorris et. al., 2022, van Loon et. al., 2018). By increasing the number of shoes that a person is shown, and understanding the differences between those shoes, the easier it is for them to step into them. Dorris et. al. (2022) found that cognitive empathy follows a bimodal distribution in the levels displayed by humans over their lives with the highest levels experienced in young adulthood. There is an initial increase in cognitive empathy in young children from ages 6 to 12 followed by a slight decrease from 13 to 18 years old. The second, and largest, increase is in the 19 to 25 year old group. Following this there is a plateau in levels and a drop in levels from age 56 and up with the most dramatic decrease after the age of 75. This slight decrease from 13 to 18

is the reason why programs such as the *Activating Empathy* program are so important in trying to increase specifically cognitive empathy levels rather than see a decline.

Affective empathy is developed from listening and learning how experiences felt. In following our metaphor of shoes, affective empathy is learning from the other person how the shoes fit them and sharing that same feeling with them. A study by Ze et. al. (2014) found that affective empathy increases with age and as people experience more of life's joys and hardships they are able to feel what others might be going through. Programs like *Activating Empathy* increase exposure to certain situations and the emotions associated with them which should increase affective empathy levels.

Defining Community

Community is a network of interpersonal connections that are used to influence a collective outcome. Put plainly, community is the coming together of people with the decision that life can be better if they work together. Wilkinson (1991) developed what is known as the interactional theory of community which is a hybrid of two theories; field theory and network theory. The field theory is the idea that humans who have regular and repeated interactions around a common interest create what are called social fields. The critical part of Wilkinson's interactional theory is the second part which is network theory. Essentially, these are the interactions between the individual social fields to make up a single interconnected community. Think of a coffee shop that is located between an engineering firm and a law firm. Lawyers and engineers might never interact with one another but sharing a common "watering hole" could lead them to interact an eventually the law firm could represent the engineering firm. Each had its own social field and with the help of a shared interaction point (the coffee shop) an interconnected community was created. Similarly

schools can also be a common interaction point where many different households of the community interact and remain connected.

Schools As Community

Almost any definition of community has two basic principles. First, there must be multiple humans socially connected. Secondly, these social connections need to be rooted in a defined place/area. Schools fulfil both of these requirements. In fact, because community often implies people working together toward a common goal, many schools and school administrators promote the idea of treating school as a community. In a 2002 book titled *School As Community: From Promise to Practice*, Gail Furman discusses the theory behind treating school as community. Furman explains that when a school adopts the mentality that their school is a community it highlights the importance of belongingness. In chapter 7 of the book Karen Osterman describes how belongingness is a fundamental motivation need and is vital for human development. This belongingness or "sense of community" leads to prosocial behaviors (Osterman, 2002). A 2019 study by Baker et. al., found that schools who actively teach skills to better the community (i.e. democratic and ethical decision making) tended to have more engagement within the community. Schools, in both structure and function have the key ingredients for forming community. The skills that can be learned within the school community can then be applied to the wider general community.

The Unique Position Of Schools In Community Development

Nearly every country on the planet has some form of compulsory education (ICESCR, 1966). This means that almost every country sees the value in some form of education for its

citizens. By having school be mandated to a certain age, school systems have become a large part of community. Grover (2015) explores U.S. schools and their role in community. The study explains that schools can often reveal the underlying issues within a community and can serve as a common meeting place of many different families from many different walks of life under one roof (Grover, 2015). The relationship of schools and their influence in their communities is explored by Sanders & Epstein (2005) citing how specific partnerships between the school and community have been shown to both improve the experience that children have in schools as well as establishing better relations between community members. Other studies by Lockwood (1996) and Stone (1993) also demonstrate the position that schools have in being a source of change in a community. It is the unique position of schools to both be a snapshot of a community as well as a potential source of positive change in a community. Schools serve as a common place where families from all over a community integrate and, more importantly, interact. Since empathy education is based on exposure to new situations and perspectives having a diverse group of community members represented in a school allows for many different perspectives to learn from. By tailoring the empathy education to fit the students within the school these students can bring the lessons they learn home and directly change the community around them. The goal of teaching empathy in schools would be to have a ripple effect where students begin to display more empathy to one another and then that creates more empathetic parents and by extension the entire community becomes more empathetic.

Empathy's Influence On Community Development

Empathy has been shown to be instrumental in the development of community and comes with a whole host of benefits. Studies have found that empathy can lead to better peer-to-peer

relationships (Dekovic & Gerris, 1994; Eisenberg et al., 2006; Portt et. al, 2020), less prejudice (Dovidio et al., 2000; Galinsky & Ku, 2004; Vescio et al., 2003), greater social competence (Hirn et al., 2018; Saarni, 1990), and increased public participation within communities (Batson, 1991; Wilson, 1996).

In a review of 28 studies on empathy and the positive aspects of adolescent peer relationships Portt et al. (2020) showed that the majority of studies found that increased empathy relates to greater friendship quality or closeness and peer attachment. While this is not the only aspect of peer-to-peer relationships, this study states that their findings "speaks to the potential value of including empathy-promoting programming in schools" (Portt et al., 2020).

In a study about the effects of empathy on prejudice within communities, Vescio et al. (2003) used confirming or disconfirming stereotypes of to measure intergroup attitudes. Vescio et al. (2003) found that perspective taking [empathy] promoted improved intergroup attitudes regardless of the type of stereotype they were confronted with. Those who remained detached and objective listeners did not show the same improvement of intergroup attitudes (Vescio et al., 2003).

The role of empathy in developing social competence was studied in 130 recent graduates of a mainstream school in Germany. Hirn et al. (2019) found that evaluation of actions and anticipation of consequences were impacted most by the level of emotional perspective taking or empathy of the student. The better able a student was at taking the perspective of others, allowed for the ability to predict the outcomes of potential events (Hirn et al., 2019).

Wilson (1996) discusses a case study in Cali, Columbia where empathy was used to empower community members. Through the application of the social learning theory (the concept of modeling behavior that is desired in the hopes it will be emulated) Wilson was able to show the impact of empathy and empowerment on public participation in the development process. When

these members of the community realized that their voice mattered they were more inclined to use it moving forward (Wilson, 1996).

These studies demonstrate the positive impacts that empathy can have on community development. Empathy is a tool and a skill for how to better care for one another. As communities prioritize the awareness and use of empathy community members will have better peer-to-peer relationships, less prejudice, and generally be more active within the development process.

Ability To Improve Empathy

Empathy is the combination of the innate human ability to identify another person's emotions with the added skill and effort of taking the perspective of that person to better understand the reasoning for their emotions (Bråten, 2013). This means that empathy is both something that comes naturally to most [neurotypical] people and also is a skill that can be improved.

Along with differences between people and their natural ability to perceive others emotions, certain demographics have been shown to influence empathy levels. For example, women have been found to be more willing to display empathy when compared to men (Silke et al., 2019). In the same review, culture and ethnic identity were also found to cause variety in empathy expression (Silke et al., 2019). A 2019 study by Beadle & de la Vega further supported a 2014 study by Ze et al. exploring empathy across ages. Both studies found that as age increases so does affective empathy levels. This essentially means that as our life experiences increase there is an increased likelihood that we have felt what others have felt before. The Beadle & de la Vega (2019) study also showed that there is a decline in cognitive empathy as humans age which means that overall empathy levels stay consistent throughout a human life (Beadle & de la Vega, 2019; Ze et al., 2014).

Outside of demographic and innate differences there are specific skills used in empathy that can be strengthened and improved upon (Permana & Pandin, 2022; Samarasekera et al., 2022). A 2022 review on how to enhance empathy in nursing students found that targeted interventions were shown to increase the levels of empathy displayed by nurses. These interventions included transcultural education and specific education on the concept of empathy, mindfulness, and communication (Permana & Pandin, 2022). In a review on the most effective methods of teaching empathy, Samarasekera et al. (2022) found that targeting the affective domain of learning along with experiential learning were more effective than didactic methods of teaching and learning (Samarasekera et al., 2022). A study by van Loon et. al. (2018) looked at virtual reality perspective taking and its effects on cognitive empathy levels. It was found that virtually placing one in another's shoes led to increased levels of cognitive empathy. A study by Garandeau et. al. (2022) found a Finnish anti-bullying campaign that focused on the sharing of experiences and emotions felt in a situation led to increases in affective empathy. This further supports the idea that affective empathy increases over a lifetime due to experiences that a person has and so increased exposure to empathy education and practicing of perspective taking skills can increase empathy overall.

Empathy, like walking and talking, is a combination of an innate human ability as well as a skill that can be improved upon. Recognizing the emotions of others comes naturally in neurotypical individuals but understanding the reason for these emotions requires effort and skill. The use of experiential learning or exposure can help build skills such as perspective taking and have been found to increase levels of empathy. Simply put, the more a person is exposed to situations and the perspectives of those involved the more empathy they will start to have for those in those situations.

Creating An Effective Curriculum In Empathy Education

While empathy education and social-emotional learning have existed for a long time in the form of professional development and anti-bullying campaigns, *Activating Empathy* is a unique curriculum aimed at educating high school students (ages 14-18) in four main areas of empathy. Those four components include, (1) demographics, (2) the ability to perceive another's emotions, (3) the ability and desire to understand another's emotions, and (4) the ability to differentiate another's emotions from oneself.

As previously stated, demographics is an important factor in empathy but since it cannot be changed by those taking the course the three other components are the focus of the curriculum. After first recognizing and learning the influence of demographics, the ability to define empathy is also included early in the curriculum. Much like explaining to someone how to breathe in yoga, the goal of explaining the concept of empathy is to bring more attention to something that is occurring all around them. By understanding this complex and layered term, participants can better recognize empathy in the world (Howe, 2012).

> "[The definition of empathy is] an emotional response that is produced by the emotional state of another individual without losing sight of whose feeling are whom."
>
> – (Decety, 2007)

The second component is the ability to perceive emotions. As stated earlier, this is a innate human characteristic that exists in most neurotypical individuals. Studies with those who are unable to easily perceive emotions (such as those on the autism spectrum) have shown that through targeted activities like being shown an emotion and having students identify it has increased emotional perception (Herpertz et al., 2016; Pool & Qualter, 2012).

The third component is the ability and desire to understand another's emotions. This is where the term activate in *Activating Empathy* becomes central to the curriculum. In this component participants are both being taught how to better understand others feel but how that can be beneficial to providing help (*Activating Empathy* Facilitators Guide, 2017). To do this participants are confronted with situations that are unfamiliar to them and they are helped to understand how someone might feel in that situation and are then led to share that emotion with that person. Ultimately the goal is to have participants use empathy as a tool in prosocial behavior (Batson & Stocks, 2015).

The final component is the ability to separate another's emotions from the self. This is done so by self-reflective exercises that allow for the participant to practice differentiating themselves from others (*Activating Empathy* Facilitators Guide, 2017). It is in the separation between the self and others that allows for empathy to be used productively. For example think about a crying newborn. A parent has no formal way to communicate with the child so they have to empathize to better understand why the child might be crying. Rather than bursting into tears and losing themselves they can maintain that separation and think about potential solutions such as food or other soothing techniques. Maintaining separation between the self and others allows for empathy to function as a learning experience rather than just a change in emotions. (Decety & Moriguchi, 2007).

This research is largely based off a 2020 study of undergraduate students following the *Activating Empathy* curriculum (Berardi, 2020). This study looks at all of the significant components from that study with the caveat of studying a younger population. While every component is necessary for a complete education in empathy, skills such as perspective-taking and identifying emotions are the basic necessities for having empathy. After learning how to

understand emotions and the reasoning behind them it falls on the person to use that information as a way to help and care for others.

Summary

Empathy and community are linked by the fact that empathy is one of the key tools for caring for a fellow human. For a community to thrive members need to support and feel supported by each other and empathy can play a large role in achieving that goal. Schools are a great place to begin the teaching of empathy. Since students already represent a sample of the larger community having them learn to care for one another could cause a ripple effect that goes beyond the classroom and throughout the community. A targeted empathy curriculum such as *Activating Empathy* allows for the skill that is empathy to be honed and promoted as a way for students and future citizens of the community to work together to ensure a brighter future.

Chapter 3 – RESEARCH METHODS

Purpose, Objective, and Research Questions

The purpose of this study is to evaluate an existing empathy education program and further confirm the findings of a previous study (Berardi, 2020). The original study had the purpose of exploring literature-defined components of empathy and the influence that an empathy education program has on them.

The components that were considered in the original study are also being considered in this study. They are the demographics of the participants, the ability to perceive someone else's emotions, the ability and desire to understand someone else's emotions, and the ability to differentiate someone else's emotions from oneself, and how these components effect empathy levels of study participants. The objective of the study was to teach the empathy education program *Activating Empathy* to high school participants and measure their empathy levels before and after completing the course, and comparing overall empathy levels to the four components.

The following research questions were considered for the study:

- RQ1 – How do demographics such as age, gender, and race affect the empathy levels of participants before and after completing the *Activating Empathy* program?
- RQ2 – What is the relationship between the ability to perceive someone else's emotions and empathy levels?
- RQ3 – What is the relationship between the ability to understand someone's emotions during an interaction and empathy levels?
- RQ4 – What is the relationship between the ability to differentiate another's emotions from oneself and empathy levels?

IRB Approval

This study was submitted to the Institutional Review Board (IRB) of the The Pennsylvania State University for approval in Fall of 2021. Approval as an exempt study, as the study shows minimal risk to participants, was granted in January 2022 (IRB #SSTUDY00019266). See Appendix B on page 125 for correspondence of the approval. Participants did not have to sign consent forms as the study was ruled exempt, but consent was required from the students and their parents, as they were minors.

Overview of the structure of *Activating Empathy* Curriculum

The original curriculum *Activating Empathy* was developed in 2017 by Ciara Boylan and Pat Dolan at the UNESCO Child and Family Research Center of the National University of Ireland, Galway. Three versions of the program exist with two high school-level versions (ages 14-18) and one for undergraduate students (ages 18-25). The two high school-level versions were tailored for Irish students and later updated for American students with minor changes to make the course more relatable for the audience using it.

The *Activating Empathy* curriculum has five main components. The first two components discuss the role of demographics (RQ1) along with defining empathy from literature, expert lectures, media, and scholarly research. The remaining three components are consistent with the last three research questions of this study. Students are given practice in perceiving emotions (RQ2) through a variety of activities designed to help recognize and determine emotions being displayed. After students have practiced identifying emotions they are guided through activities to help understand how someone else feels while experiencing these emotions (RQ3). The final component of the curriculum is practice with the ability to feel the same emotions as another while

differentiating the self from others (RQ4). This final component is the application of empathy and the reason for *"Activating" Empathy* in life.

Research Design

This study used a quasi-experimental research design. Students were given a pre-test, mid-course test, and post-test model to evaluate the effects of the treatment (*Activating Empathy* Curriculum) on the participants.

The research was designed to determine which of the four components, (1) demographics, (2) ability to recognize emotions, (3) ability to understand another's emotions, (4) ability to recognize that another's emotions are separate from one's own emotions.

Study Location

This study was completed in a Canadian high school (Toronto Montessori School) The program was carried out over the course of nine months with lessons every seven days for half an hour each day.

Description of Study Population

The population that was used in this study was the Toronto Montessori School. This school is an "internationally-acclaimed educational experience" which is reflected in their diverse population that they serve. While unsuccessful in finding demographic data of the school, the school website has photos of classes with majority Asian students. The school follows a Montessori-style of learning where students are self-directed with their education. By the time students reach secondary (high) school age most students follow a typical IB diploma program and so this study can be generalized to other high schools.

Dependent Variable

The dependent variable for this study is the level of empathy exhibited by participants. This was measured before and after completing the *Activating Empathy* curriculum. To determine the level of empathy of a participant, participants completed a 40 question Empathy Quotient survey with an additional three questions regarding age, gender, and race. The original Empathy Quotient survey is 60 questions with 20 break/filler questions, but these were removed to make the survey easier to complete. The survey itself follows a four-point Likert Scale with specific weighting for each of the responses to derive an empathy quotient score. See Table 3.1 below for the weighting of every survey question along with the corresponding Empathy Quotient survey question (Baron-Cohen & Wheelwright, 2004).

Table 3.1 Pre- and Post- Survey Questions aligned to Empathy Quotient Questions and how they were scored to calculate participant's empathy quotient scores

Value for Score	**Pre- and Post- Survey Question Number (Empathy Quotient Question Number)**
Score two points for each of the following items if the participant answered, "definitely agree", or one point if the participant answered "slightly agree". All other responses receive zero points. (Baron-Cohen & Wheelwright, 2004)	1(1); 3(6); 11(19); 13(22); 14(26); 19(33); 20(35); 21(25); 22(36); 23(37); 24(38); 26(41); 27(42); 28(43); 29(44); 34(52); 35(54); 36(55); 37(57); 38(58); 39(59); 40(60)
Score two points for each of the following items if the participant answered, "definitely disagree", or one point if the participant answered, "slightly disagree". All other responses receive zero points. (Baron-Cohen & Wheelwright, 2004)	2(4); 4(8); 5(10); 6(11); 7(12); 8(14); 9(15); 10(18); 12(21); 15(27); 16(28); 17(29); 18(30); 25(39); 30(46); 31(48); 32(49); 33(50)
These questions are break questions, and their values are not added to the total Empathy Quotient score. (Baron-Cohen & Wheelwright, 2004)	*Not included in this version of the survey.*

Independent Variables

Four independent variables were measured in the survey. The first was the demographics of the participants including the age, gender, and race/ethnic background of the participants. The second variable was the ability to perceive another's emotions. The third was both the ability and desire to understand another's emotions. The fourth is the ability to feel what another is feeling while differentiating self from others. 25 of the total 43 questions in Empathy Quotient survey (Pre & Post-Test) fall under independent variables of this study. Table 3.2 below shows the breakdown of questions for each of the independent variables as they relate to the original research questions.

Table 3.2 Objectives, variables, sources of data, type of data, and analysis technique for quantitative data

Research Objective	Research Question	Survey Questions	Type of Data	Analysis Technique
To teach empathy education program Activating Empathy to participants and measure their empathy levels for each of the four components of empathy after they complete the course.	Research Question #1: How do demographics such as age, gender, and race affect the empathy levels of participants before and after completing the *Activating Empathy* program? (Silke et al., 2019; Beadle & de la Vega, 2019; Ze et al., 2014)	41, 42, 43	Nominal	Frequencies Percentages
	Research Question #2: What is the relationship between the ability to perceive someone else's emotions and empathy levels? (Herpertz et al., 2016; Pool & Qualter, 2012) Two components: (1) Ability to perceive emotions that are not explicitly expressed. (2) The ability to recognize typical emotions felt in a situation	(1): 1, 14, 26, 29, 36 (2): 13, 21, 22, 24, 27, 39	Ordinal	Frequencies Percentages
	Research Question #3: What is the relationship between the ability and desire to understand someone's emotions and empathy levels?	(1):	Ordinal	Frequencies Percentages

	(Batson & Stocks, 2015) Two components: (1) Ability to respond to another's emotions. (2) Ability to understand how someone feels during an interaction.	2, 4 (2): 28, 35		
	Research Question #4: What is the relationship between the ability to differentiate another's emotions from oneself and empathy levels? (Decety & Moriguchi, 2007)	7, 17, 23, 25, 30, 31, 32	Ordinal	Frequencies Percentages
Questions #1-40 come from (Baron-Cohen & Wheelwright, 2004)				

Scoring of Independent Variables

The following breakdown of scoring for independent variables was determined and based off Berardi (2020) and is included here for convenience.

Demographics

Since demographics are nominal in nature these were recorded to help demonstrate a snapshot of the participants involved in the study and speak to the larger community. Questions 41, 42, and 43 asked the age, gender, and racial or ethnic background of the participants. Question 43 was asked as an open response to allow for participants to self-identify the background they come from.

Ability to Perceive Another's Emotions

This variable had two distinct dimensions. The first was the ability to perceive emotions that are not explicitly expressed. Questions 1, 14, 26, 29, and 36 are added together to create a composite score for this dimension. This gave the participant the opportunity to score up to 10 points. A score of 0 to 3 represented a below average ability to perceive hidden emotion, 4 to 7 represented an average ability, and 8 to 10 represented an above average ability.

The second dimension was the ability to recognize typical emotions felt in a given situation. Questions 13, 21, 22, 24, 27, and 39 were added together to create a composite score for this dimension. This gave the participant the opportunity to score up to 12 points. 0 to 5 represented a below average ability to recognize typical emotions, 6 to 9 represented an average ability, and 10-12 represented an above average ability.

Ability to Understand Another's Emotions

This variable was split into two dimensions. The first dimension was the ability to respond to another's emotions. Questions 2 and 4 on the survey were added to score this dimension with participants having the ability to score up to 4 points. 0 to 1 represented a below average ability to respond to another's emotions, 2 represented an average ability, and 3 to 4 represented an above average ability.

The second dimension was the ability to understand how someone feels during an interaction. Questions 28 and 35 on the survey were added to score this dimension. Again a score of 4 points was the maximum score available. 0 to 1 represented a below average ability to understand how someone feels during an interaction, 2 represented an average ability, and 3 to 4 represented an above average ability.

Ability to Separate Another's Emotions from One's Own Emotions

This variable was calculated by adding questions 7, 17, 23, 25, 30, 31, and 32. Participants could score up to 14 points with 0 to 5 representing a below average ability to separate one's emotions from another's, 6 to 9 representing an average ability, and 10 to 14 representing an above average ability.

Limitations

This study had limitations that should be addressed in future studies. The first is the generalizability of the study due to the sample size (n=50). Since this was a course that students took there were only a limited number of students who took the course and of those students not all completed both the pre, mid, and post-tests. Also, the study was only conducted at one specific high school which makes it difficult to generalize the findings to all high school students. Another limitation is the lack of a control group. Given that this course was offered rather than required for students, all of the participants were aware that they were taking an empathy education course. This makes the pre, mid, and post survey serve almost as a test on their progress rather than an honest snapshot of their empathy as the course progresses. Ideally students should not view the surveys as something to score well on but rather something to just answer with an objective and unbiased approach. In a future study the inclusion of qualitative data collection could be useful in determining the impact of the course. Conducting interviews with the students to see if they felt the course helped them see new perspectives and become more empathetic could be useful. Also having students rate the quality of their interactions with other students within the course as it progresses could help determine the impact of the course.

Chapter 4 – ANALYSIS AND INTERPRETATION OF RESULTS

Frequency of Responses

All participants in the study completed a pre, mid, and post-test. The number who completed the pre-test was the highest followed by the mid and post-tests. 19 participants dropped out of the study due to incomplete surveys or other unspecified reasons. Overall the final number of participants in this study was 50 high school students.

Demographic Descriptive Statistics for All Participants

The following is a description of the age, gender, and race of all the participants who completed the *Activating Empathy* program. The study consisted of 69 participants in the pre-test of the study, 54 participants in the mid-year test, and 50 participants in the post-test. See Table 4.1 for a complete breakdown of the demographic characteristics, including age, gender, and race for both the pretest and post-test.

For this study, most participants (94.20% on the pre-test, 96.30% on the mid-test, and 80% on the post-test) were between the ages of 14 and 15. Over the entirety of the course (1 year) these groups all shifted up in age. The majority of the participants (52.17% on the pre-test, 46.30% on the mid-test, and 50.00% on the post-test) identified as male. The determination of race was self-identified with an open response option asking “How would you describe your racial or ethnic background?”. Responses were coded into the categories Asian, Black, Caribbean, Latinx, Middle Eastern, White, Multiracial, and No Response. The majority of participants (62.32% on the pre-test, 53.70% on the mid-test, and 54.00% on the post-test) identified as of Asian descent.

Table 4.1 Demographic Statistics

Demographic Characteristics	Percent Pre-Test (n = 69)	Percent Mid-Test (n = 54)	Percent Post-Test (n = 50)
Age			
Under 14	5.80%	0.00%	0.00%
14	59.42%	46.30%	30.00%
15	34.78%	50.00%	50.00%
16	0.00%	3.70%	20.00%
Gender			
Male	52.17%	46.30%	50.00%
Female	40.58%	44.44%	42.00%
Non-binary / Third Gender	2.90%	7.41%	6.00%
Prefer Not to Say	4.35%	1.85%	2.00%
Race			
Asian	62.32%	53.70%	54.00%
Black	1.45%	3.70%	0.00%
Caribbean	1.45%	1.85%	2.00%
Latinx	1.45%	1.85%	2.00%
Middle Eastern	10.14%	14.81%	12.00%
White	20.29%	22.22%	14.00%
Multiracial	2.90%	1.85%	6.00%
No Response	0.00%	0.00%	10.00%

Pre, Mid, and Post-Test Scores

As shown in table 4.2 below the pre, mid, and post-test scores were broken into four distinct ranges that were originally developed by the creators of the Empathy Quotient test. (Baron-Cohen & Wheelwright, 2004)

These ranges include:

- 0 - 32: Lower than average ability for empathetic responses;
- 33-52: Average ability for empathetic responses;
- 53-63: Above average ability for empathetic responses; and
- 64-80: Very high ability for empathetic responses.

Table 4.2 Pre, Mid, and Post-Test Scores

Empathy Quotient Score (points)	0-32: Lower than average ability for empathetic responses.	33-52: Average ability for empathetic responses.	53-63: Above average ability for empathetic responses.	64-80: Very high ability for empathetic responses.	Mean	Std. Dev.
Pre-Test (n = 69)	39.13%	56.52%	4.35%	0.00%	35.09	9.24
Mid-Test (n = 54)	51.85%	38.89%	9.26%	0.00%	35.06	10.96
Post-Test (n = 50)	36.00%	50.00%	14.00%	0.00%	37.2	12.21

$x^2 = 0.0759$

Though there was a slight increase in Empathy Quotient (EQ) scores by the end of the course, statistical analysis revealed that the increase was not significant ($x^2 = 0.0759$). An analysis of variance (ANOVA) was also used to compare the changes in scores and yielded similar insignificant results ($p = 0.4971$).

While there was a general increase in EQ scores from pre to post, the most consistent increase occurred in the "53-63: above average ability or empathetic responses" category. There was a 4.91% increase in participants within this range by the halfway point of the course and another 4.74% increase in the second half of the course (9.65% increase total). When comparing pre-test and post-test there was a 3.13% reduction of participants that fell under the "0-32: lower than average ability for empathetic responses" category. It is important to note that there was an increase at the mid-year point in the same range but this could have been due to fewer participants or other reasons. By the end of the course, the majority of the participants fell into the 33-52 average ability for empathetic responses. This remained relatively consistent throughout the course with a slight decrease at the mid-year point to match the increase in lower than average scores. There were no participants who fell under the "64-80: very high ability for empathetic responses" category at any point before, during, or after the course.

Since there was no significant difference between the pre, mid, and post-test, the post-test score was used to determine the statistical significance when comparing the other components of empathy on overall empathy level.

Review of the Research Questions

Four research questions were used in this study. They are as follows:

- RQ1 – How do demographics such as age, gender, and race affect the empathy levels of participants before and after completing the *Activating Empathy* program?
- RQ2 – What is the relationship between the ability to perceive someone else's emotions and empathy levels?
- RQ3 – What is the relationship between the ability to understand someone's emotions during an interaction and empathy levels?
- RQ4 – What is the relationship between the ability to differentiate another's emotions from oneself and empathy levels?

To answer research questions two, three, and four, questions were combined to come up with composite scores to accurately represent these variables. A complete explanation of how these scores were developed can be found in Chapter 3.

Quantitative Analysis of Research Question 1

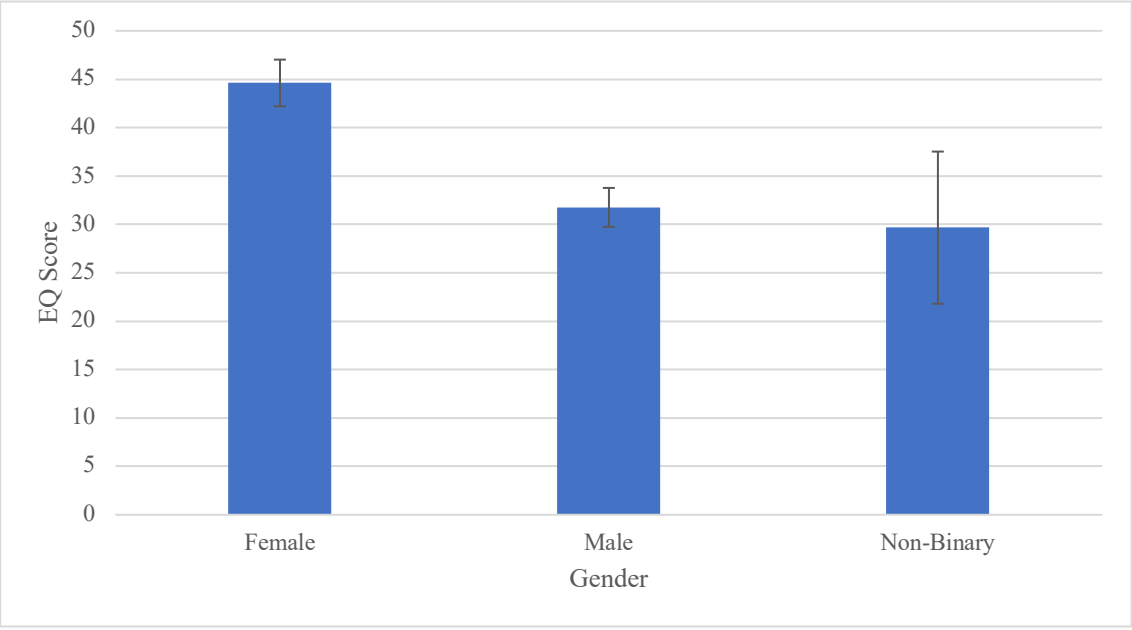
Research question 1 of this study asked "How do demographics such as age, gender, and race affect the empathy levels of participants before and after completing the Activating Empathy program?" To answer this question several statistical tests were performed. The first was an analysis of variance between all the demographic questions and (age, race, and gender) and the dependent variable of overall EQ score. This ANOVA test showed that there is no significant difference between all the demographics combined and overall EQ score. The

subsequent ANOVA tests looked at each individual demographic question compared to the overall EQ score. In the ANOVA test of age and overall EQ score there was no significant difference found (p = .495). In the ANOVA test of race/ethnicity and EQ score there was no significant difference found (p = .976). In the ANOVA test of gender there was a significant difference found (p = 0.001).

The significant difference found that females (M = 44.62, SD = 11.04 n = 21) on average scored 12.86 points higher than males (M = 31.76, SD = 10.05 n = 25) (Figure 4.1). Non-binary participants scored lower than males but were found to not be significantly different (M = 29.67, SD = 13.61, n = 3).

Figure 4.1

Comparison of Gender and Empathy Quotient Scores



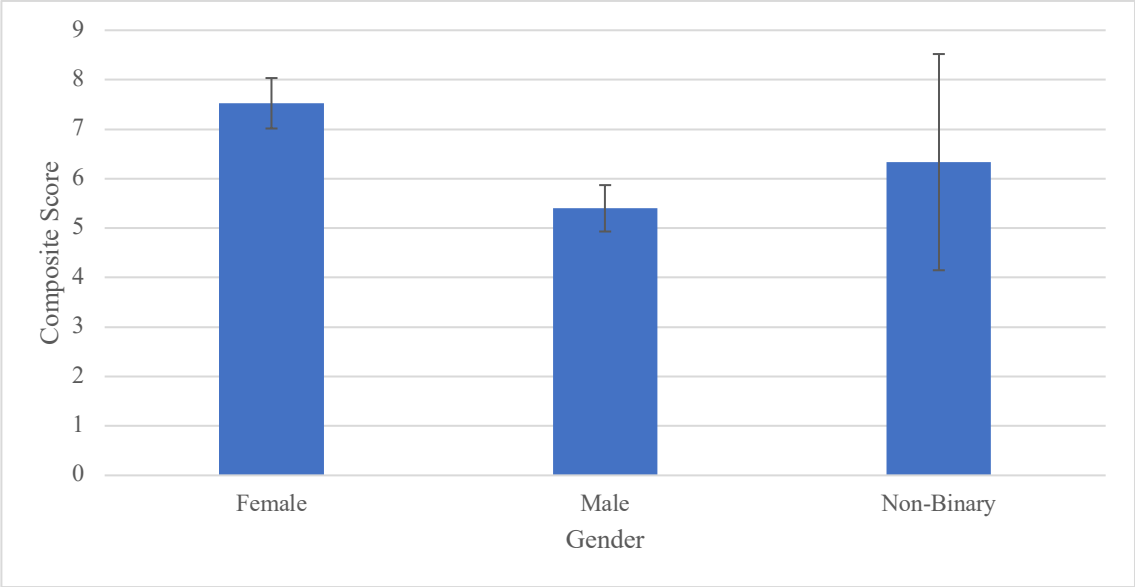
Note. Females scored significantly higher than males on the EQ post-test.

Further analysis of gender within the other components of empathy showed that gender was only significantly different when it came to both dimensions of research question 2. This

showed that there is a significant difference in the ability to perceive emotions between males and females. Females scored on average 2.12 points higher than males in the dimension of being able to perceive emotions that are not explicitly expressed (Figure 4.2) and females (M= 7.52, SD = 2.34, n = 21) scored on average 2.36 points higher than males (M = 5.40, SD = 2.35, n = 25) in the dimension of being able to recognize typical emotions felt in a given situation (Figure 4.3). Non-binary participants scored higher than males in the first dimension and lower than males in the second dimension but neither was statistically significant. The analyses for these variables can be found in Appendix A.

Figure 4.2

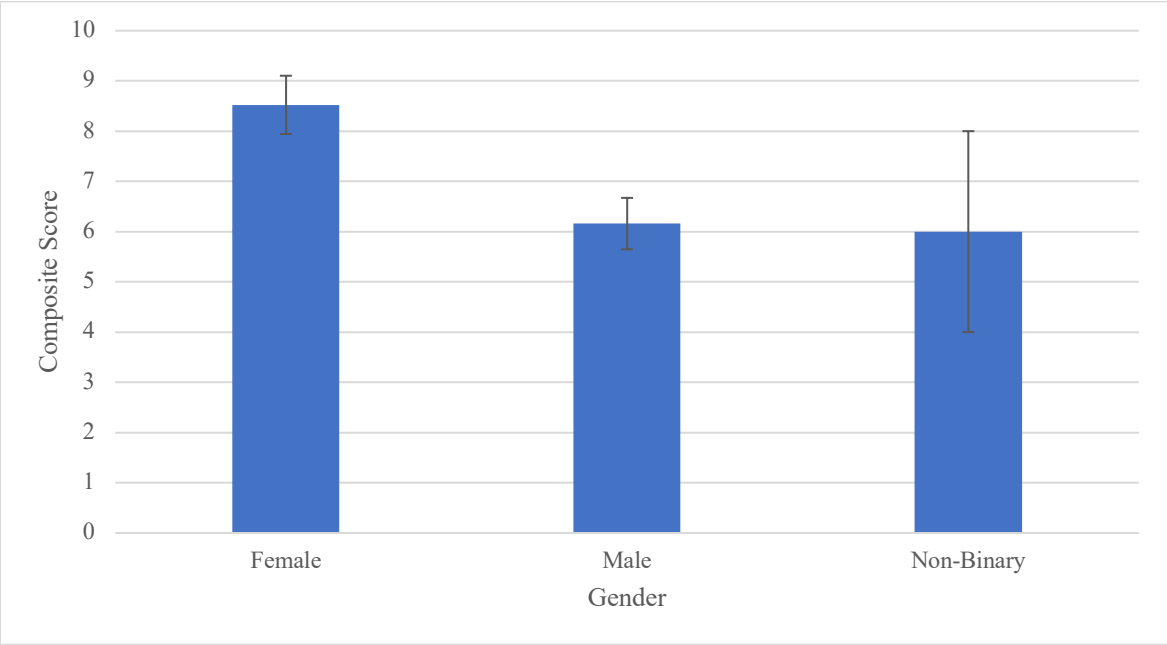
Comparison of Gender and Composite Scores of RQ2.1



Note. Females scored significantly higher than males in the ability to perceive masked emotions.

Figure 4.3

Comparison of Gender and Composite Scores of RQ2.2



Note. Females scored significantly higher than males in the ability to recognize typical emotions felt in a given situation.

Quantitative Analysis of Research Question 2

Research question 2 of this study asked, "What is the relationship between the ability to perceive someone else's emotions and empathy levels? To answer this question the research question was broken into two different dimensions. The first was the ability to perceive emotions that were not explicitly expressed. Basically it is the human ability to know when someone is hiding their true emotions. This dimension was found to increase on average over the duration of the program. An ANOVA test comparing the composite scores of these questions

for the pre, mid, and post-tests revealed that this increase was not statistically significant ($p = 0.161$).

The second dimension looked at the ability to recognize typical emotions felt in a situation. Throughout the duration of the course the composite scores for this dimension increased. An ANOVA test comparing the composite scores of the pre, mid, and post-tests, revealed that this dimension was found to be statistically significant ($p = 0.003$). This means that the perspective-taking skill of recognizing emotions felt in a situation is positively correlated with overall empathy levels. See Appendix A for the complete statistical tests.

Quantitative Analysis of Research Question 3

Research question 3 asked, "What is the relationship between the ability to understand someone's emotions during an interaction and empathy levels?" Again this question was broken into two dimensions. The first dimension looked at the ability to respond to another's emotions. An ANOVA test comparing the composite scores of the pre, mid, and post-tests revealed that there was an increase over the course of the program but this increase was found to be not statistically significant ($p = 0.767$).

The second dimension was understanding how someone feels in a given interaction. This dimension increased the most consistently over the course of the program. An ANOVA test comparing the composite scores of the pre, mid, and post-tests revealed this increase to be statistically significant ($p = 0.002$). This indicates that there was a positive correlation between the ability to understand how someone feels in a given interaction and their empathy levels. See Appendix A for the complete statistical tests.

Quantitative Analysis of Research Question 4

Research question 4 asked, “What is the relationship between the ability to differentiate another’s emotions from oneself and empathy levels?”. To answer this question an ANOVA test was completed to compare the composite scores of participants during the pre, mid, and post-tests. There was little change in scores between the pre, mid, and post-tests with no statistical significance indicating its correlation with empathy levels ($p = 0.796$). See Appendix A for the complete statistical tests.

Interpretation of Results

The results of this study support some of the findings of previous research conducted about the *Activating Empathy* program (Berardi, 2020). Statistical analysis supported the finding that there are sex differences when it comes to display of empathy with women exhibiting more empathetic tendencies than men. This remains consistent with previous research on sex differences with empathy (Silke et al., 2019). Statistical analysis also supported the idea that the ability to understand typical emotions in a situation and understanding how others feel during interactions are both positively correlated with empathy levels. Again this is consistent with previous research about neurotypical individuals having an innate ability to understand emotions and connect them to situations (Herpertz et al., 2016; Pool & Qualter, 2012).

While the other components did not show statistical significance, nearly all showed some form of increase in empathy levels. This study had several limitations with its population size and retention of participants but still exemplified how empathy education can and does work within a school.

Chapter 5 – CONCLUSIONS & RECCOMENDATIONS

The purpose of this study was to determine the most effective components of an empathy education program for high school students with the eventual goal of increasing empathy within a community. This research builds off of a 2020 study that looked at empathy education at the undergraduate level (Berardi, 2020). This study aimed to answer four of the five original research questions while also expanding research specifically on high school students (ages 14 - 16). This research is just one more step in making a more comprehensive and effective program for teaching empathy to future community members.

In total there were 50 participants from a Canadian high school who completed the year-long *Activating Empathy* program. This population was chosen because school administrators saw a benefit to teaching an empathy education program. Participants in the study completed a Empathy Quotient (EQ) test at the beginning, middle, and end of the course (Baron-Cohen & Wheelwright, 2004). These tests were used as quantitative data to help answer four research questions that were derived from literature-defined components of empathy.

Individual scores were not tracked throughout the entirety of the course. This means that the pre, mid, and post scores were looked at as an average entire population score rather than following the performance of a single student through the year. By having this approach, a collective increase in EQ test scores could show an average individual increase but could also be explained by only a handful of students having a massive increase and skewing the average score.

This study helped define which components of an empathy education program increase empathy levels the most at the high school level. Each of these four components (that served as the independent variables) will be discussed separately and suggestions for improvements will be

made for future empathy education programs for high school students. The first variable follows the first research question about the demographic characteristics of age, race, and gender.

RQ1: How do demographics such as age, gender, and race affect the empathy levels of participants before and after completing the Activating Empathy program?

For this question, EQ scores from the post-test were compared individually to each of the three demographic characteristics. The only characteristic that appeared to have a statistically significant impact was gender. The findings of this study are consistent with studies done previously on gender as it relates to empathy. Females were found to be on average more willing to exhibit more empathy than males. Specifically, females scored higher in the skill of perceiving the emotions of others. Since this was one of the two components that were found to be a significant in increasing overall levels of empathy this sex difference is even more reinforced.

Age was not a factor likely because most studies on age-related empathy levels describe differences on the generational level (Silke et al., 2019) Since all of the participants were within a few years of each other, they are likely at the same level of development and share many life experiences. Race was not a factor likely because of the relatively small sample size and the diversity of the participants. In some instances, there was a single student representing an entire race which makes drawing conclusions difficult and flawed. In addition, participants had an open response to the question of their race/ethnicity so some students stated that they are of Asian descent but identify as Canadian. Having a mixed cultural identity could further complicate the ability to make generalizations about race and its influence on empathy.

Future studies on age and race should be aimed at finding differences between high school and college or primary and secondary schools along with differing levels of diversity within the classroom. By comparing different stages of life rather than specific years future research could help examine when an empathy education can be the most effective. By comparing different levels of diversity future research could see who should be prioritized when starting to implement empathy education programs. Given the style of the program it is likely that teaching a more racially homogenous school could actually help broaden the views of participants and introduce perspectives that are otherwise absent from their school.

RQ2: What is the relationship between the ability to perceive someone else's emotions and empathy levels?

For this question, composite scores were created based off of a selection of questions from the overall EQ test. The composite scores were for the two dimensions related to this question: the ability to perceive emotions that are not explicitly expressed and the ability to perceive typical emotions in common situations. The composite scores for the pre, mid, and post-tests were then compared for these two dimensions.

The first dimension of perceiving masked emotions was not found to be statistically significant in improving empathy levels. Despite not finding statistical significance there was a slight increase in scores in this dimension as the course progressed indicating that participants somewhat improved in their self-evaluated ability to perceive emotions. This means that participants felt like they were more able to pick up on emotions felt within interactions.

The second dimension of perceiving typical emotions in common situations was found to be statistically significant in increasing empathy levels . This shows how the act of perceiving

emotions is essential to empathy and the ability to empathize. Meaning that although perceiving emotions is a largely innate human ability it should be a focus of an empathy education program. Learning certain skills like body language detection and thinking more critically about interactions can make someone perception of emotions even stronger.

RQ3: What is the relationship between the ability to understand someone's emotions during an interaction and empathy levels?

For this question, composite scores were once again created based off of a selection of questions from the overall EQ test. These composite scores represented the two dimensions of this component: the ability to respond to another's emotions and ability to understand how someone feels during an interaction. These composite scores for the pre, mid, and post-test were then compared for each dimension.

The first dimension of the ability to respond to another's emotions was not found to have a statistically significant impact on empathy levels. Again despite the lack of statistical significance there was a general increase in the scores of participants in this dimension. This means that over the course of the program participants felt a slight increase in their ability to respond to other's emotions. This could be due to the experiential style of learning from the program and the way in which participants are exposed to perspective-taking exercises. Future research could look at agency as it relates to empathy and the motivations behind empathy because the ability to respond to another's emotions also has to do with a person's desire to respond.

The second dimension of understanding how someone feels during an interaction was found to have a statistically significant impact on empathy levels. This helps support the

perspective-taking aspect of empathy and shows that the ability to "step into another's shoes" is a vital part of being able to empathize with someone. Given that current research suggests that this style of cognitive empathy declines with age, perspective-taking skill building should be one of the main focuses of an empathy education program in the future.

RQ4: What is the relationship between the ability to differentiate another's emotions from oneself and empathy levels?

For this question, a composite score was created from a selection of questions related to this topic from the overall EQ test. This composite score was compared between the pre, mid, and post-test through statistical analysis and ultimately drew no statistical difference.

The differentiation of one's own emotions from another is the basis of the "activating" part of the *Activating Empathy*. Previous research states the importance of maintaining this separation and how that is what makes empathy a useful behavior (Decety & Moriguchi, 2007). The average composite score in this category was, and stayed, in the below average level. This could indicate that high school students struggle with this component of empathy and future research should look specifically at this component and the ability of high school students to maintain separation of their own emotional state from that of another. Given the size of this study it is difficult to make these generalizations but it would be a worthwhile topic of research given the changes that occur during a child's development at that age.

Summary

In summary there were three independent variables that were found to have a significant effect on empathy levels. These variables included: (1) gender, (2) the ability to perceive typical emotions in common situations, and (3) the ability to understand how someone feels during an

interaction. Given that gender is unable to be improved upon, the following section is a suggestion about how to tailor a empathy education for high school students with the results of this study.

Future Empathy Education For High School Students

Empathy education while already present in most schools globally in the form of prosocial and team-building exercises, is largely considered an add-on part of the curriculum. Targeted empathy education through its own class has many benefits as previously stated in the literature review. The goal of future empathy education for high school students should be two-fold. First teach students how to analyze the social situations they are in. Having them learn to look for the emotions present through body language, active listening, and general awareness of all the parties involved will help the second step of understanding why those emotions are there. By first identifying emotions followed by questioning and ultimately understanding why those emotions exist students can truly begin to learn how to empathize. While research states that emotion detection is largely an innate ability it is also a skill to be improved and by focusing on this area of empathy students can begin to benefit from an empathy education program (Herpertz et al., 2016; Pool & Qualter, 2012). Understanding why those emotions are present is the more difficult task. This is where students will need to be encouraged to see the benefit to understanding emotions. The instructor will need to make the case that empathy, at the end of the day, is a tool to be used to help people. By improving their ability to understand why a person feels the way they do they can then use that knowledge to make that person feel validated for having those emotions and ideally help them move forward through those emotions. As the

name of the program suggests students must learn not only empathy but the benefits to activating it.

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Appendix A

Quantitative Analysis of Research Question 1

Univariate Analysis of Variance

Between-Subjects Factors

		N
PostRace	Asian	27
	Carib	1
	Latin	1
	Middl	6
	Multi	3
	Unkno	5
	White	7

Tests of Between-Subjects Effects

Dependent Variable: PostEQScores

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	825.424[a]	6	137.571	.912	.495
Intercept	22546.547	1	22546.547	149.509	<.001
PostRace	825.424	6	137.571	.912	.495
Error	6484.576	43	150.804		
Total	76502.000	50			
Corrected Total	7310.000	49			

a. R Squared = .113 (Adjusted R Squared = -.011)

Univariate Analysis of Variance

Between-Subjects Factors

		N
PostAge	14 years old	15
	15 years old	25
	16 years old	10

Tests of Between-Subjects Effects

Dependent Variable: PostEQScores

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	7.607[a]	2	3.803	.024	.976
Intercept	60559.562	1	60559.562	389.776	<.001
PostAge	7.607	2	3.803	.024	.976
Error	7302.393	47	155.370		
Total	76502.000	50			
Corrected Total	7310.000	49			

a. R Squared = .001 (Adjusted R Squared = -.041)

Univariate Analysis of Variance

Between-Subjects Factors

		N
PostGender	Fema	21
	Male	25
	Non-	3
	Pref	1

Tests of Between-Subjects Effects

Dependent Variable: PostEQScores

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	2073.821[a]	3	691.274	6.073	.001
Intercept	15010.602	1	15010.602	131.869	<.001
PostGender	2073.821	3	691.274	6.073	.001
Error	5236.179	46	113.830		
Total	76502.000	50			
Corrected Total	7310.000	49			

a. R Squared = .284 (Adjusted R Squared = .237)

Univariate Analysis of Variance

Between-Subjects Factors

		N
PostGender	Fema	21
	Male	25
	Non-	3
	Pref	1
PostAge	14 years old	15
	15 years old	25
	16 years old	10
PostRace	Asian	27
	Carib	1
	Latin	1
	Middl	6
	Multi	3
	Unkno	5
	White	7

Tests of Between-Subjects Effects

Dependent Variable: PostEQScores

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	3828.700[a]	22	174.032	1.350	.227
Intercept	20883.389	1	20883.389	161.966	<.001
PostGender	866.051	3	288.684	2.239	.107
PostAge	25.060	2	12.530	.097	.908

PostRace	548.247	6	91.375	.709	.645
PostGender * PostAge	186.087	2	93.044	.722	.495
PostGender * PostRace	14.205	3	4.735	.037	.990
PostAge * PostRace	531.298	4	132.824	1.030	.410
PostGender * PostAge * PostRace	.000	0	.	.	.
Error	3481.300	27	128.937		
Total	76502.000	50			
Corrected Total	7310.000	49			

a. R Squared = .524 (Adjusted R Squared = .136)

Univariate Analysis of Variance

Between-Subjects Factors

		N
PostGender	Female	21
	Male	25
	Non-Binary	3
	Prefer Not To Say	1

Descriptive Statistics

Dependent Variable: PostEQScores

PostGender	Mean	Std. Deviation	N
Female	44.6190	11.04299	21
Male	31.7600	10.05518	25
Non-Binary	29.6667	13.61372	3
Prefer Not to Say	40.0000	.	1
Total	37.2000	12.21408	50

Tests of Between-Subjects Effects

Dependent Variable: PostEQScores

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	2073.821[a]	3	691.274	6.073	.001
Intercept	15010.602	1	15010.602	131.869	<.001
PostGender	2073.821	3	691.274	6.073	.001
Error	5236.179	46	113.830		
Total	76502.000	50			
Corrected Total	7310.000	49			

a. R Squared = .284 (Adjusted R Squared = .237)

Univariate Analysis of Variance

Between-Subjects Factors

		N
PostGender	Fema	21
	Male	25
	Non-	3
	Pref	1

Descriptive Statistics

Dependent Variable: PostRQ2.1

PostGender	Mean	Std. Deviation	N
Female	7.5238	2.33707	21
Male	5.4000	2.34521	25
Non-Binary	6.3333	3.78594	3
Prefer Not To Say	5.0000	.	1
Total	6.3400	2.56833	50

Tests of Between-Subjects Effects

Dependent Variable: PostRQ2.1

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	53.315[a]	3	17.772	3.029	.039
Intercept	414.095	1	414.095	70.574	<.001
PostGender	53.315	3	17.772	3.029	.039
Error	269.905	46	5.867		
Total	2333.000	50			
Corrected Total	323.220	49			

a. R Squared = .165 (Adjusted R Squared = .110)

Univariate Analysis of Variance

Between-Subjects Factors

		N
PostGender	Female	21
	Male	25
	Non-Binary	3
	Prefer Not To Say	1

Descriptive Statistics

Dependent Variable: PostRQ2.2

PostGender	Mean	Std. Deviation	N
Female	8.5238	2.65742	21
Male	6.1600	2.56060	25
Non-Binary	6.0000	3.46410	3
Prefer Not To Say	8.0000	.	1
Total	7.1800	2.82619	50

Tests of Between-Subjects Effects

Dependent Variable: PostRQ2.2

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	68.782[a]	3	22.927	3.269	.029
Intercept	579.021	1	579.021	82.564	<.001
PostGender	68.782	3	22.927	3.269	.029
Error	322.598	46	7.013		
Total	2969.000	50			
Corrected Total	391.380	49			

a. R Squared = .176 (Adjusted R Squared = .122)

Quantitative Analysis of Research Question 2

ANOVA –
RQ2.1

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
PreRQ2.1	69	383	5.55072464	4.83930094
MidRQ2.1	54	302	5.59259259	6.09503843
PostRQ2.1	50	317	6.34	6.59632653

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	21.1791697	2	10.5895849	1.84576538	0.16105481	3.04914862
Within Groups	975.329501	170	5.73723236			
Total	996.508671	172				

ANOVA –
RQ2.2

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
PreRQ2.2	69	377	5.46376812	6.07587383

MidRQ2.2	54	327	6.05555556	8.24213836
PostRQ2.2	50	359	7.18	7.98734694

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	86.0145296	2	43.0072648	5.88963709	0.00336424	3.04914862
Within Groups	1241.37275	170	7.30219267			
Total	1327.38728	172				

Quantitative Analysis of Research Question 3

ANOVA –
RQ3.1

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
PreRQ3.1	69	71	1.02898551	1.11679454
MidRQ3.1	54	58	1.07407407	1.20195667
PostRQ3.1	50	59	1.18	1.53836735

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.67368928	2	0.33684464	0.2663104	0.76652031	3.04914862
Within Groups	215.025733	170	1.26485725			
Total	215.699422	172				

ANOVA –
RQ3.2

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*

PreRQ3.2	69	104	1.50724638	1.51832907
MidRQ3.2	54	111	2.05555556	1.44968553
PostRQ3.2	50	114	2.28	1.51183673

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	19.1697696	2	9.58488481	6.41104925	0.00206881	3.04914862
Within Groups	254.15971	170	1.49505712			
Total	273.32948	172				

Quantitative Analysis of Research Question 4

ANOVA – RQ4

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
PreRQ4	69	373	5.4057971	5.15643649
MidRQ4	54	303	5.61111111	5.07232704
PostRQ4	50	265	5.3	7.39795918

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	2.64170227	2	1.32085114	0.22866733	0.79583747	3.04914862
Within Groups	981.971014	170	5.77630009			
Total	984.612717	172				