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IMPROVING CO-TEACHERS' RELATIONSHIP: HOW TEACHING EXPERIENCE AFFECTS PERCEPTIONS OF TEAMWORK

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ABSTRACT

IMPROVING CO-TEACHERS' RELATIONSHIP: HOW TEACHING EXPERIENCE AFFECTS PERCEPTIONS OF TEAMWORK

Asher Samuel

Co-teaching is an instructional strategy wherein two teachers, a general education teacher and a special education teacher, share instructional responsibilities in a general education class that includes students with disabilities (SWDs) (Friend, 2010). Co-teaching is a strategy for ensuring SWDs are taught the general education curriculum while receiving specially designed instruction within the least restrictive environment (LRE) appropriate to their needs. An important component of co-teaching is the relationship between the teachers (Kohler-Evans, 2006), which has been described as a professional marriage (Friend, 2010). However, there is limited information on factors influencing the relationship.

This study adds to the body of knowledge in co-teaching by studying if teaching experience affects co-teachers' perception of teamwork. Participants included special and general education co-teachers from eight public school districts in New York City. Co-teachers from grades K-12 completed the Tuckman Team Maturity Questionnaire (TTMQ). Four multiple regressions were conducted using four independent variables (relationship duration, primary role, collaborative environment, and enjoyment), three covariates (years of teaching experience, years of co-teaching experience, and grade

level), and four dependent variables, the Tuckman stages of small group development (forming, storming, norming, performing).

Results showed teachers with more than two years together were less likely to demonstrate characteristics of forming, and after three years together were less likely to demonstrate characteristics of storming, compared to first year partnerships. Teachers who dislike co-teaching were less likely to demonstrate characteristics of norming and performing, and more likely to demonstrate characteristics of storming, compared to teachers who like co-teaching. High school and middle school teachers were less likely to demonstrate characteristics of norming and performing compared to elementary school teachers. High school teachers were more likely to demonstrate characteristics of storming compared to elementary school teachers. Results imply a need for two to three years together to see greater teamwork in co-teaching partnerships, and a need to support teachers in relationship building to increase enjoyment of co-teaching. Further research of co-teaching relationships are required to determine why many co-teachers dislike co-teaching and why teamwork appeared to lessen among middle and high school teachers.

DEDICATION

I dedicate this dissertation to my son, Axel, that he may one day be as proud of me as I already am of him. I hope this inspires him to achieve his own great accomplishments. I can't wait to see what those will be.

To my wife, Hallie, for her constant love, support, and encouragement. In less than 10 years since we first met, we have achieved so much together. I'm so happy to share this with her. She's my favorite yogi.

To my mother, Naava, who attended countless parent teacher conferences in which she was told of my lack of focus, poor work ethic, and social distractions. This dissertation is as much her accomplishment as it is mine.

To my grandparents, Miriam and Shimon Chejfetz, who survived the holocaust and immigrated to the United States without ever completing grade school. This dissertation was possible because of their bravery and sacrifice.

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CHAPTER 1

Introduction

Special education has long relied on teamwork. Teams comprised of special education teachers, school psychologists, social workers, related service providers, and school administrators make decisions about the most appropriate program settings, accommodations, and modifications for students with disabilities (SWDs). Often in special education, parents are active partners in these decisions as well. In the classroom, paraprofessionals partner with special educators in supporting instruction, language, behavior, and health needs of students. For decades other professionals, such as speech-language therapists, school psychologists, counselors, and occupational and physical therapists have worked in tandem with the special education teacher to deliver support services inside the special education classroom (Lerner, 1971; Lombardo, 1980; Robinson & Robinson, 1965). Historically, these partnerships were confined to special education settings. Beginning with the change in legislation in the 1970s, and a growing acceptance of inclusive education (Garvar & Papania, 1982; Will, 1986), special education and related services began to be offered in general education settings through collaborative efforts of the special and general education professionals, and thus the concept of co-teaching emerged (Bauwens, Hourcade, & Friend, 1989).

Co-teaching has become a mandated instructional strategy to ensure SWDs have access to the general education curriculum while still receiving the specialized instruction and supports to which they are entitled. For instance, the New York State Education Department (NYSED) defines co-teaching as the provision of specially designed

instruction and academic instruction provided to a group of students with disabilities and nondisabled students. Even though co-teaching is mandated, NYSED allows flexibility in programing. For example, school districts need not offer co-teaching in all grades or subjects, and are allowed choice in strategic determination based on the needs of students to offer co-teaching for specific grades and subjects (NYSED Continuum of Special Education Services for School-Age Students with Disabilities, 2013). According to NYSED's website, co-teaching may even be offered for only part of the day if the committee on special education determines that it is in the students' best interest to receive this support for only certain subjects such as English Language Arts and Math classes. The determination of weather co-teaching is recommended for a student is done on a case by case basis while considering if it meets students' needs (e.g., smaller class size, or extra staff/resources), and offers access or progress towards the general education curriculum (New York State Education Department, 2013).

Co-teaching can be described as including four components: (1) one general education teacher and one special education teacher; (2) instruction delivered by both teachers; (3) a single classroom where students with disabilities are taught with general education students; and (4) heterogeneous grouping of students within that class (Friend & Cook, 2007). Co-teaching classrooms have proven to provide many benefits to both SWDs and their non-disabled peers. Some benefits include increased academic performance, behavior, and social skills (Efthymiou, & Kington, 2017; Rea, McLaughlin, & Walther-Thomas, 2002). In attempts to achieve increased academic performance, behavior, and social skills for all students in a co-teaching classroom, researchers have stressed the importance of the co-teachers' relationship (Roth & Tobin, 2000). In fact,

without a positive co-teaching relationship, the classroom may not achieve the aforementioned benefits for all students (Kusuma-Powell & Powell, 2015).

Research has emphasized the impact of the co-teaching relationship on student performance which is important because more students each year are placed in co-teaching classrooms. The National Center for Education Statistics (2019) found that as of school year 2017-2018 there were seven million public school students receiving special education services, incorporating 14% of total public school enrollment nationwide. SWDs who spent most of their day (more than 80% of the school day) in general education classrooms increased from 47% to 63% between the years 2000 and 2017. In contrast, during that same time, SWDs who spent 40-79% of their school day in general education decreased from 30% to 18%. Additionally, SWDs who spent less than 40% of their time in general education classrooms decreased from 20% to 13% as well. Enrollment data suggests there has been a clear migration of SWDs into general education classrooms for larger portions of their day. While SWDs are increasingly placed into inclusive, co-teaching classrooms, those co-teacher's relationships must be examined as it affects more students than ever before. However, information on how to improve and support the co-teaching relationship remains limited with many studies suggesting a need for future research on improving the co-teaching relationship (Brendle et al., 2017; Kilanowski-Press et al., 2010; Hamdan et al., 2016).

Purpose of the Study

The purpose of this quantitative study is to explore the extent to which teaching experience affects teachers' perceptions of teamwork within their co-teaching relationship. Co-teaching has long been known to increase academic achievement for all students, both general education and SWDs (Murawski, 2006; Rea, McLaughlin, & Walther-Thomas, 2002). Current research touts the importance of the co-teacher's relationship as a key factor in achieving a successful co-teaching classroom (Friend, 2015). Relationships are not only an integral part of the co-teaching partnership (Ambrosetti, Knight, & Dekkers, 2014; Kusuma-Powell & Powell, 2015; Parker et al., 2010; Roth & Tobin, 2000) but are a key factor in raising student achievement (Pettit, 2017). Co-generative and collaborative teaching relationships have been associated with increased student learning (Lindeman & Magiera 2014; Roth & Tobin, 2001). On the other hand, relationship problems associated with co-teaching assignments can undo the co-teaching partnership and create a degenerative and split environment for students (Kusuma-Powell & Powell, 2015). Researchers have suggested a need to examine factors that improve the co-teaching relationship (Kamens, Susko & Elliott, 2013) in order to achieve quality co-instruction and thus raise student success.

The co-teaching model has typically been described as a marriage or dance between the general and special education teacher (Friend, 1993, 2015; Parker, McHatton, Allen, & Rosa., 2010). This analogy is intended to illustrate the importance of an interactive co-teacher relationship focused on student learning (Pettit, 2017). Many studies agree that developing relationships are critical for co-teaching (Beninghof, 2012; Friend, 2015; Mastropieri & Scruggs, 2013; Tomlinson & Imbeau 2010; Valle & Connor,

2011), and that quality co-teaching is reached through purposeful co-planning and relationship building (Pettit, 2017). In an analysis of 32 qualitative research investigations into inclusive classrooms, Scruggs, Mastropieri, & McDuffie (2007) found that co-teachers believe personal compatibility between the two teachers is the most important factor for co-teaching success.

With so much research emphasizing the importance of the co-teaching relationship and its impact on student achievement, it is important to study factors that may affect this relationship. Unfortunately, there is little research on improving teamwork within the co-teaching relationship. Pettit (2017) found that more co-teaching leads to greater collaboration between teachers, but collaboration in Pettit's study was between student teachers and mentor teachers rather than two co-teachers consisting of one general and one special educator. Radic-Sestic, et al., (2013), based on a survey/interview of 223 co-teachers, found that more work experience may lead to increases in cognition of group work methods such as awareness of roles within the team, communication of one's ideas, balancing of personal and team visions, relationship's influence on work, and recognizing the benefits of teamwork. However, they did not study if the increased cognition of group work methods led to increased teamwork. Plotner, Rose, VanHorn Stinnett & Investor, (2017) studied the how relationships can be improved with time spent together. They researched if differences in time/length on district collaborative teams will affect team members' responses to a collaboration survey. Once again the research points to teamwork improving over time but was not studied in within a co-teaching setting. Chitiyo and Brinda (2018) conducted research on how prior experience co-teaching might influence participants' preparedness to co-teach

and found it did not, based on a survey of 77 co-teachers. They studied prior experience co-teaching with different/previous partners, rather than studying time spent together as a co-teaching pair. Additionally they focused on teachers' pedagogical knowledge rather than teamwork within the co-teaching relationship.

Many studies have suggested a need for future research on improving the co-teaching relationship (Brendle et al., 2017; Kilanowski-Press et al., 2010; Hamdan et al., 2016) as current research has found no consistent method, process, or criteria for pairing co-teachers (Keefe & Moore, 2004; Kamens et al., 2013). Consistent with the topic of this study, Scruggs et al., (2007) called for future research that examines perceptions of teamwork between co-teachers. This study intended to add to the body of knowledge in the area of co-teaching by researching factors that influence co-teacher's perceptions of their teamwork.

In the current study, co-teachers' relationships were examined through their perceptions of teamwork with their co-teaching partner. Teamwork was quantified using the Tuckman Team Maturity Questionnaire (TTMQ), in which co-teachers rated their partnership in each of the stages of team development (forming, storming, norming and performing). This study then examined which variables of interest (relationship duration, primary role, collaborative environment, and enjoyment of co-teaching) would be significant predictors for each stage of team development. Applying Tuckman's stages of team development to examine the co-teaching relationship will be an important step forward in supporting co-teaching practice by providing common language and understanding to what is often a murky topic to discuss.

Theoretical Framework

In order to identify the strength of teamwork in small groups, such as a co-teaching relationship, Bruce Tuckman developed the model of small group development (Tuckman, 1965). His theory originally consisted of four stages: forming, storming, norming, and performing. The purpose of the Tuckman Model is to identify and understand in what stage of teamwork a team is operating. It can be used at any point in the teaming process to build awareness of how the team is maturing and develop strategies to move forward (Barkema & Moran, 2013).

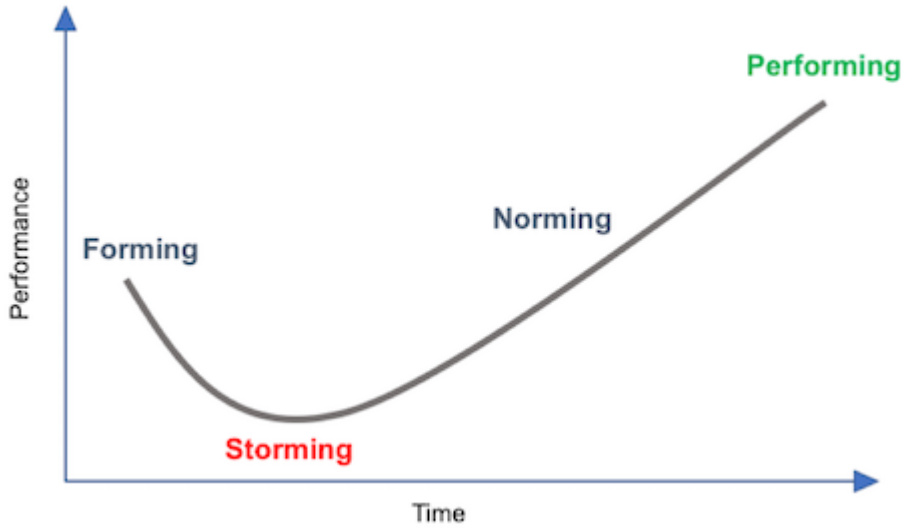
Tuckman's stages are all necessary and inevitable in order for the team to grow, to face up to challenges, to tackle problems, to find solutions, to plan work, and to deliver results (Barkema & Moran, 2013). Aydin and Gumus (2016) explain each of the original four stages: In the forming stage, team members are in a honeymoon phase where they are learning about each other and their basic responsibilities on the team. In the storming stage, the team members attempt to collaborate and establish a consensus on how to overcome the problems they encounter. Conflicts and even separation may occur if a consensus cannot be established. The team will then find it difficult to achieve the goals and to move on to the next stage. Norming is the stage in which members accept team rules regarding collaboration, distribution or sharing of responsibilities, settling disputes, and the processes they will use in order to reach targeted goals. The goals of the team become more important than individual goals. The members of the team start to trust, help, and communicate effectively. In performing, the members make decisions and problem solve quickly and effectively. Members settle conflicts without disrupting the established team process. A common vision is formed rather than members having

different points of view. Members also demonstrate an advanced sense of responsibility towards each other.

The present research fits within this theoretical framework by studying small group development in co-teaching pairs. In 1965, as Tuckman researched sequences in small group behavior he found ‘‘a surprising amount of agreement beneath the diversity’’ (Johnson & Johnson, 2003, p. 28) and created his theory in order to provide a common language for the description and analysis of small group development. This common language will be used to describe and quantify the co-teachers’ relationships with their teaching partners. This study operationalized Tuckman’s model of small group development by capturing co-teachers’ perceptions of how strongly each of the four stages resembles their current co-teaching relationship. This study then seeks to find the extent that variables such as relationship duration, primary role, collaborative environment, and enjoyment can predict in what stage of development are the co-teachers. The Tuckman stages of small group development are all necessary and inevitable in order for teams to grow, to face up to challenges, to tackle problems, to find solutions, to plan work, and to deliver results (Barkema & Moran, 2013). Since each stage is inevitable and necessary, the Tuckman stages make for a reliable and valid dependent variable for studying co-teachers relationships.

Figure 1

Conceptual framework of Tuckman's Stages of Team Maturity (1965)



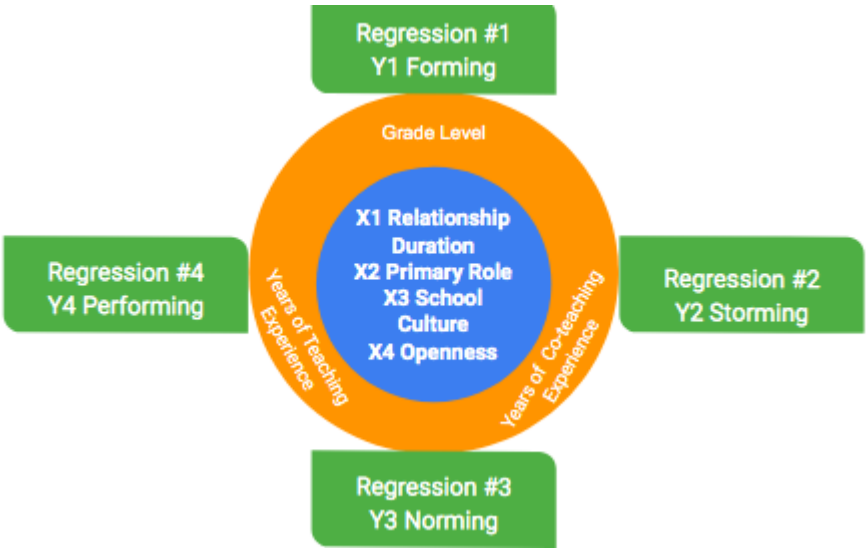
Note: This figure illustrates the progression of team performance over time through each stage of team maturity.

Figure 1 shows the conceptual framework of Tuckman's (1965) stages of team development and the depiction of team performance over time as the team progresses through the stages. This study seeks to find out what happens over time to influence the progression from one stage to the next in co-teachers. Relationship duration was chosen as an independent variable in order to study if time working together is a reliable predictor of progression through the stages of team development. This study examined relationship duration as a measure of time co-teachers have been paired together. Co-teachers' enjoyment of co-teaching is something that may influence their ability to progress through the stages of team development, and is another variable that can change over time. Collaborative environment refers to the degree of consistency in which teacher collaboration exists within the school culture, which in turn might affect

willingness to work through struggles together as a co-teaching partnership. Finally, each teacher's primary role, either as a special educator or general educator, may impact their expectations around collaboration. Collaboration has been a part of special education for a long time (Robinson & Robinson, 1965), possibly leading to the general educator needing time to adjust, once again pointing to a variable that may predict if co-teachers progress through the Tuckman stages over time.

Figure 2

Research Design for the Current Study



Note: The current study will use four multiple regressions with the Tuckman stages of small group development (1965) used separately as dependent variables. The blue inner circle lists the Independent variables of the study. The orange outer circle lists the covariates. The green boxes list the dependent variables used in each regression.

Figure 2 shows a visual of the research design for this study. The individual stages of forming, storming, norming, and performing will be quantified separately by the TTMQ and used as dependent variables. The current study will control for years of co-teaching experience and years of teaching experience as covariates. Co-teachers are

scheduled differently in elementary, middle, and high schools, and to account for that, grade level will also be used as a covariate. The conceptual framework for this study guides the research design by using the Tuckman (1965) stages as dependent variables to quantify the effect of relationship duration, primary role, collaborative environment, and enjoyment, on co-teacher's perception of teamwork with their partner.

Significance of the Study

According to most current public data, in 2017 the New York City Department of Education (NYCDOE) had 216,923 SWDs receiving services in their schools. Almost two thirds of those students spent more than 80% of their school day in a general education classroom. However, they were graduating at a far lower rate, and dropping out at a much higher rate than the general education students in those same classes. SWDs in NYCDOE schools graduated at a rate of 53.5% in 2017, with a dropout rate of 14.7% (New York State Education Department, 2019). Concurrently in 2017, NYCDOE schools touted a record high four year graduation rate of 74.2% and a record low dropout rate of 7.8% (New York City Office of The Mayor, 2019). The graduation and dropout gap is substantial for SWDs in NYCDOE schools. These gaps exist for SWDs often while attending the same co-taught classrooms, meaning a deeper look into the equity of instruction is needed and it starts with the co-teaching relationship. According to the National Education Association (NEA) (2019), in 2017 the same graduation gap appeared state-wide in New York (81.8% total, and 55.4% for SWDs) and nation-wide (84.6% total, and 67.1% SWD). NEA (2019) recommends shared instructional roles and responsibilities between the general and special educators in co-taught classrooms in

order to fulfill federal special education legislation effectively. Getting the co-teaching relationship right is consequential to achieving equitable graduation and dropout rates for SWDs.

Relationships among co-teachers are the most important determinant in how successful teachers view co-teaching and how likely they are to want to co-teach (Keefe & Moore, 2004). It is commonly accepted in education that the co-teaching relationship is an integral component of instructional success for the teachers (Ambrosetti, et al., 2014; Kusuma-Powell & Powell, 2015; Parker et al., 2010; Roth & Tobin, 2000) and academic success for students (Brendle, Lock & Piazza, 2017; Moorehead & Grillo, 2013; Pettit, 2017; Walther-Thomas, Bryant & Land, 1996). Although it is known to be extremely important, there is little research to inform school administrators on how to best pair and support co-teaching relationships.

Research suggests that components which lead to a positive working relationship often involve communication, collaboration, mutual respect, and well defined roles and responsibilities (Brendle et al, 2017; Friend & Cook, 2010; Hang & Rabren, 2009; Hamdan, Anuar & Khan, 2016; Keefe & Moore, 2004; Moorehead & Grillo, 2013). These relationship components have been observed to improve with time spent working together, with significant improvements being found in as little as one year of working together (Pettit, 2017; Plotner, et al. 2017). However, many studies have suggested a need for future research on this topic (Brendle et al., 2017; Kilanowski-Press, Foote & Rinaldo, 2010; Hamdan et al., 2016), as current research has found no consistent method, process, or criteria for pairing co-teachers (Keefe & Moore, 2004; Kamens, Susko & Elliott, 2013).

The present study is significant and will contribute to the field of education because existing research is insufficient in terms of providing data to inform practice in improving teachers' teamwork within a professional co-teaching setting. There is a need to create evidence based procedures for developing partnerships (Kamens et al., 2013), and schools need to know how they can develop collaborative co-teaching relationships (Scruggs & Mastropieri, 2007). Consistent with the research questions of this study, Scruggs et al., (2007) called for future research on collaboration that examines perceptions of collaborating teachers. An investigation of the possible correlation between relationship duration and co-teachers' perceptions of teamwork could influence the way schools make decisions around creating, changing, and supporting co-teaching assignments. Schools need to be thoughtful about how they pair co-teachers and how they will support these partnerships over time (Keefe & Moore, 2004) in order to sustain effective programming for students with and without disabilities in inclusive settings. This study seeks to resolve inconsistencies and gaps in past research by providing information that can inform practice for schools and districts to create and support co-teaching pairings.

The current study is related to the mission of St. John's University in addressing an issue of social justice for historically underrepresented, discriminated, or disadvantaged groups by serving to increase equity for SWDs in public education. SWDs have been historically disadvantaged and discriminated against by the public school system in the United States. Before the 1970's many states had laws banning some students, depending on classification, from attending school. Only about 20% of SWDs were allowed to attend public school, and those who did were placed in a separate

classroom away from the general education students, or forced to attend a separate school altogether. In 1970, these discriminatory laws led to over four million disabled children not receiving appropriate education, and nearly two million disabled children not attending school at all (US Department of Education, 2007).

Inclusive education such as co-teaching was meant to provide equity for SWDs by way of free and appropriate education (FAPE) in the least restrictive environment (LRE) as guaranteed by the Individuals with Disabilities Education Act (1997). However, the act of inclusion into a general education class does not itself provide equity of instruction delivered therein. The co-teaching relationship is an important factor of instructional equity within a co-taught classroom. When co-teachers do not work well together, it leads to the special educator taking the support role rather than co-delivering instruction (Weiss & Lloyd, 2002), and the general educator assuming the lead role even though they are not prepared to teach SWDs due to lack of experience and training (Moorehead & Grillo, 2013). When the co-teaching roles are unbalanced, SWDs are often confused about the concepts of the lesson (Gerber & Popp, 1999). This study intends to find factors that influence the co-teaching relationship. The goal of this research is to provide schools and districts with useful information as to how they may develop and support co-teachers' relationships which will lead to more equitable instruction (Moorehead & Grillo, 2013) and improved achievement for SWDs (Efthymiou, & Kington, 2017).

Research Questions & Hypotheses

The purpose of this study is to explore the extent to which teaching experience is related to co-teachers' perception of teamwork, based on Tuckman's (1965) stages of

small group development. Considering the research needs within the field, the following quantitative research questions have been developed:

Research Questions

1. To what extent are relationship duration, primary role, collaborative environment, and enjoyment related to the stage of forming within a co-teaching setting?
2. To what extent are relationship duration, primary role, collaborative environment, and enjoyment related to the stage of storming within a co-teaching setting?
3. To what extent are relationship duration, primary role, collaborative environment, and enjoyment related to the stage of norming within a co-teaching setting?
4. To what extent are relationship duration, primary role, collaborative environment, and enjoyment related to the stage of performing within a co-teaching setting?

Hypothesis

H_0 1: There will be no significant association between perceptions of the individual stages of team maturity (forming, storming, norming, performing) by relationship duration, primary role, enjoyment, and collaborative environment.

H_1 1: There will be significant association of perceptions of the individual stages of team maturity (forming, storming, norming, performing) by relationship duration, primary role, enjoyment, and collaborative environment.

H_0 2a: There will be no significant association of perceptions of the individual stages of team maturity (forming, storming, norming, performing) by relationship duration.

H_1 2a: There will be significant association of perceptions of the individual stages of team maturity (forming, storming, norming, performing) by relationship duration.

H_0 2b: There will be no significant association of perceptions of the individual stages of team maturity (forming, storming, norming, performing) by primary role.

H_1 2b: There will be significant association of perceptions of the individual stages of team maturity (forming, storming, norming, performing) by primary role.

H_0 2c: There will be no significant association of perceptions of the individual stages of team maturity (forming, storming, norming, performing) by enjoyment.

H_1 2c: There will be significant association of perceptions of the individual stages of team maturity (forming, storming, norming, performing) by enjoyment.

H_0 2d: There will be no significant association of perceptions of the individual stages of team maturity (forming, storming, norming, performing) by collaborative environment.

H_1 2d: There will be significant association of perceptions of the individual stages of team maturity (forming, storming, norming, performing) by collaborative environment.

Definition of Terms

Collaborative environment in this study is defined as co-teacher's perceptions as to what degree of consistency their school's culture includes or emphasizes collaboration among teachers.

Co-teaching may be defined as the partnering of a general education teacher and a special education teacher for the purpose of jointly delivering instruction to a diverse

group of students, including those with disabilities or other special needs, in a general education setting and in away that flexibly and deliberately meets their learning needs (Friend, 2008).

Enjoyment in this study will be defined as the degree to which teachers enjoy co-teaching.

Primary role in this study refers to a teacher's status as either the general or special education provider in a co-teaching classroom.

Relationship duration will be defined as the length of time two co-teachers have been working together.

Grade level will be used in this study to define what grade a teacher is assigned to teach. Grades k-5 will be considered elementary school. Grades 6-8 will be considered middle school. Grades 9-12 will be considered high school.

Students with disability can be operationally defined as a student with a physical or mental impairment that substantially limits one or more major life or academic activities. This includes students with episodic, or in remission of, impairments if it would substantially limit major life or academic activity when active (Meeks & Jain, 2015).

Team development / teamwork can be operationally defined by Tuckman's original four stages of team maturity. The original four stages are forming, storming, norming, and performing. These stages are necessary and inevitable in order for a team to grow, face challenges, solve problems, plan work, and deliver results (Tuckman, 1965).

CHAPTER 2

Introduction

This chapter begins with an explanation of Bruce Tuckman's (1965) stages of small group development, the theoretical framework which guides the current study. I outline how it will provide a common language and a structure for assessing teamwork in small groups as it is applied to this study. The theoretical Framework will also include research studies which support the application of Tuckman's theory to the current study. Each related study adds to the framework by providing the independent variables against which we can operationalize Tuckman's stages. The theoretical framework will then explain how the current study fits within the prior research of various scholars such as Aydin & Gumus (2016), Pettit (2017), and Radic-Sestic, Radovanovic, Milanovic-Dobrota, Slavkovic, & Langovic-Milicvic (2013).

The literature review will explain the importance of the co-teaching relationship. To understand the importance of the co-teaching relationship the literature review will examine how special education legislation in the 1970s led to federal laws which mandate the inclusive education for all SWDs within their least restrictive environment. The many benefits of inclusion for SWDs and general education students are then discussed, and the six inclusion programs offered in New York City will be detailed in order from least restrictive to most. Some of these inclusion programs involve special and general educators teaching together, which is called co-teaching. An overview of co-teaching will be provided and the six models of co-teaching will be explained. Finally,

the research will outline how the relationship between the co-teachers in integral for pedagogical and academic success.

Theoretical Framework

The purpose of Bruce Tuckman's (1965) developmental sequence in small groups was to review and evaluate the body of literature on small group development, and to identify trends in group development. He reviewed 50 articles on small group development over time. He used three criteria for grouping these studies: (1) the setting in which the group was found; (2) the realm in which the behavior occurred, either task or interpersonal; and (3) the position of the group within a hypothetical developmental sequence, which he referred to as *stage of development*. Delineating by setting allowed studies to be clustered based on the similarity of their features such as size of groups studied, group duration, group problem area, and group composition.

Tuckman (1965) identified that all previous studies in small group development fit into three settings. *Group Therapy* setting contained five to 15 members each with a debilitating personal problem, a therapist, and the group lasted for 3 months or more with the goal of individual adjustment within group members. The second setting identified by Tuckman was the *Human Relations Training-Group (T-Group). In a* T-Group setting the goal is to help members interact with one another, focusing on being more productive and less defensive. T-Groups typically included between 15-30 members, usually students or corporate teams, and lasted up to six months on average before disbanding. *Natural Groups* exist only to perform a single function. Members of Natural Groups are not brought together for self-improvement, but rather to do a job or for a single purpose.

For example, this setting included laboratory-task Groups formed for the purpose of studying group phenomena and corporate advisory groups, typically are less than 10 people and have a short lifespan.

After all studies were sorted into one of the three settings, Tuckman focused on the reported group behaviors to distinguish between the realms of *task related* behaviors and *interpersonal* stages of group development exhibited by the groups. He found groups progress through separate stages in each realm concurrently as members learn how to complete their task and how to work interpersonally with other members in order to complete their task. Tuckman proposed that any group in any setting must address itself towards the successful completion of the task while simultaneously, and often through the same behavior, relating to one another interpersonally. He theorized that the developmental process is obscured by the behavior from both realms happening in an interconnected fashion. Tuckman (1965) pointed to the failure to separate developmental stages by realm as a limitation of all preceding studies on the topic. Tuckman studied each developmental stage separated by setting, and for the first time separated by realm as well. He was then able to isolate concepts common to various studies he reviewed and propose an overarching developmental model which incorporated those trends. Tuckman's model is widely accepted and regularly referenced in literature (Bonebright, 2010; Gladding, 1995; Hansen, Warner, Smith, 1980; Posthuma, 2002) because it is comprehensive and easy to understand and apply (Fall & Wejnert, 2005). In the field of group work, The Tuckman model is considered the best known and most famous theory on small group development (Burn, 2004; Johnson & Johnson, 2003).

In the forming stage, group members struggle to find their place in the group, and the primary feeling is one of uncertainty and anxiety. In a dyad, the experience is similar as in a small group. Pairs are uncertain about the expectations of the group and of one another. Group members wonder how their strengths and weaknesses will fit within the group or pairing, leading to identity formation and negotiation. As members gain a sense of comfort within the group that arrives from a deeper understanding of their role, and the roles of others in the group, members begin to share more meaningful aspects of themselves. When group members develop a sense of identity within the group they are ready to transition to the next stage (Fall & Wejnert, 2005).

In the storming stage, members begin to create emotional responses to the demands of the group. Intra-group conflict and increased hostility arise as members shed their polite pretense in favor of more honest views. Members begin to take greater risks by speaking more bluntly in the form of feedback of others and sharing of personal beliefs. Power struggles may also arise as members try to do things their way. In other words, this is the stage where group members drop their guard, censor their behavior less, and disagree about roles, responsibilities, and how to meet their goals (Burn, 2004). This stage is where irritation with each other arises. However this is necessary and expected as part of the development process. Failure to address differences may lead to a shutdown of communication and a stagnation of group development. Healthy dialogue is imperative in order to move forward through this conflict if the team is to advance towards the next stage. It is important to view conflict in this stage as a rich source of learning for the group in how to process and navigate through disagreements (Aydin & Gumus, 2016; Fall & Wejnert, 2005).

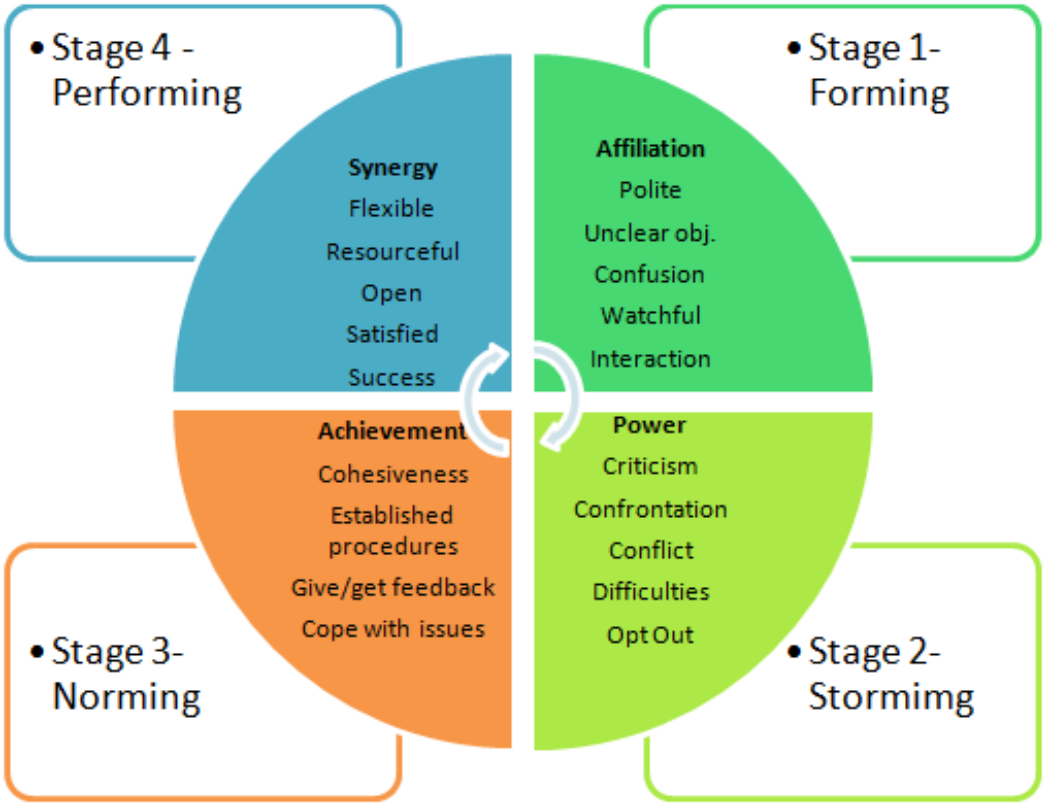
Norming is categorized by an increase in group cohesion. The goals of the team become more important than individual goals as members accept being part of a group. An increased sensitivity to each other's concerns and ideas develops. There is an increased acceptance of individual approaches and styles and members feel more strongly about their support for the group process and structure. The team has already learned how to resolve conflict in the storming stage and that was important to producing cohesion in the norming stage. However, acknowledgement and acceptance of individual differences was important to producing cohesion as well. Failure to recognize that acknowledgement and acceptance of individuality helped produce cohesion can lead to a misinterpretation that conflict should once again be avoided in order to maintain cohesion. Fear of how conflict may affect cohesion is a return to behavior related to earlier stages and signals a regression in group development. Acceptance of different views of the process to achieve team goals will lead towards positive and respectful communication. Communication without the restriction of internal censoring leads to the advancement towards the next stage of group development (Aydin and Gumus, 2016; Fall & Wejnert, 2005).

In performing, team members begin to use interpersonal communication skills they developed in the norming stage. Because issues have been processed, high levels of work can be accomplished. Members have learned to relate to each other which allows them to adapt and play complementary roles to each other which can change from task to task depending on each other's individual strengths and preferences. In this stage members forecast potential future conflicts and resolve them without disrupting the established team process. Members also demonstrate an advanced sense of responsibility

towards each other, leading to very few inherent problems, and allowing for an increased focus on achieving team goals (Aydin and Gumus, 2016; Fall & Wejnert, 2005).

Figure 3

A summary of Tuckman's stages of small group development (1965)



Note: This figure is meant to be read clockwise. Shaded areas are comprised of examples of the characteristics associated with each stage. The term Unclear obj. Is an abbreviation for Unclear objectives.

Researchers have long studied if all groups follow a similar pattern of development, and theorists have been proposing various models to explain how groups develop for quite some time (Gersick, 1988; (McGrath & Tschan, 2004). Tuckman's (1965) model is the most frequently cited and supported model of group development in

literature (Wheelan & Lisk, 2000). Tuckman's model has influenced many popular subsequent models (Gersick, 1988). Similar to Tuckman's (1965) four stage model, Fisher's model (1970) also includes four linear stages including orientation, conflict, emergence, and reinforcement. Another model influenced by Tuckman's work (McGrath, 1991) suggested groups develop through the four stages of inception, technical problem solving, conflict resolution, and execution. In 1995 Tubbs proposed four phases of decision-making processes (orientation, conflict, consensus, and closure). Each stage in these subsequent models can trace its roots back to Tuckman's four stages. Researchers have even compared models of group development in studies of small groups to see which model most closely depicted their subjects' dynamic over time and found that Tuckman's stages of group development is more accurate than his successors (Johnson, Suriya, Yoon, Berrett, & LaFleur, 2002).

Tuckman's stages help facilitate analyses of team behavior and aid in developing the necessary traits and behavior patterns for a team to become high performing (Edison, 2008). The application of Tuckman's stages are highly accurate in depicting small group dynamics, including within the co-existing relationship (Fall & Wejnert, 2005), which makes them a logical choice to depict the dynamics of the co-teaching relationship. In this study, co-teachers will complete the Tuckman Team Maturity Questionnaire (TTMQ) which contains 32 items on a five point Likert scale. The results will show the extent that relationship duration, primary role, collaborative environment, and enjoyment predict a change in the co-teacher's perceived relationship. The Tuckman stages will quantify and facilitate analysis of the co-teachers' perceived relationships. Fall and Wejnert (2005) called for the Tuckman stages to be used in future research on different

techniques and strategies that promote progress through stages of group development. The results of this study will provide information as to how schools and districts may support co-teachers in progressing through the stages of group development.

Tuckman's theory has been applied to other recent studies in education. Aydin & Gumus (2016) used the theory to determine whether there was a relationship between online learners' sense of classroom community, perceptions of success in team development process and their preferences of studying in teams. Participants in the study were 118 second year students in the Information Management Associate Degree Program of Anadolu University. The 118 participants represented 47% of all second year students. Second year students were chosen because the academic program focuses on teamwork in the second and final year of study. A teamwork Questionnaire was used to collect data based on the Tuckman's theory of small group development. The teamwork questionnaire was made up of five subscales, each representing a score for one of Tuckman and Jensen's (1977) five stages of team development: forming, storming, norming, performing, and adjourning. Aydin & Gumus (2016) used a revised version of the questionnaire, removing the subscale for adjourning, and cited Gunawardena et al., (2001) as testing the revised questionnaire for reliability with a Cronbach's *a* coefficient of .91. The instrument was provided on the school's website for students to complete. T-tests, Pearson Correlations, and a series of multivariate analyses were conducted.

A positive significant relationship was observed between respondents sense of classroom community and success in team development based on Tuckman's stages of team maturity ($p = <0.01$, $r = 0.27$). Significant relationships were found in sub-dimensions of the sense of classroom community and the team development process.

The feeling of connectedness to the group was observed to be significantly related (p = <0.01) to the more mature stages of group development (norming, performing, adjourning). There was still a significant correlation between the feeling of connectedness to the group and the storming stage, but it is at the .05 level. Finally, no relationship was found between feeling connected to the group and the forming stage. Additionally, a correlational analysis revealed a significant relationship (p = <0.01) between having a preference for teamwork and being in the storming, norming, Performing, and Adjourning stages. However, there was no significant relationship found between having a preference for teamwork and being in the forming stage. Aydin & Gumus (2016) concluded that a sense of presence or connectedness to the group or team can be used as a predictor of success in team development. Aydin & Gumus (2016) also theorized that the participants who felt most connected to their teams demonstrated greater communication and understanding of their responsibilities within the team.

Aydin & Gumus's work (2016) informs the current study by providing a structure to measure teamwork. They used the TTMQ to quantify teamwork in online student's group work. The current study will also employ the TTMQ to quantify teamwork, but will use a different sample and setting. Instead, this study will examine co-teachers' perceptions of teamwork in a professional co-teaching classroom rather than online college students during group work.

The sample and setting for my study was informed by Radic-Sestic, et al., (2013). The objective of their study was to establish the relation between general and special education teachers within teamwork and to define socio-demographic factors that affect teamwork. The research encompassed 223 participants of both genders (44 or 19.7%

males and 179 or 80.3% females) ages 25 to 60. The sample included 112 or 50.2% of general and 111 or 49.8% of special education teachers who are employed in elementary schools. Participants were grouped by work experience (1-5 years, 5-15 years, 15-25 years, and more than 25 years) and asked to individually complete a survey about the teacher's perceptions of six dimensions of teamwork (Environment, Conduct, Abilities, Values, Identity, Meaning). The survey yielded a reliability correlation level of Cronbach's *a* coefficient of .907. Researchers used the Kruskal-Wallis Test to reveal that length of work experience leads to a difference among participants in two dimensions: Environment ($p = 0.030$), and meaning ($p = 0.036$) of teamwork.

In the dimension of Environment, participants with the most work experience (more than 25 years) had the highest scores, while in the dimension of meaning the group with work experience from 15 to 25 years had the highest scores. This indicates that more work experience may lead to increases in cognition of group work methods, awareness of roles within the team, presentation of one's ideas, communication in joint meetings, balancing of personal and team visions, relationship's influence on work, and recognizing the benefits of teamwork, which are all traits associated with the dimensions of Environment and Meaning.

Radic-Sestic, et al., (2013) will inform the current study by providing the sample (professionally licenced co-teachers) and setting (public schools). However the current study will build on Radic-Sestic, et al., (2013) by delineating between co-teaching experience and overall teaching experience and using both types of experiences as covariates. While Radic-Sestic, et al., (2013) studied elementary school co-teachers, the current study will again build on this research by including co-teachers from all grades

(k-12) and using grade level as a third covariate. Like Radic-Sestic, et al., (2013) the current study will look at the differences in co-teachers' perceptions of teamwork as separated by primary role (special educator or general educator). The current study will also compare teamwork scores based on teacher's perceptions of teamwork like Radic-Sestic, et al., (2013). However, teamwork scores will be provided by the TTMQ.

Other independent variables for the current study were informed by the work of Pettit (2017), who intended to discover if providing student-teachers with experience co-teaching earlier in their training program improved collaboration. Pettit studied 13 teaching candidates during a one semester course at the Teacher Education Program at Colorado State University-Pueblo. This was conducted as a qualitative action research study which relied on group discussions and reflections. Two interventions were added to the course and would be assessed to see their effects on teaching candidates engagement in co-teaching practice and collaboration during their time in field. The first intervention were weekly discussions. For 15 weeks the 13 candidates began Socratic discussions about their most recent co-teaching experiences. An example of a discussion prompt was "How would you describe the difference between leading and co-leading during a co-teaching lesson?" The second intervention was post teaching video reflections which were used to evaluate if the candidates were having co-generative experiences during their field work. Candidates would record video of themselves during two co-taught lessons, then watch the lessons with their graduate class, and finally engage in self and peer reflection. The prompt given for reflection was "Discuss the effectiveness of your planning and co-teaching experience." Responses from both

interventions were coded and analyzed for themes relating to mentoring, co-generative teaching, and co-teaching adjustments.

Four themes emerged from the analyses: (1) Co-teaching to meet common learning goals - candidates found that when co-teachers work in tandem they can clarify instruction and meet students' learning goals. (2) Co-teaching to meet common teaching goals - candidates noted that co-teaching is a great opportunity for support and feedback in their teaching which allowed them to better support their cooperative teacher's teaching goals. (3) Equality of teaching roles - Candidates felt they were no longer observing and assisting but were not a part of the teaching team. (4) Increased opportunities for differentiation. Results from the two interventions found that participants valued their co-teaching relationship. Data from this action research suggested that more time spent co-teaching is important for candidates to learn how to build a co-generative and collaborative relationship with their cooperating teacher.

The current study will use the independent variable relationship duration, based on Pettit's (2017) work. Pettit (2017) found that more experience co-teaching leads to greater collaboration between teacher and student teacher. The current study intends to build on Pettit's work by studying if more time co-teaching together leads to greater collaboration between two co-teachers. The application of Tuckman's theory on small group development is needed to quantify co-teachers' perceptions of collaboration and teamwork in the current study as Pettit (2017) was qualitative in design.

The framework for my study will guide the organization of literature review below. The application of Tuckman's (1965) stages of small group development in a co-teaching setting will assist in quantifying co-teachers perceptions of team development.

In order to understand the need to quantify co=teachers perceptions of team development we must understand why the co-teaching relationship is important for SWDs. The literature review will discuss legislation that has led to SWDs being entitled to inclusive education, then explain how co-teaching as a setting satisfies this entitlement. Finally, the literature review will explain the importance of the co-teaching relationship, and that there is insufficient research on how to support co-teachers in building their relationship, which is why applying Tuckman's stages in the current study is necessary.

Review of Related Literature

Co-teaching has increased in popularity as a strategy for ensuring SWDs receive the federal mandates guaranteed to them by the Individuals with Disabilities Education Act (1997). SWDs must have access to, and be taught the general education curriculum. They are also entitled to be educated in the least restrictive environment (LRE) possible. For many, LRE means being educated in a co-taught classroom with general education classmates. Additionally, SWDs must also receive specially designed instruction, which is individualized adaptations and modifications to instruction that meets their learning needs. Federal legislation has been the driving force behind changes to special education for decades and has contributed to recent interest in co-teaching, which has become the favored strategy among educators to meet legislative expectations found in the Individuals with Disabilities Education Act (1997) Part B, s.300.114.

This literature review will begin with the history of special education legislation to understand why SWDs are entitled to be educated in a general education classroom. I will then discuss the academic, social, and behavioral benefits of inclusive education

programs for SWDs, general education students, and co-teachers. An overview of various inclusive settings offered in New York City will be provided and explained in order to provide context for the settings in which teachers co-teach. An overview of co-teaching and its six models of instruction will be discussed to understand exactly what is required of each co-teacher. Finally, the importance of the co-teaching relationship and its effect on students will be explored.

The History of Special Education Legislation

Co-teaching as practiced today is a product of special education legislation. To emphasize the impetus for LRE mandates, it is important to look back upon the poor educational conditions for SWDs up to the mid-20th century. In 1970, U.S. schools educated only one in five children with disabilities, and many states had laws excluding certain students, including children who were deaf, blind, emotionally disturbed, or mentally retarded (US Department of Education, 2007). A congressional investigation in 1972 by the Bureau of Education for the Handicapped found that nearly half of the eight million SWDs in the United States did not receive an appropriate education, 2.5 million were receiving a substandard education, and 1.75 million were not in school at all. These students were either placed in a special classroom that separated them from the rest of their general education peers, or forced them to attend a different school altogether (US Department of Education, 2007).

Without community placement for education, many children ended up in separate schools and residential centers such as the now infamous Willowbrook State Developmental Center in New York. Meant to house 4,000 people, Willowbrook at its

highest population had over 6,000 residents. Unchecked conditions led to dehumanization of residents such as exposing them to Hepatitis for vaccine research without consent (Disability Justice, 2019). In 1972, ABC News reported on the conditions at Willowbrook and drew national attention. Parents of Willowbrook filed a class action lawsuit the same year (New York State Association for Retarded Children, V. Carey, 1972). In court, they told stories of beaten children, maggot-infested wounds, assembly-line bathing, use of chemical restraints, lack of medical care, inadequate clothing, malnourishment, limited toilet facilities, and not providing adequate educational programs (President's Committee on Mental Retardation, 1975). In 1975 the judge ruled in favor of the parents. The Willowbrook Consent Judgment recognized that people with developmental disabilities are capable of physical, intellectual, emotional, and social growth, and that intervention and programming is necessary to foster that growth while in a less restrictive environment. The right of children with disabilities to a public education was created (Disability Justice, 2019). The ruling set a precedent for future LRE legislation.

Concurrently, in 1975, the Education for All Handicapped Children Act (EAHCA) mandated that SWDs are to be educated in LRE appropriate to their ability, which meant that they are to be taught in classes with general education students whenever possible. The LRE mandate brought millions of students out of residential settings like Willowbrook, and millions more who were not receiving any education at all, into public schools. LRE still is a major protection for SWDs and their families today. EAHCA also included mandates from the Elementary and Secondary Education Act of 1965 which granted equal access to education for all students, as a way of

addressing President Lyndon B. Johnson's war on poverty. EAHCA guaranteed equal access for children with disabilities by way of free and appropriate public education (FAPE) (United States Department of Education, 2010). FAPE and LRE were important milestones for the disabled population, but EAHCA did not include mandates about the quality of instruction. As a result, SWDs were being integrated into the general education classroom primarily for socialization.

In 1997 the EAHCA was amended to address the need for quality instruction for SWDs by providing all students access to the same curriculum as their general education peers. Specifically, the law stated that SWDs should be taught according to the general education curriculum. President Clinton authorized the amendment which also renamed the EAHCA to the Individuals with Disabilities Education Act (IDEA). In response to this new law, schools continued to place SWDs into general education classrooms, or their LRE, but this time with the assumption that they can make academic progress and achieve higher degrees of independence (Hicks-Monroe, 2011). Seven years later, in 2004, the U.S. Congress amended IDEA once more by including greater accountability in improved educational outcomes, and higher standards for teachers of special education. With federal mandates and funding tied to providing equal access to the general education curriculum, high quality instruction, and improvements in student achievement for SWDs, states and their educators had to figure out the best way to provide an inclusive learning environment that meets the needs of all students. One of the approaches that demonstrated promise was a co-teaching approach where general and special education teachers could work together in an inclusive classroom and jointly provide instruction to all students.

The Benefits of Inclusion

Inclusive education is an educational process where students with and without disabilities are educated together in age-appropriate general education classes, with sufficient support, in their neighborhood schools (Okongo, Ngao, Rop & Nyongesa, 2015). Inclusive education is the nexus between special education legislation and co-teaching. The National Center for Educational Restructuring and Inclusion (NCERI), cited in Mapuranga, Dumba & Musodza (2015), defines inclusive education as "providing to all students, including those with severe handicaps equitable opportunities to receive effective educational service with the needed supplementary aids and support services in age appropriate classes in their neighborhood schools in order to prepare students for productive lives as full members of the society." UNESCO cited in Chimonyo et al (2011) defines inclusive education as a process of responding to the diverse needs of all children by providing changes and modifications in content, approaches, structures and strategies, with a common vision that it is a responsibility of the regular system to educate all children.

For SWDs this means moving away from separate special education placement and towards full time placement in general education with appropriate special education supports within that classroom (Garvar-Pinhas & Schmelkin-Pedhazur, 1989; Lipsky & Gartner, 1996). Currently this is often achieved through co-teaching. Inclusive Education allows access to the general education curriculum by providing all students in these classrooms the unique supports and services they need, such as adaptations and modifications to the delivery of instruction, more frequent checks for understanding, scaffolded materials, breaks, extra time, teacher modeling, explicit instruction of concepts

and directions, pre-teaching of prerequisite skills required to participate in the lesson, assistive devices, and sometimes teacher assistants. However, in an inclusive classroom the general education content and standards of the lesson remain the same for all students.

The benefits of an inclusive classroom reach farther than meeting federal mandates and academics. Academics are not the only learning in an inclusive classroom. There is an increased focus on social inclusion as well. In a qualitative study of 14 middle and high school students with Down Syndrome in an inclusive classroom, Cuckle and Wilson (2002) found that the SWDs spoke positively about friendships and having role models among their non-disabled peers. This finding indicates positive social gains which would not be possible in a separate learning environment.

In studies that compared different settings for SWDs, the more inclusive approach has been found to benefit students on a range of social factors such as friendship, loneliness, self-perceptions and social skills (Efthymiou, & Kington, 2017; Hayes & Bulat, 2017; Wiener & Tardiff, 2004). SWDs often struggle with these basic social skills that cannot be learned if kept in isolation with other SWDs who also have delays in developing social skills. SWDs in inclusive settings were also found to have better attendance than SWDs in more restrictive settings, as well as equivalent levels of suspension to their non-disabled peers (Rea, et al., 2002). These results should serve to ease fears often voiced by educators who oppose the idea of SWDs attending general education classrooms. Wallace, Anderson, Bartholomay, and Hupp (2002) studied 118 inclusive classrooms and found that students with and without disabilities had about the same levels of academic engagement and also about the same low levels of inappropriate

behavior. Even when Wallace et al., (2002) conducted a study that placed SWDs with "severe emotional disturbance" into an inclusive science class, no behavioral problems were found and the academic success of the SWDs was equivalent to that of the general education students. When given the proper supports and structure with high quality engaging and individualized instruction, SWDs' behavior will not be any worse than their general education peers, and should not disrupt or slow the pace of the general education curriculum.

Inclusive classrooms, such as co-teaching settings, benefit children with disabilities by having peer role models for behavior and social skills, but they also lead to increased achievement academically (Baker, Wang & Walberg, 1994; Tomko, 1996). SWDs in inclusive settings have achieved significantly higher levels on a range of academic measures compared to SWDs in more restrictive settings (Waldron & Cole, 2000; Rea, et al., 2002). Myklebust (2002) found after 3 years in inclusive settings 40% of SWDs were performing on grade level compared to only 10% of SWDs who were in more restrictive settings. The achievement gap between included and excluded SWDs is significant and continues to grow overtime.

Inclusion is not detrimental to students without disabilities. Actually, inclusive education has been found to benefit all students, not just the SWDs (Downing, Spencer & Cavallaro, 2004; Buckley, Bird, Sacks & Archer, 2002; NCERI, 1995). A 1995 study by the National Center on Education Restructuring and Inclusion (NCERI) which involved 891 school districts in all 50 states reported students without disabilities benefitted from inclusion academically, behaviorally, and socially. A possible reason for improved educational outcomes for students without disabilities in inclusive classrooms is that they

benefit from having special education staff in the classroom. In a research review, Hayes and Bulat (2017) found that additional staff allows for more differentiated learning techniques and accommodations such as increased opportunities for small-group learning, more individualized instruction, the adaptation of academic material, visual schedules, manipulatives, and comprehension strategies. Additionally, in another research review it was found that general education students' academic and social performance is equal or better in inclusive settings (Hicks-Monroe, 2011). In a study of 12 schools from across Indiana representing urban, suburban, and rural environments, Waldron and Cole (2000) compared inclusive and resource/pull-out programs in grades two through five. Their study included 428 SWDs and 607 students without disabilities. They found students without disabilities educated in inclusive settings made significantly greater academic progress in mathematics, while in reading their progress was not significantly different from those who were educated in traditional settings such as resource or pull-out programs. Nearly 50 years of research in the United States and other high-income countries has demonstrated that inclusive education benefits not only SWDs, but also students without disabilities (Hayes & Bulat, 2017).

The research is clear that the majority of special needs students benefit socially and academically from being included with non-disabled students, and taught to the general education curriculum. In fact, no study conducted since 1970 has shown that SWDs who are educated in special classrooms separated from non-disabled students perform better academically than SWDs educated in inclusive classrooms (Hayes & Bulat, 2017). Additionally, the amount of time a SWD spends in an inclusive classroom has been correlated with higher math and reading test scores, less disruptive behavior,

and increased future employment. This correlation has been found regardless of the type of disability or its severity (Wagner, Newman, Cameto, Levine, & Garza, 2006). These findings show that everyone involved in inclusive schooling can benefit from the experience (Okongo, et al., 2015), and this is why Inclusive Education continues to be the gold standard for educational systems and their leaders worldwide (Marope, 2014; Opertti, Brady & Duncombe, 2009; The United Nations Education, Science and Culture Organization, 2015).

There are many types of inclusive programs schools can provide. In 2012, The New York City Department of Education (NYCDOE) released a Flexible Programming Guide which identifies 10 programming options they offer. Six of those programs are inclusive, allowing SWDs to be taught in general education classrooms. Schools may program students full-time or part-time between these inclusive programs. The NYCDOE (2012) calls this practice Flexible Programming, and defines it as "using the full continuum of services to meet each student's needs in the least restrictive environment appropriate." When flexible programming is used effectively, the committee on special education will tailor special education programs, individualized for each student, with a focus on increasing access to the general education curriculum. That is to say a student may be scheduled part time in different programs if it meets their needs and increases their access to general education. One example of flexible programing is that it allows students to be educated in self-contained classrooms for part of the day but receive general education classes for subjects where the student has shown ability meet grade level learning standards with supports. Of the 10 special education programs and services offered by NYCDOE schools, six of them either directly provide inclusion to the

general education classroom or may be flexibly programed to allow part time inclusion. Those six programs are:

- *General Education with Supplementary Aids and Services* is when SWDs receive support from various special education providers such as materials, devices, and instructional adaptations, that enables them to be educated within a general education class.
- *Declassification Support Services* is a decertification from special education with the provision of appropriate support services for up to one year following the declassification in order to help the student transition out of special education. Support services include but are not limited to speech or language services, counseling, testing accommodations, and instructional modifications.
- *General Education with Related Services* is designed to help SWDs benefit from general education instruction while receiving related services as needed, such as speech or language services, counseling, and occupational or physical therapy.
- *General Education with Special Education Teacher Support Services (SETSS)* is designed to utilize the combined expertise of the general and special education teacher. In this model the special educator makes modifications to the general education instruction that accommodates specific needs of SWDs. SETSS is the most flexible program as it can be provided in three ways. The first two ways are both considered Direct SETSS where the special education teacher works with students directly, either by pushing in to a general education class, or pulling students out to a separate location or classroom in a group of eight of fewer students. The third way is considered Indirect SETSS, when the special education teacher plans with the general

education teacher to accommodate SWDs, but is not in the classroom during instruction.

- *Integrated Co-Teaching (ICT)* is an integrated program where SWDs and general education students are taught in the same classroom with a special education and general education teacher. ICT may be provided either full-time, for less than an entire day, or on an individual subject basis.
- *General Education Part-Time and Special Class Support Part-Time* provides SWDs with instruction in a special class setting for up to 50% of the day, with the remainder of the day spent in general education classes. During the time spent in the special class the special education teacher provides direct/specialized instruction services in a separate, self-contained setting. While in the general education classes the student will receive supplementary aids and services including SETSS.

All of these programs and services satisfy the right to an inclusive education in the students' most appropriate LRE. The addition of flexibly programming these services adds to the school's ability to individualize instruction on a student by student basis. In reviewing the six inclusive programs offered in the NYCDOE, only ICT programs involve two teachers co-generating and delivering instruction full-time. Only co-teaching involves developing a partnership in which the relationship of the teachers has become an integral part of student achievement (Ambrosetti, et al., 2014; Kusuma-Powell & Powell, 2015). As such, this study will focus on the co-teaching setting.

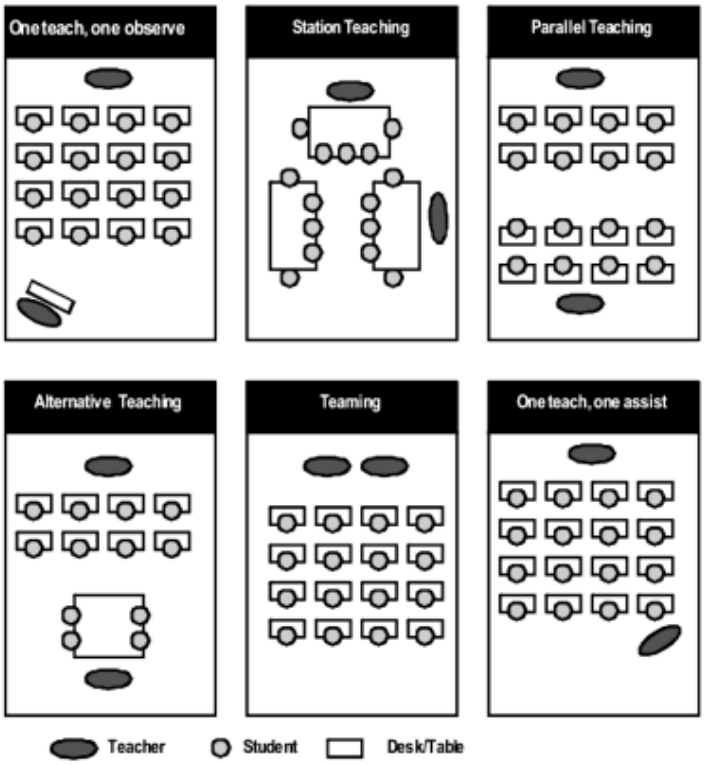
An Overview of Co-Teaching

Co-teaching is a special education service delivery vehicle (Friend et al., 2010). In co-taught classes, both teachers plan and deliver instruction together. Researchers have identified six approaches for co-teaching for SWDs, as defined by Friend and Cook (2010) below, and illustrated in Figure 4.

- *One Teach, one Observe* is an approach where one teacher leads instruction for the entire class while the other gathers data on specific students' academic, behavioral, or social levels of performance.
- *Station Teaching* is when instruction is divided into three areas of the classroom and students rotate from station to station, with teachers leading two stations and students working independently at the third.
- *Parallel Teaching* has both teachers, each leading a group of half the students in the class, present the same content to their group in order to offer greater instructional differentiation and increase student participation.
- *Alternative Teaching* asks one teacher to work with most students while the other works with a small group for a specific purpose such as assessment, preteaching, intervention, enrichment, remediation, or another purpose.
- *Team teaching* has both teachers leading the whole class instruction simultaneously through lecturing, representing opposing views in a debate, illustrating two ways to solve a problem, and so on.
- *One Teach, One Assist* is when one teacher leads instruction for the whole class while the other circulates among the students offering individual assistance, prompting, refocusing, and repeating of directions to name a few.

Figure 4

Co-Teaching Approaches



Note: From M. Friend & W. D. Bursuck, 2009, Including Students With Special Needs: A Practical Guide for Classroom Teachers (5th ed., p. 92). Columbus, OH: Merrill.

Selection of these approaches is based on student needs and instructional objectives (Friend & Cook, 2010). Within the six models the roles of the teachers are fluid with either teacher delivering instruction to SWDs or general education students, and either teacher delivering content instruction. Students within these models are grouped flexibly, switching between heterogeneous and homogeneous groups depending on the lesson objectives, learning activities, and needs of the students. In co-teaching, the general educator brings key instructional pieces such as content expertise, and curriculum

competencies and standards. The special educator adds expertise in the pedagogical process of learning and highly individualized nature of students' needs (Friend et al., 2010). Significant differences in the areas of expertise of the co-teaching professionals complement each other and are meant to add value to all learners in the classroom.

Importance of the Co-Teaching Relationship

Co-teaching is a significant adjustment for educators as teaching is typically conducted independently by one teacher in each classroom. It can be difficult for teachers to adjust to sharing responsibilities, and understanding their roles within a co-taught classroom. In other words, due to the individualistic nature of being a classroom teacher, it can be difficult for teachers to learn to work together. When two teachers are assigned to a single classroom, their roles often go undefined leading to confusion (Moorehead & Grillo, 2013). Confusion may lead to resentment regarding who is doing more work in the classroom. In a statewide survey of general and special education co-teachers, each group saw itself as having more responsibilities than the other for instructional and behavioral management (Fennick & Liddy, 2001). For both general and special education teachers to be an effective co-teaching pair, an identification and understanding of roles and responsibilities must occur (Dieker, 2001).

Understanding each other's' roles and responsibilities may take significant planning and discussion time between the teachers. However, co-teachers have reported that a lack of planning time is a significant problem often caused by a lack of administrative support in scheduling this time (Correa, Jones, Thomas, & Morsink, 2005; Dieker & Murawski, 2003; Eaton, Salmon, & Wischnowski, 2004; Keefe & Moore,

2004; Mastropieri et al., 2005; Trent et al., 2003). Furthermore, this situation has not changed over time, as older studies have stated the same issues with lack of planning time (Scruggs & Mastropieri, 1996; Walther-Thomas & Bryant, 1996; Walther-Thomas, 1997).

Without co-planning, teachers are not able to co-deliver instruction as required by four of the six co-teaching models. Without co-delivered instruction, a majority of co-teaching teams rely primarily on the two models that lean heavily on one teacher, the One-Teach/One-Support approach, and the One-Teach/One-Observe approach, with the special educator always in the support role (Weiss & Lloyd, 2002). When the special educator assumes a support role they are often treated as "glorified assistants" who are then unable to make pedagogical contributions to the lesson (Dieker, 2001; Murawski, 2009; Walther-Thomas, 1997) which are mandated for SWDs. The general educator will then have to carry most of the instructional load which is not best for an inclusive classroom because they are often not prepared to teach to SWDs, due to lack of experience and professional development training (Moorehead & Grillo, 2013). In these instances when special education co-teachers do not assume roles equal to their general education teacher counterparts, confusion about roles and responsibilities is increased (Rice & Zigmond 2000). Gerber & Popp (1999) stated that in situations where teachers cannot co-plan and co-teach a lesson, as students are often provided different explanations from different teachers which may lead to student confusion.

Qualitative research has revealed the importance of communication and collaboration between co-teachers. Keefe and Moore (2004) studied high school teachers' perceptions of co-teaching by interviewing eight co-teachers. Some interview

questions asked to co-teachers were: “Describe and inclusive classroom.”, “Tell me about a typical day in your classroom”, “What are the roles and responsibilities of the special and general education teachers in this classroom?”, and “How did you decide on these roles and responsibilities?” One theme revealed in this study was co-teaching pairs who did not demonstrate collaboration and communication struggled to understand their roles and responsibilities. Scruggs et al., (2007) similarly concluded that co-teacher teams who did not demonstrate collaboration struggled to work out? past differences in teaching styles which lead to conflict instead of compromise. In both studies, teachers described a trend of special educators taking on the role of helper rather than co-teacher, which prevents all students from receiving the benefits of a co-taught lesson. As a result, the researchers found little benefit to SWDs was occurring in these classes.

Magiera, Smith, Zigmond & Gebaner (2005) performed an observational study of middle school teachers and also found that without good communication and collaboration, teachers in a co-teaching pairing struggle to understand their roles and responsibilities. Using time sampling methodology, results showed that the general education teacher spent less time working with SWDs when the special education teacher was in the room. Magiera, et al. (2005) determined that the co-teachers had little planning time to prepare for their roles and spent the majority of instructional time with students in large groups rather than one of the six co-teaching models. It seems like a simple matter for teachers to share their expertise with each other so a diverse group of students can learn more than might be possible if either teacher had sole responsibility, but such is not the case (Friend et al., 2010).

The co-teaching relationship is not only crucial to the success of the students, but it is complex and personal for the teachers involved (Kohler-Evans, 2006). Co-teachers should have the collaboration skills to facilitate the negotiation of roles and responsibilities in co-taught classrooms, in addition to the knowledge to provide the necessary instructional supports for students with disabilities. Without both sets of skills, it is more likely that the special educator will remain acting as a classroom assistant rather than become an instructional partner (Friend, 2007; Scruggs et al., 2007). In short, an identification and understanding of roles and responsibilities must occur for both general and special education teachers to be effective instructional agents in the co-teaching process (Dieker, 2001). The better understanding between the two teachers, the better their practice will be (Shin, Lee & McKenna, 2016).

Relationship Between Prior Research and Present Study

The current study seeks to extend previous research on the co-teaching relationship. Previous scholarship in this field has suggested a need for future research on improving the co-teaching relationship (Brendle et al., 2017; Kilanowski-Press et al., 2010; Hamdan et al., 2016). Schools need to know how they can best develop and support co-teaching relationships (Scruggs & Mastropieri, 2007), however there is no evidence based method, process, or criteria for doing that (Keefe & Moore, 2004; Kamens et al. (2013). Prior scholarship has called for research that examines the perceptions of teamwork between co-teachers (Scruggs et al., 2007), and the current study intends to satisfy that need. The current study will apply Tuckman's (1965) stages of small group development in order to quantify co-teachers perception of teamwork and

to provide a structure for analyzing how to support them in progressing to the next stage. The current study will also examine the extent to which relationship duration, primary role, collaborative environment, and enjoyment predict in what stage of development co-teachers will be. Tuckman's stages applied to these variables will help schools to make more informed decisions around creating and supporting their co-teacher's relationships.

The current study will also address shortcomings in the extant in literature by studying the co-teachers perceptions of teamwork. The co-teaching relationship is significantly tied to student achievement (Gerber & Popp, 1999). However, there has been insufficient research conducted specifically on how to develop and support two professional co-teachers' relationship (Brendle et al., 2017; Hamdan et al., 2016; Kamens et al., 2013; Keefe & Moore, 2004; Kilanowski-Press et al., 2010; Scruggs et al., 2007). Previous research has come close to studying how to improve co-teachers relationships, and these studies served to help build the framework for the current research. Chitiyo & Brinda (2018) studied how prepared teachers are to use co-teaching models. They found no difference in those who had co-taught before and those who had not in their preparedness to co-teach. They did not study why prior co-teaching experience did not affect teachers' preparedness. The current study will use prior teaching experience and prior co-teaching experience as covariates while examining other factors that may predict teachers' ability to work together such as teachers' enjoyment of co-teaching, collaborative environment, their primary role, and their relationship duration. Pettit (2017) examined the effect of time together on teamwork and found that student teachers with greater co-teaching time reported greater team equity and clearer team goals. The current study will examine if the same effect is true in two professional co-teachers.

By addressing shortcomings in previous literature and expanding on prior studies, this study will contribute to the research in the area of special education. This study will help provide evidence based procedures for developing collaborative partnerships between co-teachers. The current study will also contribute possible criteria for best pairing co-teachers to lead towards greater teamwork and collaboration. Schools and districts need to know how to best pair and support their co-teachers relationships (Scruggs & Mastropieri, 2007) and this study intends to provide a framework for that.

Chapter 3

Introduction

The purpose of this chapter is to discuss the research methods for this ex post facto study regarding how teaching experience affects perceptions of teamwork. This research design allowed for a deeper understanding of how teachers' previous classroom experiences, such as years paired with their current co-teacher, years spent co-teaching, and years teaching in total, affect their current perceptions of teamwork in their co-teaching partnership. This chapter will provide an explanation of the research design as an ex post facto study, and describe the independent variables, covariates, and dependent variables to be employed by the present research. An outline of the data analysis procedures will be provided, discussing how a multiple regression was the appropriate analytical approach, as well as the steps taken to enhance validity, reliability, and trustworthiness of the study. This chapter will then discuss the sample population of co-teachers and recruitment efforts utilized to obtain subjects. I then discuss how the instrument employed in this study, the TTMQ, was adjusted to provide a greater focus on co-teaching. Data collection methods will be recounted as this study employed Google Forms to host and distribute TTMQ. Finally, steps taken to ensure participant confidentiality, voluntary participation, and obtaining informed consent will be described.

Methods and Procedures

Research Questions

1. To what extent are relationship duration, primary role, collaborative environment, and enjoyment related to the stage of forming within a co-teaching setting?
2. To what extent are relationship duration, primary role, collaborative environment, and enjoyment related to the stage of storming within a co-teaching setting?
3. To what extent are relationship duration, primary role, collaborative environment, and enjoyment related to the stage of norming within a co-teaching setting?
4. To what extent are relationship duration, primary role, collaborative environment, and enjoyment related to the stage of performing within a co-teaching setting?

Hypotheses

H_0 1: There will be no significant association between perceptions of the individual stages of team maturity (forming, storming, norming, performing) by relationship age, primary role, enjoyment, and collaborative environment.

H_1 1: There will be significant association of perceptions of the individual stages of team maturity (forming, storming, norming, performing) by relationship age, primary role, enjoyment, and collaborative environment.

H_0 2a: There will be no significant association of perceptions of the individual stages of team maturity (forming, storming, norming, performing) by relationship age.

H_1 2a: There will be significant association of perceptions of the individual stages of team maturity (forming, storming, norming, performing) by relationship age.

H_0 2b: There will be no significant association of perceptions of the individual stages of team maturity (forming, storming, norming, performing) by primary role.

H_1 2b: There will be significant association of perceptions of the individual stages of team maturity (forming, storming, norming, performing) by primary role.

H_0 2c: There will be no significant association of perceptions of the individual stages of team maturity (forming, storming, norming, performing) by enjoyment.

H_1 2c: There will be significant association of perceptions of the individual stages of team maturity (forming, storming, norming, performing) by enjoyment.

H_0 2d: There will be no significant association of perceptions of the individual stages of team maturity (forming, storming, norming, performing) by collaborative environment.

H_1 2d: There will be significant association of perceptions of the individual stages of team maturity (forming, storming, norming, performing) by collaborative environment.

Research Design

This study sought to answer the question "To what extent does teaching experience affect perceptions of teamwork within a co-teaching relationship?" This question requires no formal treatment as participants already acquired continuous levels of experience co-teaching together, co-teaching with others, and teaching in general. The current research was conducted as an Ex Post Facto study that compared groups of

subjects in a Criterion Group Design. The Ex Post Facto design is ideal for conducting research when it is not possible to manipulate characteristics of human participants, and when a true experimental or quasi experimental design would not be practical or ethical (Simon & Goes, 2013). This research used the independent variables of relationship duration, primary role, collaborative environment, and enjoyment, in addition to the covariates of years of teaching experience and years of co-teaching experience, and grade level, to examine their effect on the dependent variables of forming, storming, norming, and performing.

In alignment with the theoretical framework of Bruce Tuckman's model of small group development (1965), a similar version of the TTMQ conducted in Aydin and Gumus' (2016) study was used to collect co-teachers' perceptions of their teamwork. The TTMQ provided separate scores in each of Tuckman's original four stages of team maturity; forming, storming, norming, or performing. To answer the research questions, this study grouped participants based on their responses to survey questions. Tables 1 and 2 show each independent variable and covariate with their corresponding categorical groupings.

Table 1

Categorical Groupings of Independent Variables

Independent Variables	Groups
Relationship Duration	0-1
	2
	3+
Primary Role	Special Educator
	General Educator
Collaborative Environment	Inconsistent
	Consistent
Enjoyment of Co-teaching	Dislike
	Like

Table 2

Categorical Groupings of Covariates

Covariates	Groups
Years of Teaching Experience	0-4
	5-10
	11+
Years of Co-teaching Experience	0-4
	5+
Grade Level	Elementary School
	Middle School
	High School

Criterion Group Design was chosen for this study because this research required a comparison of categorical independent variables, and could not include random assignment of subjects nor required any treatment. There were four independent variables for this study. The first was relationship duration which will quantify how long a co-teacher pair has been together. The groupings for this variable were 0-1 year, 2, and 3+. The next independent variable was primary role which sorted participants into two groups as either special education teachers or general education teachers. Another independent variable in this study was collaborative environment. This variable captured the teachers' perceptions of how much they are encouraged to, or expected to, collaborate within their school community. For this variable participants were sorted into 2 groups consisting of teachers who replied their school is a consistent collaborative environment or inconsistent collaborative environment. The final independent variable was enjoyment of co-teaching. This variable captured teachers' feelings towards co-teaching and sorted participants into two groups which were dislike, and like.

This study used three covariates to control for extraneous variance. The first covariate was years of teaching experience which grouped teachers based on how many years they have been working professionally as a teacher in any setting. There were three groups for this covariate and they included 0-4 years, 5-10, and 11+. The second covariate was years of co-teaching experience. This covariate captured how many years a teacher has been assigned to a co-teaching classroom. There were two groups for this covariate which were 0-4 years, and 5+. The last covariate employed in this study was grade level which refers to the range of grades in which a teacher may work. There were three groups for the covariate Grand Level: Teachers of grades K-5 were sorted into the

group elementary school. Teachers of grades 6-8 formed the group middle school. The high school group was comprised of teachers from grades 9-12. Teachers selected elementary, middle, or high school based on the grade they teach regardless of the grades offered in their school. For example a teacher in a k-8 school who taught grade 6 would be grouped in the 6-8 middle school grade level. Groupings for grades, years of teaching experience, years or co-teaching experience, and relationship duration were used to avoid possible re-identification of subjects.

The dependent variables for this study were the four Tuckman stages of team maturity, forming, storming, norming, and performing. The TTMQ provided a separate saw score in each of the subscales related to the four stages. The raw scores on each subscale of the TTMQ were used as dependent variables. Four regressions were conducted, each using the four independent variables and three covariates being regressed upon one of the dependent variables (the raw scores from the TTMQ subscales for forming, storming, norming, and performing).

Data Analysis

This study employed four multiple regressions to address the four hypotheses. A multiple regression was selected in order to inferentially compare coefficients across outcomes. Hierarchical regressions were conducted in order to measure the unique contributions of the independent variables of interest (relationship duration, primary role, collaborative environment, enjoyment of co-teaching), which were added in the second model to examine if they explained away any significance in covariates (years of teaching experience, years of co-teaching experience, grade level), and compared how

each model affected and predicted change in four dependent variables (forming, storming, norming, performing). All categorical variables were run as dummy variables during the multiple regressions. The covariate teaching experience placed two groups (0-4 years, 5-10 years) into the first model and held one group (11+ years) as a reference. The covariate co-teaching experience placed one group (0-4 years) into the first model and held one group (5+ years) as a reference. The covariate grade level placed two groups (middle school, high school) into the first model and held one group (elementary school) as a reference. Two groups from the independent variable relationship duration were placed into the second model (2 years, 3+ years) and held one group as a reference (0-1 years). One group from the independent variable primary role (general education teachers) were added to the second model and one group (special education teachers) were held as a reference. One group from the independent variable collaborative environment (inconsistent) was added to the second model and one group (consistent) was held as a reference. Finally, one group from the independent variable enjoyment of co-teaching (dislike) was added into the second model while one group (like) was used as a reference.

For this study the alpha level was set to .05. In order to reach a large effect size (Pearson's r = .50), and a statistical power level of .80, the number of participants in each group must be at least 26, which was achieved in all but one group. The high school group in the covariate grade level had 25. The total number of survey responses collected was 120. The total number in each group is shown in Table 3 and Table 4 in the Sample and Population section of this chapter. Data was screened for coding errors to ensure codes for categorical variables were correct and match the data. The researcher then

screened for missing data. Less than 5% of cases were missing so a listwise default was used to delete five cases. No outliers were found using Cook's D +/- 1.0 (Cook, R.D., 1977). Tests to see if the data met the assumption of multicollinearity indicated this assumption was not violated as all variables produced tolerance scores above 0.40 (Allison, 1999), and VIF scores between 1.0 and 10.0 (Baguley, 2012). The data did not violate the assumption of independent errors as all Durbin-Watson values were between 1.5 and 2. The histograms of standardized residuals for each multiple regression showed the variance of the residuals were approximately normally distributed, meeting the assumption of homoscedasticity. The P-P plots of standardized residuals for each multiple regression indicated all points closely followed the line which meets the assumption of normally distributed errors. The result was all assumptions not being violated and 115 remaining cases being included in the study.

Reliability and Validity of the Research Design

Statistical Validity

The current study met the criteria for statistical power using an alpha level of .05, a large effect size (Pearson's r = .50), and a statistical power level of .80. The number of participants needed in each group was 26. As stated earlier, this study met that criteria in all but one group. The group of high school subjects in the covariate of grade level was 25. The other 16 groups all had between 27 and 85 participants. The current study used a reliable measure of the dependent variable. The four subscales of the TTMQ were tested separately for reliability. Internal consistency analysis on the modified scales

yielded a Chronbach's *a* coefficient of .733 for forming and .752 for storming, which is considered acceptable, as well as .859 for norming and .896 for performing, which is considered preferred (Cortina, 1993). No assumptions were violated by this data.

Internal Validity

This study used a convenience sample of subjects to increase the internal validity of the design. Convenience sample was achieved by recruiting the superintendents of the eight community school districts and then allowing them to forward the invitation to participate to their principals who would then forward to co-teachers. Due to the ex post facto design, groups of participants were created based on their prior experiences, rather than the researcher placing subjects into groups. This recruitment process and research design assisted in enhancing the chance that the subjects in the study represented the greater population. This research avoided threats to selection, the chance that differences among the dependent variable means might have reflected prior differences among the subjects assigned to the various levels of the independent variable (Kirk, 1982) because the current research intended to study prior differences of subjects assigned to various levels of the independent variables.

Data collection for this study lasted two weeks, with each subject participating once, for an approximate 10-15 minutes while completing the TTMQ. This timing helped strengthen internal validity by reducing the effects of subject maturation, mortality, and testing. Subject maturation, a process of change within subjects that happens over the course of time (growing older, more experienced, forming new opinions) which may affect dependent variable outcomes (Kirk, 1982), would be of

limited concern in only two weeks of data collection. Similarly, mortality refers to the loss of subjects as they withdraw from the study over time (Kirk, 1982), would minimally factor in this study since they only participated once for approximately 10-15 minutes. Finally, as subjects were only required to complete the TTMQ once, the threat of repeated testing resulting in familiarity with the test or acquisition of information that can affect the results (Kirk, 1982), was significantly reduced.

External Validity

External validity was strengthened through the use of a single testing rather than repeated testing over time. Results obtained under conditions of repeated testing may not generalize to situations that do not involve repeated testing (Kirk, 1982). Pretests may sensitize subjects to a topic, or even diminish subjects' sensitivity to a subject, and either enhance or diminish the effectiveness of the treatment. Testing only once decreased the risk of sensitizing or desensitizing subjects to the topic of the study and thus strengthened the external validity of the current research.

The ex post facto design of this study also served to strengthen external validity by removing the threats commonly associated with the study of treatments. The current research design served to reduce the risk of multiple treatment interference. When subjects are exposed to multiple treatments, the results may only generalize to populations that were exposed in the same manner and to the same combination of treatments (Kirk, 1982). By studying prior experiences and current perceptions of subjects' professional relationships this study reduced threats to external validity.

The current study's methods for data collection also benefited external validity by lessening the risk of selection and treatment interaction. The constellation of factors that may affect the availability of subjects to participate can restrict the generalizability of the results only to populations that share the same constellation of factors (Kirk, 1982). The employment of an online survey that subjects can complete from anywhere at any time, and a generous two week window for completion, diminished the likelihood that the results of this study were influenced by a subject population that was only available at a certain time or location to complete a survey.

The Sample and Population

Sample

New York City is the largest school district in the United States. With over one million students enrolled, it is larger than the second and third largest school districts in the country, Los Angeles and Chicago, combined (United States Census Bureau, 2019). However there is a disproportionately large special education population. Over 200,000 students are eligible for special education in New York City, accounting for more than 20% of the total student population. The percent of students who receive special education is also the largest in the country, 19% compared to 14% in Chicago and 12% in Los Angeles (Research Alliance for New York City Schools, 2019). With the largest special education population in the country, the New York City public school system is a logical choice to study special education instructional settings such as co-teaching classrooms.

New York City is comprised of 32 smaller community school districts each with varying likelihood of students receiving special education instruction. For example the percentage of SWDs ranged from less than 5% in District 26 in Queens, to over 25% in District 4 in East Harlem (Research Alliance for New York City Schools, 2019). For this reason the current study surveyed co-teachers from multiple school districts within New York City. Participants included special educators as well as general educators who were currently paired with a co-teacher in a co-teaching classroom. Co-teachers from grades k-12 within eight community school districts were invited to complete the TTMQ and participate in the study. Participants were comprised of a diverse socio-economic and racial group, ranging in ages from approximately 22 to 55 years old.

In order to obtain the sample of participants for this study, a recruitment email was originally sent from the researcher's university email address directly to the eight superintendents overseeing the districts in this study. The superintendents email addresses were publicly available and acquired from their district websites. The recruitment email sent to superintendents can be found in Appendix E. In the superintendent recruitment email, the researcher introduced himself as a doctoral candidate and explained the purpose of the study was intended to examine the affect of teaching experience on co-teaching teamwork. The email went on to explain that the study was anonymous and will not collect names, email addresses, or any other identifiable information from participants. The researcher then asked any interested superintendents to forward the survey to their principals to share with all co-teachers. Instructions for forwarding the recruitment email to principals and teachers was provided. Instructions included not adding or altering the language in the email, and to forward it

by simply stating "Dear Principals, please forward to co-teachers (referring to the invitation email)." In order to avoid any undue influence, the invitation email immediately made clear that teachers' employers (principals and superintendents) do not expect or require participation, and no one but the researcher will receive results should teachers choose to participate.

The recruitment email then directed attention to the link to participate in the study. The link opened a Google Survey which began with the adult consent form to participate in a research study. The consent form, found in Appendix C, included the title, purpose, and procedures of the study, as well as the researcher's contact information should participants need it. The consent form went on to explain steps to ensure confidentiality of participants such as how the survey will collect no identifiable data from participants, and all collected data such as survey responses were to be coded and secured using a password protected Google drive. The consent form explained there would be no payments for participation, outlined participants' right to refuse participation or withdraw at any time, and the right to ask questions or report concerns at any time, including contact information for the University Internal Review Board chair. Those who chose to participate provided consent electronically by answering the question "Have you read, understood, and agree to participate in the research study described above?" by selecting the response "Yes, I agree to be in the research study described above." It was not required of them to sign their name in order to protect anonymity. After electronically signing consent, the survey allowed participants to proceed to the survey. Google survey did not ask for identifying information from participants and the settings were adjusted to exclude their email addresses as well.

One week after initial recruitment emails were sent to superintendents and forwarded to principals and then to co-teachers, the researcher sent a second recruitment email directly to principals. The email to principals was an identical copy of the email sent to superintendents, just addressed to principals instead. Principals' email addresses were publicly available on school websites. Principals were asked to forward the survey directly to co-teachers if they have not done so already. Once again they were reminded not to add or alter the language in the email in any way and to simply forward by stating "dear co-teachers, please see below (referring to the invitation email)." In order to avoid any undue influence, the invitation email immediately made clear that teachers' employers (principals and superintendents) do not expect or require participation, and no one but the researcher will receive results should teachers choose to participate. The survey was left open and collected data for 2 weeks following the initial recruitment email to superintendents.

Table 3

Description of Participants in Independent Variable Groups

Independent Variable	Group	N	%
Relationship Duration	0-1	60	50
	2	28	23.3
	3+	32	25.8
Primary Role	Special Educator	80	66.7
	General Educator	40	33.3
Collaborative Environment	Inconsistent	33	27.5
	Consistent	87	72.5
Enjoyment of Co-teaching	Dislike	43	35.8
	Like	77	64.2

Table 4

Description of Participants in Covariate Groups

Covariates	Group	N	%
Years of Teaching Experience	0-4	35	29.2
	5-10	39	32.5
	11+	46	38.3
Years of Co-teaching Experience	0-4	64	53.3
	5+	56	46.7
Grade Level	Elementary School	54	45
	Middle School	41	34.2
	High School	25	20.8

Population

The sample was drawn from a population of professionally licensed teachers employed in New York City's public schools and specifically assigned to co-teaching

classrooms. The population included grades k-12 and both special education and general education teachers. There was no age limitation for participation. Participants ranged in age from approximately 24-55 years old. Specific community school districts were targeted to participate due to the economic and racial diversity of their neighborhoods, which would enhance the generalizability of results.

Instruments

The method of data collection was through completion of the TTMQ by individual co-teachers from eight community school districts. The TTMQ normally takes approximately 10 minutes to complete. Aydin and Gumus (2016) cited Clark (1997) as the developer of the TTMQ which was based on Tuckman's model of small group development. Aydin and Gumus (2016) used an unpublished version of the TTMQ revised by Gunawardena, et al. (2001), in a study with 118 online college students assigned to group work in the same course. This study reported their version of the TTMQ obtained an internal consistency reliability Cronbach's *a* coefficient of .91. Barkema and Moran (2013) published a version of the TTMQ on the Public Health Foundation's website. This version contains 32 items on a five point Likert scale, divided into four subscales, each providing a score for Tuckman's original four stages of team maturity: forming, storming, norming, and performing.

Barkema and Moran's 2013 version of the TTMQ was not designed specifically for co-teachers, but rather small groups in general which may include teams from corporate, labor and political fields. As such, the wording of the questions was vague in order to be accessible to all types of teams from any field of collaboration. However

some of this wording would be confusing or irrelevant to co-teachers. Four survey items included statements about the "team leader" while co-teaching relationships have no leader. For example, item #7 in the subscale of storming stated "The team leader tries to keep order and contributes to the task at hand." In addition, there were some other survey items that asked about the team "project" which is not how co-teachers view the tasks of delivering instruction or raising student achievement and would lead to confusion. For example item #24 from the norming subscale stated "The team is often tempted to go above the original scope of the project." As a result it was determined that some questions should be reworded to avoid confusion and relate more specifically to co-teachers.

In order to improve the validity of this instrument for the current study, a team of experts in the field of co-teaching were assembled to review and re-word some survey items. The team consisted of nine members. Each team member was currently employed as a district level instructional coach specializing in co-teaching. All team members had more than 10 years of experience in the field of co-teaching. Each team member had previously taught in a co-teaching setting before becoming a district level coach. Two team members pursuant to their doctorate degrees had previous experience in survey construction. Four team members were familiar with the Tuckman stages of team maturity and used them as a resource to coach co-teachers. The other five members were given resources such as Tuckman's (1965) research article and PowerPoints explaining the stages created by district coaches. After reading through these materials the nine member team engaged in a discussion protocol to norm their language and understanding of the topic.

The discussion protocol used was the Making Meaning Protocol created by School Reform Initiative (SRI). SRI specializes in adult learning research and has developed discussion protocols as a resource to help guide adult learning. Discussion protocols assist in providing equity of voice in group discussions which provides multiple perspectives on a given topic and leads to a deeper understanding. The goal of Making Meaning Protocol was to lead the conversation towards creating a shared group understanding of the given text. Team members read through the TTMQ looking for items with language not applicable to co-teaching. Following the steps of the Making Meaning Protocol, team members discussed the TTMQ items in four rounds: (1) describing the items in low inference statements, (2) asking questions about the items, (3) speculating on the meaning / significance of the items, (4) discussing implications for keeping or changing the wording of each item.

This discussion yielded additional reasons why items should be reworded. Reasons for rewording items included those that would have to be recoded. For example item #1 in the subscale of forming stated "We try to have set procedures or protocols to ensure that things are orderly and run smoothly." However, most groups in the forming stage would not have set procedures determined yet. As a result most participants who are in the forming stage would rate this question with a low score resulting in a lowering of their raw score for forming, when in fact a low rating on this item would indicate the participant demonstrates characteristics found in the forming stage. Another reason for rewording an item was to avoid strong or leading wording such as item #5 in the forming subscale "Team members are afraid or do not like to ask others for help." Some items that were not deemed relevant to co-teaching were replaced with a new item drawn from

Tuckman's definition of the stage of team maturity relating to the subscale in which the item belongs. For example item #30 in the subscale of norming stated "We often share personal problems with each other." In cases such as these the team created a new item based on Tuckman's definition of norming. The last reason items were targeted for rewording were just to include phrasing related to co-teaching. Following this discussion the team worked together rewording survey items to be more applicable to co-teaching. Internal consistency analysis on the modified scale was conducted and yielded a Chronbach's *a* coefficient of .733 for forming and .752 for storming, which is considered acceptable, as well as .859 for norming and .896 for performing, which is considered preferred (Cortina, 1993).

The co-teaching version of the TTMQ assisted in the exploration of how teaching experience affects perceptions of co-teaching teamwork. There is no other survey published in previous literature that questions co-teachers specifically about the co-teaching relationship and teamwork therein, while also accomplishing the task of quantifying their perceptions of teamwork and providing a common language for discussing the results. This version of the TTMQ was the only suitable instrument for the target population to answer the current study's research questions with validity. In addition, the employment of Google Forms to host the TTMQ online was appropriate for the target population because it served to increase reliability by ensuring participants were familiar with the assessment user interface. Familiarity reduced testing anxiety which in turn increased reliability of results. Google Forms as an assessment format allowed participants to complete the survey at a time and location convenient and comfortable for them. Since the content of the TTMQ asked about personal feelings

towards how they work with their colleagues, it was best for participants to have the option of answering these questions outside of their school building. Freedom to complete the TTMQ in the location and time most convenient to participants allowed for more honest answers and again increased reliability of results. For these reasons Google Forms was deemed the most suitable format for this population to complete the TTMQ.

Procedures for Collecting Data

Data collection for the current study was conducted through the completion of the TTMQ online by co-teachers in eight community districts. In order to survey co-teachers the researcher has taken the following steps. Data collection began by first converting the TTMQ into an online survey on Google Forms to be distributed to subjects. The Google Form containing the TTMQ was given the same title as this study - Improving Co-Teachers' Relationship: How Teaching Experience Affects Perceptions of Teamwork. The survey opened with the New York City Department of Education Institutional Review Board Adult Consent Form to Participate in a Research Study. Subjects reviewed the consent form which informed them of general information about the study, the researchers contact information, potential risks and benefits of participation, steps taken to protect privacy, and subjects' rights. The following question was asked directly following the consent form "Have you read, understood, and agree to participate in the research study described above?" a response of "Yes, I agree to be in the research study described above" linked to all 32 TTMQ items. This response was marked as required meaning subjects must select this response to gain access to the TTMQ.

The second section of the Google Form contained the TTMQ and began with directions to complete the survey. These directions were simply "Think of your current co-teaching relationship when answering the following questions." followed by "Response scale: 1-Almost Never, 2-Seldom, 3-Occasionally, 4-Frequently, 5-Almost Always" all 32 survey items proceeded these instructions with the response scale provided in multiple choice form. None of the survey items in this section were marked as required in case participants felt uncomfortable answering any particular question. At the bottom of this section there were "back" and "next" buttons which allowed participants to retreat to the previous section and reread the consent form, or advance to the final section.

The scoring of the TTMQ consisted of each response on a five point Likert scale counting as a point value. For example, a response of "1-Almost Never" was scored as one point. A response of "2-Seldom" was scored as two points, and so on. The 32 items on the TTMQ consist of four subscales containing eight items in each subscale. Point totals in each subscale are summed to produce a total score for forming, storming, norming, and performing. The lowest possible score on each subscale is eight points while the highest possible score is 40.

The last section of the Google Form was titled "Your Experience" and contained seven questions related to each independent variable and covariate of this study. Once again none of these items were listed as required to minimize potential feelings of discomfort while completing the survey. At the bottom of this page, participants were presented with "back" and "submit" buttons. The "back" button provided participants with the ability to go back and change any TTMQ item responses or even go all the way

back to the consent form again. The "submit" button would share and store their responses on a Google spreadsheet only accessible by the researcher.

In December of 2019 the Google Form was linked in the invitation email to recruit participants which was emailed to eight superintendents of community districts. One week later the same invitation email containing the link to the Google Form was emailed directly to principals of the eight community school districts. The Google Form remained open for two weeks. Subjects were allowed to complete the TTMQ hosted on the Google form anytime within the two week window at their convenience. Due to the TTMQ being hosted online it was available to complete from any location, allowing subjects the ability to complete it in a location most comfortable for them. After two weeks of data collection the Google Form was taken offline by the researcher. The results, stored on a Google Spreadsheet were then uploaded to SPSS for analysis.

Research Ethics

The following steps were taken to ensure participant confidentiality. First, the research design of the study allowed for participants to complete the survey alone, without colleagues, employers, researchers, or anyone else present. Secondly, the Google form did not collect identifiable information. This was accomplished by adjusting the settings to exclude capturing participant email addresses, and not asking for identifiable information such as participant's names, the school where they worked, or in which community district participants were employed.

Additionally, to provide further insurance towards participant confidentiality the survey did ask for certain biographical information related to independent variables and

covariates of this study. These questions were “How many years of teaching experience do you have?”, “How many years of experience do you have co-teaching?”, “How many years have you been paired with your current co-teacher?”, “What grade do you teach?”, and “What is your primary role in your co-teaching relationship?” This information may be used to potentially identify participants. In order to mitigate the risk of potential identification of participants, the multiple choice responses to these biographical questions were grouped together to allow for an additional level of anonymity. For example, rather than capture the exact years of teaching or co-teaching experience, responses were grouped into ranges of 0-4, 5-10, 11-20, and 21+. The choices of response for what grade participants teach was also grouped into ranges of elementary, middle, or high school grades. While the response choices for primary role (special educator or general educator), and years paired with current co-teaching relationship (1, 2, or 3+) were more specific, it was unlikely that information alone could assist in the identification of participants.

Voluntary participation was a concern of the researcher due to the fact that subjects received the recruitment email from their employers. This recruitment method was necessary because teachers’ professional email addresses were not publicly available or allowed to be provided for research purposes. Since the recruitment email had to be sent to publicly available emails of community district superintendents and their principals, the recruitment email included instructions as to how it may be forwarded to teachers without compromising voluntary participation. Instructions embedded in the recruitment email reminded superintendents and principals not to add or alter the language in the email in any way and to simply forward by stating "dear co-teachers,

please see below." referring to the invitation email. Furthermore, in order to avoid any undue influence, the invitation email immediately stated that teachers' employers (principals and superintendents) do not expect or require participation, and no one but the researcher will receive results should teachers choose to participate.

Informed consent was obtained electronically. First, the recruitment emails found in Appendix B introduced the purpose of the study and other general information regarding participation. Subjects who were interested in participating based on that general information followed a provided link to the Google Form containing New York City Department of Education Institutional Review Board's Adult Consent Form to Participate in a Research Study. As stated earlier, and found in Appendix C, this form contained an explanation of the purpose and procedures of this study, the researchers contact information, potential risks and benefits of participation, steps taken to protect privacy, and subjects' rights. Informed consent was then obtained as subjects electronically signed consent. The following question was asked directly following the consent form "Have you read, understood, and agree to participate in the research study described above?" a response of "Yes, I agree to be in the research study described above" was marked as required meaning subjects must select this response to gain access to the TTMQ in the next section of the Google Form.

Conclusion

The aim of this chapter was to illustrate how the research methods were used to answer the research questions. A discussion of the ex post facto design, procedures for recruitment and data collection, design of the TTMQ, study participants, and research

ethics, outlined how the study was conducted and who participated in the study. In chapter four the results of the study will demonstrate that the methodology described in this chapter was followed.

CHAPTER 4

Introduction

This chapter contains the results of the current study, conducted to answer the following research questions:

1. To what extent are relationship duration, primary role, collaborative environment, and enjoyment related to the stage of forming within a co-teaching setting?
2. To what extent are relationship duration, primary role, collaborative environment, and enjoyment related to the stage of storming within a co-teaching setting?
3. To what extent are relationship duration, primary role, collaborative environment, and enjoyment related to the stage of norming within a co-teaching setting?
4. To what extent are relationship duration, primary role, collaborative environment, and enjoyment related to the stage of performing within a co-teaching setting?

This chapter will begin with descriptive statistics of the participants in this study. The statistical analysis findings aligned to each research question and guided by Tuckman's theory of small group development (1965) will be discussed. Four multiple regressions were conducted to answer the four research questions. Each multiple regression included all four independent variables (relationship duration, primary role, collaborative environment, and enjoyment) and three covariates (grade level, years of teaching experience, and years of co-teaching experience). Each of the four multiple regressions used one of the dependent variables (forming, storming, norming, or

performing). Standardized values will be included in all coefficient tables, however only unstandardized values will be summarized to ease interpretation.

Results

TTMQ Results

The results of the TTMQ for each group within the covariate teaching experience can be found in Table 5. This covariate consisted of three groups, 0-4 years, 5-10 years, and 11+ years. All three groups rated themselves highest in performing and lowest in storming. However, comparing the scores for each subscale between groups reveals the group with the highest score for storming was the group with the least amount of teaching experience, 0-4 years (M = 20.42, SD = 5.94). Teachers with the least amount of experience also rated themselves lowest of all groups in the subscale for performing (M = 31.39, SD = 0.761). The same group, 0-4 years, also rated themselves highest of all groups in norming (M = 30.87, SD = 6.88). The highest score for forming was found in the group with the most years of teaching experience, 11+ years (M = 22.22, SD = 3.49). The group with 5-10 years of teaching experience was found to have the lowest scores for forming (M = 21.18, SD = 4.13) and storming (M = 19.45, SD = 5.38). They also had the highest scores of any group in the subscales for norming (M = 32.79, SD = 5.21) and performing (M = 33.82, SD = 5.34).

Table 5

TTMQ Results for Teaching Experience

Teaching Experience Group		Forming	Storming	Norming	Performing
0-4 Years	Mean	21.87	20.42	30.87	31.39
	N	31	31	31	31
	Std. Deviation	4.47	5.94	6.88	7.61
5-10 Years	Mean	21.18	19.45	32.79	33.82
	N	38	38	38	38
	Std. Deviation	4.13	5.38	5.21	5.34
11+ Years	Mean	22.22	19.78	32.35	33.74
	N	46	46	46	46
	Std. Deviation	3.49	4.96	5.63	5.37

The results of the TTMQ for each group in the covariate co-teaching experience can be found in Table 6. This covariate was comprised of two groups, 0-4 years, and 5+ years. Teachers with 5+ years of co-teaching experience recorded higher scores in the subscales of forming (M = 22.04, SD = 4.17), norming (M = 32.58, SD = 5.63) and performing (M = 34.11, SD = 4.94) than teachers with 0-4 Years. Both groups were nearly even in their scores for storming. 0-4 years (M = 19.85, SD = 5.31) and 5+ years (M = 19.84, SD = 5.43) respectively.

Table 6

TTMQ Results for Co-teaching experience

Co-teaching Experience Groups		Forming	Storming	Norming	Performing
0-4 Years	Mean	21.55	19.85	31.65	32.23
	N	60	60	60	60
	Std. Deviation	3.81	5.31	6.08	6.89
5+ Years	Mean	22.04	19.84	32.58	34.11
	N	55	55	55	55
	Std. Deviation	4.17	5.43	5.63	4.94

The covariate grade level included three groups which were elementary school, middle school, and high school. The TTMQ results for these groups are displayed in Table 7. Teachers in elementary school had the highest scores for norming (M = 34.00, SD = 4.56), and performing (M = 34.89, SD = 4.71). Elementary school teachers also received the lowest scores in storming (M = 18.62, SD = 4.70). Teachers in high school rated themselves higher than other groups in forming (M = 23.25, SD = 4.03) and storming (M = 22.25, SD = 6.24). The group with the lowest scores for forming was middle school (M = 21.05, SD = 4.05).

Table 7

TTMQ Results for Grade Level

Grade Level		Forming	Storming	Norming	Performing
Elementary School	Mean	21.64	18.62	34	34.89
	N	53	53	53	53
	Std. Deviation	3.79	4.70	4.56	4.71
Middle School	Mean	21.05	20.03	30.08	31.37
	N	38	38	38	38
	Std. Deviation	4.05	5.18	6.71	7.28
High School	Mean	23.25	22.25	31.08	32.04
	N	24	24	24	24
	Std. Deviation	4.03	6.24	5.91	5.87

The independent variable relationship duration was divided into three groups comprised of co-teachers paired together for one year or less, two years, and three or more years. TTMQ results for relationship duration are presented in Table 8. Teachers within their first year of partnership obtained the highest scores in the subscales of forming (M = 23.20, SD = 3.86) and storming (M = 21.04, SD = 5.59). First year partners also collected the lowest scores for norming (M = 30.55, SD = 6.22), and performing (M = 31.43, SD = 6.65). Teachers with a relationship duration of two years earned higher scores in forming (M = 21.04, SD = 3.86) and storming (M = 19.48, SD = 4.34) than teachers with three or more years. Teachers with the longest relationship duration, three or more years, accrued higher scores on performing (M = 35.16, SD = 5.08) than teachers with a relationship duration of two years. Relationship duration of

two years (M = 33.52, SD = 4.661) and three or more years (M = 33.59, SD = 55.87) performed similarly on norming.

Table 8

TTMQ Results for Relationship Duration

Relationship Duration		Forming	Storming	Norming	Performing
0-1 Year	Mean	23.20	21.04	30.55	31.43
	N	56	56	56	56
	Std. Deviation	3.86	5.59	6.22	6.65
2 Years	Mean	21.04	19.48	33.52	34.26
	N	27	27	27	27
	Std. Deviation	3.86	4.34	4.66	5.03
3+ Years	Mean	19.94	18.06	33.59	35.16
	N	32	32	32	32
	Std. Deviation	3.39	5.27	5.58	5.08

The independent variable primary role contained two groups. Those were general educator and special educator. The TTMQ results for primary role set forth in Table 9. Although special education teachers rated themselves higher on performing (M = 33.18, SD = 5.99), they also performed higher on storming (M = 20.07, SD = 5.57) than the general education teachers. However, the general education teachers were not far behind in both performing (M = 33.03, SD = 6.34), and storming (M = 19.41, SD = 4.90). Similarly, the general education teachers rated themselves higher on forming (M = 21.90, SD = 4.21) and norming (M = 32.18, SD = 6.45), but the special education teachers were

very close to them in both forming (M = 21.72, SD = 3.88) and norming (M = 32.05, SD = 5.58).

Table 9

TTMQ Results for Primary Role

Primary Role		Forming	Storming	Norming	Performing
General Educator	Mean	21.90	19.41	32.18	33.03
	N	39	39	39	39
	Std. Deviation	4.21	4.90	6.45	6.34
Special Educator	Mean	21.72	20.07	32.05	33.18
	N	76	76	76	76
	Std. Deviation	3.88	5.57	5.58	5.99

The TTMQ results for the independent variable collaborative environment are arranged in Table 10. Collaborative environment had two groups including inconsistent, and consistent. Teachers who reported they worked in a consistent collaborative environment attained higher scores in performing (M = 34.51, SD = 5.07) and norming (M = 33.44, SD = 4.98) that teachers who said they worked in an inconsistent collaborative environment. Conversely, teachers from inconsistent collaborative environments rated themselves higher in the subscales of forming (M = 22.73, SD = 4.44) and storming (M = 22.20, SD = 5.68) than teachers from consistent collaborative environments.

Table 10

TTMQ Results for Collaborative Environment

Collaborative Environment		Forming	Storming	Norming	Performing
Inconsistent	Mean	22.73	22.20	28.30	29.23
	N	30	30	30	30
	Std. Deviation	4.44	5.68	6.57	7.07
Consistent	Mean	21.45	19.01	33.44	34.51
	N	85	85	85	85
	Std. Deviation	3.77	4.99	4.98	5.07

Finally, the independent variable enjoyment of co-teaching was comprised of two groups; those who dislike co-teaching and those who like co-teaching. The TTMQ results for enjoyment can be found in Table 11. Co-teachers who reported a like for co-teaching recorded higher scores in the subscales of norming (M = 34.35, SD = 4.49) and performing (M = 35.87, SD = 3.87) than co-teachers who reported a dislike for co-teaching. Co-teachers who dislike co-teaching rated themselves higher in the subscales of forming (M = 23.05, SD = 4.30) and storming (M = 22.76, SD = 5.24) than those who like co-teaching.

Table 11

TTMQ Results for Enjoyment of Co-teaching

Enjoyment of Co-teaching		Forming	Storming	Norming	Performing
Dislike	Mean	23.05	22.76	27.53	27.58
	N	38	38	38	38
	Std. Deviation	4.30	5.24	5.69	6.00
Like	Mean	21.16	18.4	34.35	35.87
	N	77	77	77	77
	Std. Deviation	3.67	4.80	4.49	3.87

Research Question 1

Table 12 shows the Pearson correlations among the variables in the regression performed for forming. Significant correlations were found. 0-4 years of teaching experience was associated with a significant negative correlation to 5-10 years of teaching experience ($r = -0.42$, $p = <.001$). Relationship duration of three year or more was associated with significant negative correlations with the stage of forming ($r = -0.28$, $p = .001$), co-teaching 0-4 years ($r = -0.22$, $p = .009$), and a relationship duration of two years ($r = -0.34$, $p = <.001$). Inconsistent collaborative environments were associated with a significant positive correlation with teaching in middle school ($r = 0.29$, $p = .001$). Finally, disliking co-teaching was associated with a significant positive correlation with teaching in middle school ($r = 0.23$, $p = .001$), and a significant negative correlation with a relationship duration of three years or more ($r = -0.18$, $p = .02$).

Table 12

Pearson Correlations in Forming

	Form-ing	Teach 0-4yr	Teach 5-10yr	Co-teach 0-4yr	Middle School	High School	RD2	RD3	Gen-ed	Incon-sistent	Dislike
Forming	1.00	0.01	-0.10	-0.06	-0.12	0.19	-0.10	-0.28***	0.02	0.14	0.22
Teach 0-4yr	0.01	1.00	-0.42***	0.42***	0.03	-0.02	-0.10	-0.07	-0.10	0.04	-0.01
Teach 5-10yr	-0.10	-0.42***	1.00	-0.06	-0.02	-0.13	0.04	-0.06	-0.11	0.04	-0.02
Co-teach 0-4yr	-0.06	0.45***	-0.06	1.00	0.06	-0.15	-0.12	-0.22**	0.06	0.09	0.08
Middle School	-0.12	0.03	-0.02	0.06	1.00	-0.36***	0.04	0.01	0.04	0.29***	0.23***
High School	0.19*	-0.02	-0.13	-0.15	-0.36***	1.00	0.11	0.01	-0.14	0.03	0.03
RD2	-0.10	-0.10	0.04	-0.12	0.04	0.11	1.00	-0.34***	-0.07	-0.02	-0.08
RD3	-0.28***	-0.07	-0.06	-0.22**	0.01	0.01	-0.34***	1.00	-0.11	-0.14	-0.18*
Gen-ed	0.02	-0.10	-0.11	0.06	0.04	-0.14	-0.07	-0.11	1.00	0.11	0.12
Incon-sistent	0.14	0.04	0.04	0.09	0.29***	0.03	-0.02	-0.14	0.11	1.00	0.42
Dislike	0.22**	-0.01	-0.02	0.08	0.29***	0.03	-0.08	-0.18*	0.12	0.42***	1.00

Multiple regression analyses were conducted to determine the extent to which there is a relationship between the stage of forming and relationship duration, primary role, collaborative environment, and enjoyment. Two models were utilized for this regression. The model summaries can be found in Table 13. Teaching experience, co-teaching experience, and grade level were considered covariates and placed in Model 1. There were no significant relationships between the covariates and the dependent variable in Model 1($R^2 = 0.05$, $p = .34$). Model 2 incorporated the three covariates, as well as

relationship duration, primary role, collaborative environment, and enjoyment. Model 2 had significant predictors and accounted for 24.9% of the variance in the forming stage of team maturity ($R^2 = 0.24$, $p = <.001$).

Two of the variables in Model 2 had a significant relationship with the forming stage. As displayed in Table 14, a relationship duration of two years was found to have a significant negative relationship compared to one year ($B = -2.35$; $p = 0.01$). Co-teachers who have been paired together for two years were associated with a 2.35 point decrease in the score for forming compared to the 0-1 year group. A relationship duration of three or more years was also found to have a significant negative relationship compared to one year ($B = -3.43$; $p = <0.001$). A partnership lasting three years was associated with a 3.43 point decrease in their score of forming compared to the 0-1 year group. Other variables of interest such as primary role, collaborative environment, and enjoyment were not found to have a significant relationship with the dependent variable forming.

Table 13

Model Summary for RQ1

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.22a	0.05	0.01	3.96	0.05	1.14	5	109	0.34
2	.49b	0.24	0.17	3.61	0.19	5.49	5	104	0.00

a Predictors: (Constant), Teaching Experience 0-4 Years, Teaching Experience 5-10 Years, Middle School Teachers, High School Teachers, Co-teaching Experience 0-4 Years

b Predictors: (Constant), Teaching Experience 0-4 Years, Teaching Experience 5-10 Years, Middle School Teachers, High School Teachers, Co-teaching Experience 0-4 Years, Relationship Duration 2 Years, Relationship Duration 3+ Years, General Educators, Dislike of Co-teaching, Inconsistent Collaborative Environment

c Dependent Variable: Forming

Table 14

Coefficients for RQ1

Model		Unstandardized B	Coefficients Std. Error	Standardized Coefficients Beta
1	Teaching Experience (0-4 Years)	-0.01	1.02	-0.01
	Teaching Experience (5-10 Years)	-0.77	0.88	-0.09
	Co-teaching Experience (0-4 Years)	-0.35	0.83	-0.04
	Middle School Teachers	-0.67	0.84	-0.08
	High School Teachers	1.38	1.00	0.14
	(Constant)	22.16***	0.81	
2	Teaching Experience (0-4 Years)	-0.16	0.96	-0.01
	Teaching Experience (5-10 Years)	-1.07	0.83	-0.12
	Co-teaching Experience (0-4 Years)	-1.4	0.79	-0.17
	Middle School Teachers	-1.13	0.86	-0.13
	High School Teachers	1.21	0.96	0.12
	Relationship Duration (2 Years)	-2.35**	0.90	-0.25**
	Relationship Duration (3+ Years)	-3.43***	0.87	-0.38***
	General Educators	-0.34	0.76	-0.04
	Inconsistent Collaborative Environment	0.70	0.88	0.07
	Dislike of Co-teaching	1.28	0.83	0.15
	(Constant)	24.05***	0.99	

a Dependent variable: Forming

* Sig. = <0.05

** Sig. = <0.01

*** Sig. = <0.001

Research Question 2

Table 15 shows the Pearson correlations among the variables in the regression performed for storming. Significant correlations were found. Teaching 5-10 years was associated with a significant negative correlation with teaching 0-4 years ($r = -0.42$, $p = <.001$). Co-teaching 0-4 years was associated with a significant positive correlation with teaching 0-4 years ($r = 0.45$, $p = <.001$). Teaching in high school was associated with a significant positive correlation with storming ($r = 0.23$, $p = .006$), and a significant negative correlation with teaching middle school ($r = -0.36$, $p = <.001$). Relationship duration of three or more was associated with significant negative correlations with storming ($r = -0.20$, $p = .01$), co-teaching 0-4 years ($r = -0.22$, $p = .009$), and a relationship duration of two years ($r = -0.34$, $p = <.001$). An inconsistent collaborative environment was associated with a significant positive relationship with storming ($r = 0.26$, $p = .002$) and with teaching middle school ($r = 0.29$, $p = .001$). Teachers who dislike co-teaching were associated with significant positive correlations with storming ($r = 0.38$, $p = <.001$), teaching middle school ($r = 0.29$, $p = .001$), and with an inconsistent collaborative environment ($r = 0.42$, $p = <.001$). Disliking co-teaching was also associated with a significant negative relationship with a relationship duration of three or more years ($r = -0.18$, $p = .022$).

Table 15

Pearson Correlations in Storming

	Storming	Teach 0-4yr	Teach 5-10yr	Co-teach 0-4yr	Middle School	High School	RD2	RD3	Gen-ed	Incon-sistent	Dislike
Storming	1.00	0.06	-0.05	0.00	0.02	0.23 **	-0.03	-0.20 *	-0.05	0.26 **	0.38 ***
Teach 0-4yr	0.06	1.00	-0.42 ***	0.45 ***	0.03	-0.02	-0.10	-0.07	-0.10	0.04	-0.01
Teach 5-10yr	-0.05	-0.42 ***	1.00	-0.06	-0.02	-0.13	0.04	-0.06	-0.11	0.04	-0.02
Co-teach 0-4yr	0.00	0.42 ***	-0.06	1.00	0.00	-0.15	-0.12	-0.22 **	0.06	0.09	0.08
Middle School	0.02	0.03	-0.02	0.00	1.00	-0.36 ***	0.04	0.01	0.00	0.29 ***	0.29 ***
High School	0.23 **	-0.02	-0.13	-0.15	-0.36 ***	1.00	0.11	0.05	-0.14	0.03	0.03
RD2	-0.03	-0.10	0.04	-0.12	0.04	0.11	1.00	-0.34 ***	-0.00	-0.02	-0.08
RD3	-0.20 *	-0.07	-0.06	-0.22 **	0.01	0.01	-0.34 ***	1.00	-0.11	-0.14	-0.18 *
Gen-ed	-0.05	-0.10	-0.11	0.06	0.00	-0.14	-0.00	-0.11	1.00	0.11	0.12
Incon-sistent	0.26 **	0.04	0.00	0.09	0.29 ***	0.03	-0.00	-0.14	0.11	1.00	0.42 ***
Dislike	0.38 ***	-0.01	-0.02	0.08	0.29 ***	0.00	-0.08	-0.18 *	0.12	0.42 ***	1.00

* Sig. = <0.05

** Sig. = <0.01

*** Sig. = <0.001

Multiple regression analyses were conducted to determine the extent to which there is a relationship between the stage of storming and relationship duration, primary role, collaborative environment, and enjoyment. Two models were employed for this regression as well. The model summaries can be found in Table 16. Teaching experience, co-teaching experience, and grade level were considered covariates and contained in Model 1. There was no significant relationship between Model 1 and the

dependent variable ($R^2 = 0.07$, p = <.014). However, one covariate in Model 1, high school teachers, had a significant positive relationship with storming (B = 3.71; p = .006). High school teachers were associated with a 3.71 point increase in their scores for storming compared to elementary school teachers.

Model 2 was comprised of the three covariates, as well as relationship duration, primary role, collaborative environment, and enjoyment. Model 2 had significant predictors and accounted for 25.4% of the variance in the storming stage of team maturity ($R^2 = 0.25$, p = <.001). Several of the variables in Model 2 had a significant relationship with the storming stage. As displayed in Table 17, a relationship duration of three or more years was found to have a significant negative relationship compared to one year (B = -2.33; p = 0.48). Co-teachers who have been paired together for three or more years were associated with a 2.33 point decrease in the score for storming compared to the 0-1 year group. Teachers who dislike co-teaching were found to have a significant positive relationship with the storming stage (B = -3.55; p = .002) and were associated with an increase of 3.55 points in their scores for storming. Within Model 2, high school teachers were again found to have a significant positive relationship with storming (B = -2.74; p = .036) while being associated with an increase of 2.74 points in their scores for storming. Other variables of interest such as primary role, and collaborative environment were not found to have a significant relationship with the dependent variable storming.

Table 16

Model Summary for RQ2

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.26a	0.07	0.03	5.26	0.07	1.70	5	109	0.14
2	.50b	0.25	0.18	4.83	0.18	5.07	5	104	0.00

a Predictors: (Constant), Teaching Experience 0-4 Years, Teaching Experience 5-10 Years, Middle School Teachers, High School Teachers, Co-teaching Experience 0-4 Years

b Predictors: (Constant), Teaching Experience 0-4 Years, Teaching Experience 5-10 Years, Middle School Teachers, High School Teachers, Co-teaching Experience 0-4 Years, Relationship Duration 2 Years, Relationship Duration 3+ Years, General Educators, Dislike of Co-teaching, Inconsistent Collaborative Environment

c Dependent Variable: Storming

Table 17

Coefficients for RQ2

Model		Unstandardized B	Coefficients Std. Error	Standardized Coefficients Beta
1	Teaching Experience (0-4 Years)	0.84	1.36	0.07
	Teaching Experience (5-10 Years)	0.21	1.18	0.01
	Co-teaching Experience (0-4 Years)	0.15	1.10	0.01
	Middle School Teachers	1.40	1.12	0.12
	High School Teachers	3.71**	1.33	0.28**
	(Constant)	18.22***	1.08	
2	Teaching Experience (0-4 Years)	0.75	1.28	0.06
	Teaching Experience (5-10 Years)	-0.17	1.11	-0.01
	Co-teaching Experience (0-4 Years)	-0.87	1.05	-0.08
	Middle School Teachers	-0.21	1.15	-0.01
	High School Teachers	2.74*	1.29	0.20*
	Relationship Duration (2 Years)	-1.33	1.20	-0.10
	Relationship Duration (3+ Years)	-2.33*	1.17	-0.19*
	General Educators	-1.05	1.01	-0.09
	Inconsistent Collaborative Environment	1.39	1.18	0.11
	Dislike of Co-teaching	3.55**	1.12	0.31**
	(Constant)	19.44***	1.32	

a Dependent variable: Storming

* Sig. = <0.05

** Sig. = <0.01

*** Sig. = <0.001

Research Question 3

Table 18 shows the Pearson correlations among the variables in the regression performed for storming. Significant correlations were found. 5-10 years of teaching experience was associated with a significant negative correlation with 0-4 years of teaching experience ($r = -0.42$, $p = <.001$). Co-teaching for 0-4 years was associated with a significant positive correlation with teaching for 0-4 years ($r = 0.42$, $p = <.001$). Middle school teachers were associated with a significant negative relationship with norming ($r = 0.24$, $p = .005$). High school teachers were associated with a significant negative relationship with middle school teachers ($r = -0.36$, $p = <.001$). Relationship duration of three or more was associated with a significant positive correlation with norming ($r = 0.15$, $p = .04$), and significant negative correlations with 0-4 years of co-teaching experience ($r = -0.22$, $p = .009$) and relationship duration of two years ($r = -0.34$, $p = <.001$). An inconsistent collaborative environment was associated with a significant negative correlation with norming ($r = -0.38$, $p = <.001$), and a significant positive correlation with teaching middle school ($r = 0.29$, $p = .001$). Teachers who dislike co-teaching were associated with significant negative correlations with norming ($r = -0.55$, $p = <.001$) and relationship duration of three or more years ($r = -018$, $p = .02$). Teachers who dislike co-teaching were also associated with significant positive correlations with teaching middle school ($r = 0.29$, $p = .001$) and inconsistent collaborative environments ($r = 0.42$, $p = <.001$).

Table 18

Pearson Correlations in Norming

	Norming	Teach 0-4yr	Teach 5-10yr	Co-teach 0-4yr	Middle School	High School	RD2	RD3	Gen-ed	Incon-sistent	Dislike
Norming	1.00	-0.12	0.08	-0.08	-0.24 **	-0.08	0.13	0.15 *	0.01	-0.38 ***	-0.55 ***
Teach 0-4yr	-0.12	1.00	-0.42 ***	0.42 ***	0.03	-0.02	-0.10	-0.07	-0.10	0.04	-0.01
Teach 5-10yr	0.08	-0.42 ***	1.00	-0.06	-0.02	-0.13	0.04	-0.06	-0.11	0.04	-0.02
Co-teach 0-4yr	-0.08	0.42 ***	-0.06	1.00	0.00	-0.15	-0.12	-0.22 **	0.06	0.09	0.08
Middle School	-0.24 **	0.03	-0.02	0.00	1.00	-0.36 ***	0.04	0.01	0.00	0.29 ***	0.29 ***
High School	-0.08	-0.02	-0.13	-0.15	-0.36 ***	1.00	0.11	0.01	-0.14	0.03	0.00
RD2	0.13	-0.10	0.04	-0.12	0.04	0.11	1.00	-0.34 ***	-0.00	-0.00	-0.08
RD3	0.15 *	-0.07	-0.06	-0.22 **	0.01	0.01	-0.34 ***	1.00	-0.11	-0.14	-0.18 *
Gen-ed	0.01	-0.10	-0.11	0.06	0.00	-0.14	-0.00	-0.11	1.00	0.11	0.12
Incon-sistent	-0.38 ***	0.04	0.04	0.09	0.29 ***	0.03	-0.00	-0.14	0.11	1.00	0.42 ***
Dislike	-0.55 ***	-0.01	-0.02	0.08	0.29 ***	0.03	-0.08	-0.18 *	0.12	0.42 ***	1.00

* Sig. = <0.05

** Sig. = <0.01

*** Sig. = <0.001

Multiple regression analyses were conducted to determine the extent to which there is a relationship between the stage of norming and relationship duration, primary role, collaborative environment, and enjoyment. Two models were analyzed for this regression. The model summaries can be found in Table 19. Teaching experience, co-teaching experience, and grade level were considered covariates and incorporated into

Model 1. Model 1 had significant predictors and accounted for 11.4% of the variance in the norming stage of team maturity ($R^2 = 0.11$, p = .02). High school (B = -3.09; p = .032) and middle school (B = -3.93; p = .001) teachers had significant negative relationships with norming compared to elementary school teachers. High school teachers were associated with a decrease of 3.09 points and middle school teachers were associated with a decrease of 3.93 points in the scores for norming compared to elementary school teachers.

Model 2 integrated the three covariates, as well as relationship duration, primary role, collaborative environment, and enjoyment. Model 2 had significant predictors and accounted for 38.7% of the variance in the norming stage of team maturity ($R^2 = 0.38$, p = <.001). One variable in Model 2 had a significant relationship with the norming stage. As displayed in Table 20, a dislike for co-teaching was found to have a significant negative relationship with the norming stage compared to a like for co-teaching (B = -5.23; p = <.001). Co-teachers who reported a dislike for co-teaching were associated with a 5.23 point decrease in the score for norming compared to those who reported a like for co-teaching. High school and middle school teachers were found to have no significant relationship to the stage of norming in Model 2. Other variables of interest such as relationship duration, primary role, and collaborative environment were not found to have a significant relationship with the dependent variable norming.

Table 19

Model Summary of RQ3

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.33a	0.11	0.07	5.64	0.11	2.79	5	109	0.02
2	.62b	0.38	0.32	4.80	0.27	9.27	5	104	0.00

a Predictors: (Constant), Teaching Experience 0-4 Years, Teaching Experience 5-10 Years, Middle School Teachers, High School Teachers, Co-teaching Experience 0-4 Years

b Predictors: (Constant), Teaching Experience 0-4 Years, Teaching Experience 5-10 Years, Middle School Teachers, High School Teachers, Co-teaching Experience 0-4 Years, Relationship Duration 2 Years, Relationship Duration 3+ Years, General Educators, Dislike of Co-teaching, Inconsistent Collaborative Environment

c Dependent Variable: Norming

Table 20

Coefficients for RQ3

Model		Unstandardized B	Coefficients Std. Error	Standardized Coefficients Beta
1	Teaching Experience (0-4 Years)	-1.18	1.46	-0.09
	Teaching Experience (5-10 Years)	0.05	1.26	0.01
	Co-teaching Experience (0-4 Years)	-0.83	1.19	-0.07
	Middle School Teachers	-3.93***	1.20	-0.31***
	High School Teachers	-3.09*	1.42	-0.21*
	(Constant)	34.78***	1.16	
2	Teaching Experience (0-4 Years)	-1.27	1.28	-0.09
	Teaching Experience (5-10 Years)	0.29	1.11	0.02
	Co-teaching Experience (0-4 Years)	0.41	1.05	0.03
	Middle School Teachers	-1.59	1.14	-0.12
	High School Teachers	-1.92	1.28	-0.13
	Relationship Duration (2 Years)	2.18	1.19	0.15
	Relationship Duration (3+ Years)	1.64	1.16	0.12
	General Educators	0.83	1.01	0.06
	Inconsistent Collaborative Environment	-2.02	1.18	-0.15
	Dislike of Co-teaching	-5.23***	1.11	-0.42***
	(Constant)	34.05	1.31	

a Dependent variable: Norming

* Sig. = <0.05

** Sig. = <0.01

*** Sig. = <0.001

Research Question 4

Table 21 shows the Pearson correlations among the variables in the regression performed for storming. Significant correlations were found. Teachers with 0-4 years of experience were associated with significant negative correlations with the performing stage (r = -0.17, p = .03) and teaching 5-10 years (r = -0.42, p = <.001). Co-teaching 0-4 years was associated with a significant negative correlation with performing (r = -0.15, p = .05), and a significant positive correlation with teaching 0-4 years (r = 0.42, p = <.001). Teaching in middle school was associated with significant negative correlations with performing (r = -0.20, p = .014), and with teaching in high school (r = -0.36, p = <.001). Relationship duration of three or more years was associated with a significant positive correlation with the performing stage (r = 0.20, p = .013), and significant negative correlations with co-teaching 0-4 years (r = -0.22, p = .009) and a relationship duration of two years (r = -0.34, p = <.001). An inconsistent collaborative environment was found to be associated with a significant negative correlation with performing (r = -0.38, p = <.001), and significant positive correlations with teaching middle school (r = 0.29, p = .001) and disliking co-teaching (r = 0.42, p = <.001). A dislike for co-teaching was associated with significant negative correlations with performing (r = -0.64, p = <.001) and a relationship duration of three or more years (r = -0.18, p = .02), and a significant positive correlation with teaching middle school (r = 0.29, p = .001).

Table 21

Pearson Correlations in Performing

	Performing	Teach 0-4yr	Teach 5-10yr	Co-teach 0-4yr	Middle School	High School	RD2	RD3	Gen-ed	Incon-sistent	Dislike
Perfor-ming	1.00	-0.17 *	0.07	-0.15 *	-0.20 *	-0.09	0.10	0.20 **	-0.01	-0.38 ***	-0.64 ***
Teach 0-4yr	-0.17 *	1.00	-0.42 ***	0.42 ***	0.03	-0.02	-0.10	-0.07	-0.10	0.04	-0.0
Teach 5-10yr	0.07	-0.42 ***	1.00	-0.06	-0.02	-0.13	0.04	-0.06	-0.11	0.00	-0.02
Co-teach 0-4yr	-0.15 *	0.42 ***	-0.06	1.00	0.00	-0.15	-0.12	-0.22 **	0.06	0.09	0.08
Middle School	-0.20 *	0.03	-0.02	0.00	1.00	-0.36 ***	0.04	0.01	0.00	0.29 ***	0.29 ***
High School	-0.09	-0.02	-0.13	-0.15	-0.36 ***	1.00	0.11	0.01	-0.14	0.03	0.00
RD2	0.10	-0.10	0.04	-0.12	0.04	0.11	1.00	-0.34 ***	-0.00	-0.02	-0.08
RD3	0.20 *	-0.07	-0.06	-0.22 **	0.01	0.01	-0.34	1.00	-0.11	-0.14	-0.18 *
Gen-ed	-0.01	-0.10	-0.11	0.06	0.00	-0.14	-0.00	-0.11	1.00	0.11	0.12
Incon-sistent	-0.38 ***	0.04	0.00	0.09	0.29 ***	0.03	-0.00	-0.14	0.11	1.00	0.42 ***
Dislike	-0.64 ***	-0.01	-0.02	0.08	0.29 ***	0.00	-0.08	-0.18 *	0.12	0.42 ***	1.00

* Sig. = <0.05

** Sig. = <0.01

*** Sig. = <0.001

Multiple regression analyses were conducted to determine the extent to which there is a relationship between the stage of performing and relationship duration, primary role, collaborative environment, and enjoyment. Two regression models were run . The model summaries can be found in Table 22. Teaching experience, co-teaching experience, and grade level were considered covariates and integrated in Model 1. Model

1 had significant predictors and accounted for 11.8% of the variance in the performing stage of team maturity ($R^2 = 0.11$, p = <.01). High school (B = -3.25; p = .030) and middle school (B = -3.59; p = .005) teachers had significant negative relationships with performing compared to elementary school teachers. High school teachers were associated with a decrease of 3.25 points and middle school teachers were associated with a decrease of 3.59 points in the scores for performing compared to elementary school teachers.

Model 2 incorporated the three covariates, as well as relationship duration, primary role, collaborative environment, and enjoyment. Model 2 had significant predictors and accounted for 48.3% of the variance in the performing stage of team maturity ($R^2 = 0.48$, p = <.001). One variable in Model 2 had a significant relationship with the performing stage. As displayed in Table 23, a dislike for co-teaching was found to have a significant negative relationship with the performing stage compared to a like for co-teaching (B = -7.21; p = <.001). Co-teachers who reported a dislike for co-teaching were associated with a 7.21 point decrease in the score for performing compared to those who reported a like for co-teaching. High school and middle school teachers were found to have no significant relationship to the stage of performing in Model 2. Other variables of interest such as relationship duration, primary role, and collaborative environment were not found to have a significant relationship with the dependent variable performing.

Table 22

Model Summary of RQ4

					Change Statistics			
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.34a	0.11	0.07	5.84	0.11	2.90	5	109	0.01
2	.69b	0.48	0.43	4.58	0.36	14.70	5	104	0.00

a Predictors: (Constant), Teaching Experience 0-4 Years, Teaching Experience 5-10 Years, Middle School Teachers, High School Teachers, Co-teaching Experience 0-4 Years

b Predictors: (Constant), Teaching Experience 0-4 Years, Teaching Experience 5-10 Years, Middle School Teachers, High School Teachers, Co-teaching Experience 0-4 Years, Relationship Duration 2 Years, Relationship Duration 3+ Years, General Educators, Dislike of Co-teaching, Inconsistent Collaborative Environment

c Dependent Variable: Performing

Table 23

Coefficients for RQ4

Model		Unstandardized B	Coefficients Std. Error	Standardized Coefficients Beta
1	Teaching Experience (0-4 Years)	-1.64	1.51	-0.12
	Teaching Experience (5-10 Years)	-0.20	1.31	-0.01
	Co-teaching Experience (0-4 Years)	-1.64	1.23	-0.13
	Middle School Teachers	-3.59**	1.24	-0.27**
	High School Teachers	-3.25*	1.47	-0.21*
	(Constant)	36.36	1.20	
2	Teaching Experience (0-4 Years)	-2.00	1.22	-0.14
	Teaching Experience (5-10 Years)	-0.06	1.06	-0.01
	Co-teaching Experience (0-4 Years)	-0.26	1.00	-0.02
	Middle School Teachers	-0.69	1.09	-0.05
	High School Teachers	-1.77	1.22	-0.11
	Relationship Duration (2 Years)	1.33	1.14	0.09
	Relationship Duration (3+ Years)	1.51	1.10	0.11
	General Educators	0.64	0.96	0.05
	Inconsistent Collaborative Environment	-1.45	1.12	-0.10
	Dislike of Co-teaching	-7.21***	1.06	-0.56***
	(Constant)	36.24***	1.25	

a Dependent variable: Performing

* Sig. = <0.05

** Sig. = <0.01

*** Sig. = <0.001

Conclusion

This chapter contained the results of the multiple regression analyses. The covariates teaching experience, co-teaching experience, and grade level were added into Model 1. The covariates were included in Model 2 with the independent variables relationship duration, primary role, collaborative environment, and enjoyment. The variables grade level, relationship duration, and enjoyment played major roles in the results of the multiple regressions.

One of the main findings was the significant negative relationship of high school and middle school teachers in the more advanced stages of team maturity, norming and performing, compared to elementary school teachers. These significant relationships were found in Model 1, but not in Model 2. In the stage of storming, high school teachers had a significant positive relationship in both models. Another main finding was that a dislike for co-teaching was also found to have a significant negative relationship with the stages of norming and performing, and a significant positive relationship in the storming stage, compared to teachers who like co-teaching.

The last main finding was that relationship duration was the only variable found to have a significant relationship with the stage of forming. Teachers with a relationship duration of two years and those with three or more years both reported significant negative relationships with the stage of forming, compared to teachers with a relationship duration of 0-1. Teachers with a relationship duration of three or more years were the only variable in the study to have a significant negative relationship with the storming stage, when compared to teachers with a relationship duration of 0-1. There were no significant relationships found in any stage of team maturity for the variables of teaching

experience, co-teaching experience, primary role, or collaborative environment. Chapter 5 will discuss the implications of these findings and their relationship to prior research, as well as implications for future practice, implications for future studies, and the limitations of this study.

CHAPTER 5

Introduction

The purpose of this quantitative study is to explore the extent to which teaching experience affects teachers' perceptions of teamwork within their co-teaching relationship. This chapter begins with a discussion of the major findings as related to Tuckman's theory of small group development (1965) presented in Chapter 2. Also included is a discussion of connections between the major findings of this study and those of prior research. This chapter will conclude with a discussion of the limitations of the current study, recommendations for co-teaching practice, recommendations for future research, and a brief summary.

Implications of Findings

There are many possible variables that can affect the co-teaching relationship. This study included seven, chosen based on previous research. Those were the covariates of teaching experience, co-teaching experience, and grade level, as well as the independent variables of relationship duration, primary role, collaborative environment and enjoyment. Three variables yielded significant results. Those were grade level, relationship duration, and enjoyment.

Enjoyment of Co-teaching is Critical for Success

Teachers who reported a dislike for co-teaching were found to have a negative relationship with the advanced stages of team maturity (norming and performing) compared to teachers who like co-teaching. Within Tuckman's theory of small group development (1965), it can be interpreted that teachers who dislike co-teaching are less likely to develop group cohesion in the norming stage. This is when the goals of the team become more important than individual goals as members accept being part of a group. Acceptance of being part of a group includes accepting different views and individual approaches of the same process for meeting team goals. These acceptances help co-teaching pairs develop communication skills needed to process issues and adapt to play complementary roles to each other. Teachers who dislike co-teaching may also be less likely to demonstrate characteristics associated with the performing stage which relies on skills developed in the norming stage, such as forecasting potential future conflicts and resolving them without disrupting the established team process (Aydin & Gumus, 2016; Fall & Wejnert, 2005).

One reason for teachers who dislike co-teaching to produce a negative relationship with the stages of norming and performing, is that they also demonstrated a positive relationship with the stage of storming. On average teachers who dislike co-teaching had higher scores in storming, indicating an increased chance of stagnation in in this stage. Teachers who dislike co-teaching are associated with an increase in developing emotional responses to the demands of the partnership leading to intra-group conflict and hostility. Storming is the stage where irritation with each other arises, and a healthy dialogue is imperative in order to pass through to the next stage. Failure to work

through differences in the storming stage will prevent progress towards the norming stage and can lead to team disbandment (Aydin & Gumus, 2016; Fall & Wejnert, 2005).

Relationship Duration is an Important Factor in Team Development

Relationship duration was the only variable to significantly affect the forming stage of team development, and the only variable to negatively affect the storming stage, making it a key indicator in predicting the time it takes to become a high performing team. On average, teachers who have been paired together for two or more years had lower forming scores than those in their first year together. This indicates an association with a decrease in team behaviors such as struggling to find ones place on the team, and a primary feeling of uncertainty and anxiety. Compared to a partnership with a relationship duration of one year or less, partnerships with two years or more are more likely to demonstrate more certainty about the expectations of the team and one another. They have a sense of comfort within the team that arrives from a deeper understanding of their role, and the role of their partner. Teachers with a relationship duration of two years or more demonstrate an increased willingness to share more meaningful aspects of themselves (Aydin and Gumus, 2016). Once teams develop a sense of identity within the group they are ready to transition to the next stage (Fall & Wejnert, 2005). By the second year of co-teaching together, it is likely that pair has moved on from forming into the storming stage, compared to co-teaching pairs in their first year together.

Relationship duration of three years or more produced a negative relationship with the storming stage compared to a relationship duration of one year or less. Teachers

in their 3rd year or partnership are less likely to demonstrate intra-group conflict, hostility, and power struggles. In contrast, the third year partners are more likely to agree about roles, responsibilities, and how to meet their goals (Burn, 2004). By the third year, partners are more likely to demonstrate healthy dialogue in order to process and navigate disagreements (Aydin & Gumus, 2016; Fall & Wejnert, 2005). There was no significant difference in a relationship of two years compared to one year or less in the stage or forming which indicates that it is likely that pairs need a third year to become a high performing team.

Grade Level Demonstrates an Effect on Teamwork

Middle school and high school teachers performed worse on the TTMQ than elementary school teachers. Teachers in middle and high schools registered negative relationships with the advanced stages of teamwork (norming and performing) compared to elementary school teachers. In the norming stage, these results are associated with less focus on team goals and more on individual goals, less of an acceptance of being part of a team, and less of an acknowledgement and acceptance of individual differences and approaches. In the performing stage, these results indicate that middle and high school teachers demonstrate a reduced ability to adapt and switch to different roles while playing to each other's strengths as tasks change, compared to elementary school teachers. Middle school and high school teachers also exhibit a decrease in sense of responsibility towards each other, compared to elementary school teachers, leading to inherent problems and impeding focus on achieving team goals (Aydin & Gumus, 2016; Fall &

Wejnert, 2005). However these results came from Model 1 which included only the three covariates of teaching experience, co-teaching experience, and grade level. In Model 2, with all seven variables used in this study, grade level did not demonstrate a significant relationship with the stages of norming or performing.

Grade level resulted in a significant relationship with storming in both Model 1 and Model 2. High school teachers displayed a positive relationship with the storming stage compared to elementary school teachers. Middle school teachers did not display significant differences in storming compared to elementary school teachers. These results imply that high school teachers are more likely to provide each other more blunt feedback, stick to accomplishing tasks "their way", and disagree about roles, responsibilities, and how to meet team goals (Burn, 2004). These results may be from lack of planning time and time spent teaching together. Elementary school co-teachers typically teach the entire day together, affording them more planning and relationship building time than middle and high school teachers. High school teachers, on the other hand, do not have one class for the whole day. They see a different class each period, and often the special educator assigned as the co-teacher acts as more of a "push in" to the general educator's classroom just for that period. Special educators in high school are often schedule scheduled to co-teach with two, three, or more, general education teachers each day. This schedule limits their planning and relationship building time.

Relationship to Prior Research

The major findings of the current study supports and extends prior research studies in the field of co-teaching and teamwork, while also questioning other previous literature on this topic. Variables in this study which produced significant results (grade level, relationship duration, and enjoyment) all supported and extended prior research. As described below, prior research has pointed to these variables as potential key ingredients in improving co-teaching teamwork, but none have ever studied them specifically within a co-teaching setting. Two variables (teaching experience, and collaborative environment) have been associated with improving teamwork, however the current study found this was not consistent with a population consisting of co-teachers.

This study found that a relationship duration of two or more years had a significant negative relationship with the stage of forming. This suggests that once co-teachers are in their second year together they are less likely to demonstrate characteristics commonly associated with the first stage of team development. A relationship of three or more years was also found by the current study to have a significant negative relationship with the stage of storming. These results propose that by their third year together, co-teachers are less likely to demonstrate characteristics usually found in the second stage of team development. Together this indicates that the more time spent together as a team, the greater the chance of that team moving on from forming and storming, into the more developed stages of norming and performing. Similarly, Plotner et al., (2017) studied how relationships can be improved with time spent together. They researched if differences in time/length on teams will affect members responses to a collaboration survey. Participants were 135 educators in South

Carolina. Results showed that participants who spend one year or more on the team reported significantly higher scores on each of the 15 survey items compared to their peers who spent less than one year on the team. Results of the current study support Plotner et al.'s (2017) results as we both found that time-on-team led to greater teamwork. The current study also extended this research in two ways. First, by focusing specifically on co-teaching partnerships as "teams." Secondly, by not only looking at the differences between the first and second year on a team, but including a third year as well, which yielded significant results.

This study also extended the work of Radic-Sestic et al, (2013) whose objective was to establish the relation between general and special education teachers within teamwork and to define socio-demographic factors that affect teamwork. 223 co-teachers participated. The sample included general and special education teachers who are employed in elementary schools. Participants were grouped by work experience (1-5 years, 5-15 years, 15-25 years, and more than 25 years) and asked to individually complete a survey about the teacher's perceptions of teamwork. The survey revealed that length of work experience leads to a difference among participants in teamwork. Results indicated that more work experience may lead to increases in cognition of group work methods, awareness of roles within the team, and finding teamwork meaningful**.** The current study extended this research by focusing on teachers who found teamwork meaningful (liked co-teaching) and those who did not (disliked co-teaching). Significant relationships were found between teachers who like co-teaching and those who don't, which aligns with the results of Radic-Sestic et al, (2013). The current study revealed teachers who dislike co-teaching demonstrated a significant negative relationship with the

stages of norming and performing, and significant positive relationship with the storming stage. These results indicate that a dislike for co-teaching results in a decreased demonstration of teamwork.

Additionally, I sought to extend the research of Radic-Sestic, M., et al, (2013) by not limiting participants to elementary schools but including middle and high school teachers as well, and then comparing their teamwork results. The current study found significant differences between elementary school teachers and those in middle and high school in the stages of norming and performing. Elementary school teachers performed significantly better than middle and high school teachers in the advanced stages of teamwork. Middle and high school teachers were associated with significant negative relationships with the stages of norming and performing compared to elementary school teachers. Additionally, high school teachers performed significantly worse than elementary teachers in the storming stage. These results reveal a decrease in teamwork as grade level increases from elementary to middle and high school.

Radic-Sestic et al, (2013) included both general educators and special educators in their population, but they did not study teamwork differences between them. My study also extended this research by comparing general and special educators' perception of teamwork within their co-teaching partnership. The current study found no significant differences between both types of teachers in any of the stages of group development.

Another way I extended the work of Radic-Sestic et al, (2013) is by studying teaching experience as they did, as well as studying co-teaching experience. Radic-Sestic et al,'s (2013) major finding was that teaching experience affected teamwork. The

current study used similar teaching experience groups (0-4 years, 5-10 years, 11+ years) as Radic-Sestic et al, (2013). My results were not aligned with the previous research as the current study did not find significant differences in teamwork by teaching experience. I then used the co-teaching experience groups of 0-4 years and 5+ years. No significant differences in teamwork were found between these groups. My results support those of Chitiyo & Brinda (2018) who studied how prepared teachers are to use co-teaching. They researched the relationship between teachers who had used co-teaching and those who had not in their preparedness. Participants in this study were a convenience sample of 77 co-teachers with co-teaching experience ranging from 0-25 years. In alignment with the results of the current study, Chitiyo & Brinda (2018) found prior experience co-teaching does not influence participants' preparedness to co-teach.

Limitations of the Study

While the quantitative research design used in this study provided measurable outcomes captured by the TTMQ, it was unable to provide context as to why co-teachers answered as they did. To this end, more credibility could be given to this study if it were mixed methods that included a qualitative component. Follow up interviews with some co-teachers would help ascertain a deeper understanding of the results. For example, it was found by this study that co-teachers who report a dislike for co-teaching rated themselves significantly lower in the stages of norming and performing, and significantly higher in the storming stage. We now know teachers who dislike co-teaching are less likely to demonstrate characteristics of the advanced stages of teamwork, but we do not

know why they dislike co-teaching and what would make them like it more. In addition to the limitations of the research design, there were also threats to statistical conclusion, internal and external validity, discussed below.

Threats to Statistical Conclusion

The current study met the criteria for statistical power using an alpha level of .05, a large effect size (Pearson's r = .50), and a statistical power level of .80. The number of participants needed in each group was 26. As stated earlier, this study met that criteria in all but one group. The group of high school subjects in the covariate of grade level was 24. The other 16 groups all had between 27 and 85 participants. A larger sample size in each group would increase the statistical power of this study. Moreover, 115 participants is not a large enough sample to represent the total population of co-teachers in New York City. Larger sample size would reduce the chances of the researcher rejecting a false null hypothesis (Kirk, 1982).

The current study used an online survey, the TTMQ, distributed via email to recruit co-teachers as participants. Because it was online, participants were able to complete the survey in any location they chose at their convenience. This created a variation of the environment in which the TTMQ was administered. Variation in environments can inflate the estimate of the error variance and result in not rejecting a false null hypotheses (Kirk, 1082).

Threats to Internal Validity

Internal consistency analysis on the modified scale was conducted and yielded a Chronbach's *a* coefficient of .733 for forming and .752 for storming, which is considered acceptable, as well as .859 for norming and .896 for performing, which is considered preferred (Cortina, 1993). However, a stronger coefficient for the forming and storming subscales would signal a more reliable instrument and thus improve the internal validity of the results, as well as reduce the threat of statistical regression. The TTMQ was not perfectly reliable allowing for the tendency of extreme scores to regress toward the mean. Since statistical regression is inversely related to the reliability of the test, improving the reliability of the TTMQ would reduce the internal validity threat of statistical regression (Kirk, 1982).

Threats to External Validity

All efforts were made to remove undue influence on subjects' participation. Recruitment letters clearly stated how the study was completely anonymous and voluntary, and included messaging that their employer(s) do not expect or require participation. It was also made clear that I was an outside researcher and a university student. However, to obtain IRB Approval I was not allowed to recruit teachers directly, but rather I had to send recruitment letters to principals and superintendents asking them to forward to co-teachers. In the end, teachers received recruitment letters via email from their employers which, regardless of my letter stating they do not expect or require participation, may have influenced some teachers to participate. It may also have

influenced some teachers responses on the TTMQ. However, all participants received information stating that only the researcher would be able to view the results, and all participants read and signed consent to participate on their own. The New York City Department of Education Adult Consent Form to Participate in a Research Study can be found in Appendix B.

Generalizability of the results from the current study may be limited to co-teachers in large urban school systems. New York City's public school system is in many ways unique to itself as a result of meeting the needs of the largest and most diverse student population in the country. Student economic, ethnic, and language diversity informed city and state regulations which make co-teaching in New York City possibly very different than in smaller, or more rural school systems.

Recommendations for Future Practice

Results from this study could inform changes to co-teaching practice at the school and district levels. Co-teachers could receive support in understanding the Tuckman stages of small group development and use the co-teaching version of the TTMQ developed for this study as a self-assessment. Principals should consider if a teacher likes or dislikes co-teaching when creating teacher assignments. Districts may also consider implementing a two or three year commitment when creating co-teaching partnerships. Districts may also consider increased funding for more special education co-teachers in high schools.

The first main finding from this study that should inform practice is that teachers who dislike co-teaching demonstrate significantly less teamwork with their co-teacher. Although this seems like common sense, teachers who don't want to co-teach are often assigned to co-teaching roles. Most principals create teacher assignments based on scheduling needs rather than taking into account the teachers' preference. The results of this study reinforce the idea that teacher preference regarding co-teaching is significant in improving the co-teachers' relationship which has been linked towards improving student achievement (Lindeman, 2014; Pettit, 2017; Roth & Tobin, 2001).

At the district level, many superintendents are reducing the number of self-contained special education classrooms in favor of opening co-teaching classrooms, in order to provide more inclusion for SWDs in accordance with federal mandates of IDEA. Changes to class offerings force many teachers into co-teaching assignments which they do not prefer, and often because of limited staffing or budgets the principal must assign teachers into these classrooms without regard for preferences. In these instances it is important to remember how impactful teacher's enjoyment to co-teaching can be towards student achievement. Best efforts to support teachers in feeling more comfortable, and even growing to like co-teaching should be made. Supporting teachers towards being more open to co-teaching can be accomplished through professional development workshops focusing on the co-teaching models, educating teachers as to the many benefits co-teaching offers to both general education and special education students, as well as team building workshops where teachers are made aware of the Tuckman stages and how to advance through them with their partners.

Another result from this study that should inform practice is to consider relationship duration before reassigning co-teachers. The current study found that teachers with a relationship duration of two years or more were significantly less likely to demonstrate characteristics of the forming stage, and a relationship duration of three years or more meant they were significantly less likely to be in the storming stage, compared to first year partners. It is important to realize that co-teachers, like most other relationships, take time to develop. According to the results of this study, we should expect a co-teaching partnership to take approximately two to three years before we see advanced cohesion and productivity. However, half of the teachers in this study were in the first year of partnership with their co-teaching pair, which speaks to how often co-teachers are reassigned to new partners. Principals and superintendents should be recommending a two or three year commitment when creating a co-teaching partnership, and including professional development plans to support advancement through the stages of team maturity as quickly as possible.

Recommendations for Future Research

Several areas of future research could add to the findings of this study. Further research is needed to examine why some teachers like or dislike co-teaching, and to uncover what they think would help them like it more. Future studies may also question how we can accelerate team development so that it doesn't take co-teaching pairs two or three years to demonstrate high levels of cohesion and teamwork. Additional research may also assess the reasons why elementary school teachers demonstrated higher levels of teamwork than middle and high school teachers, and ways to improve teamwork

among high school teachers who were significantly more likely to demonstrate characteristics of the storming stage.

The current study found teachers who dislike co-teaching demonstrate less teamwork than those who like co-teaching. Further research is required to examine why some teachers dislike co-teaching. Some possible reasons include that some teachers prefer to teach alone, is it difficult to master both the general education content and the special education pedagogy, and that it is challenging to differentiate instruction for high performing general education students and SWDs in the same classroom. In addition to examining why some teachers dislike co-teaching, it is equally important to discover why many of them do. Finding out why some teachers enjoy co-teaching could be the key to bringing others along. Some possibilities here could be the enjoyment of collaboration, mentorship, friendship, and shared/distributed responsibilities. It is also important for future research to determine what supports are needed to improve teachers enjoyment to co-teaching. Many teachers were never trained to co-teach prior to receiving that assignment. Some possible trainings for a support plan prior to co-teaching might include how to use the six models of co-teaching, training both teachers in the general education content and special education pedagogy, and team building. Future research could use these trainings as treatment in an experimental study to determine which benefits co-teachers more in their enjoyment to co-teach.

Future studies may decide to question how we can accelerate team development in a co-teaching setting. The current study found that co-teaching pairs with two or more years together were less likely to be in the forming stage of team development, and at three years or more they are less likely to be in the storming stage, compared to pairs in

their first year together. For schools, two or three years is a long time to wait for a classroom to become high performing. Principals continue to reshuffle co-teaching pairs in the hopes of finding two who hit if off right away, but by restarting the clock on relationship duration they are doing more harm that good to team development. The need is there to expedite team development in a co-teaching setting. Future studies may research if receiving team building training before co-teaching pairs begin working together improves teamwork within the first year. Another possibility for future studies is to focus on first year pairs who report advanced teamwork to find out what they did differently than most first year pairs to build their rapport.

Additional research may also assess why teamwork is so different from one grade level to the next. This study found significant differences between the teamwork of high school teachers and elementary school. High school and middle school teachers rated themselves significantly lower in the stages or norming and performing than did elementary school teachers. High school teachers rated themselves significantly higher in storming than elementary school teachers. A Qualitative study of co-teaching pairs from different grade levels could help discover different barriers to teamwork that they each face as a result of the grade level in which they teach.

Conclusion

It can seem as though co-teaching has as many challenges as it has benefits. Just like in any relationship, in a co-teaching partnership there are many variables which can affect teamwork, collaboration, and cohesion. The purpose of this study was to explore the extent to which teaching experience affects teachers' perceptions of teamwork within

their co-teaching relationship. Prior research has associated co-teaching with an increase in academic achievement for all students, both general education and SWDs (Murawski, 2006; Rea, McLaughlin, & Walther-Thomas, 2002). Current research highlights the co-teacher's relationship as a key factor in achieving a successful co-teaching classroom (Friend, 2015). Relationships are essential for a productive co-teaching partnership (Ambrosetti, Knight, & Dekkers, 2014; Kusuma-Powell & Powell, 2015; Parker et al., 2010; Roth & Tobin, 2000) and are a key factor in raising student achievement (Pettit, 2017).

According to the most recent public data, in 2017 the NYCDOE had nearly 150,000 SWDs scheduled for more than 80% of their school day in a general education classroom, most of whom attend co-teaching classrooms. Co-teaching affects a large number of students in New York City public schools, and if it's not done well, the effects may be negative. SWD's graduate at a much lower rate, and drop out at a much higher rate than the general education students while often attending the same co-taught classes. In 2017, SWDs in NYCDOE schools graduated at a rate of 53.5% with a dropout rate of 14.7%, compared to the total graduation rate of 74.2% and dropout rate of 7.8% (New York City Office of The Mayor, 2019; New York State Education Department, 2019). The graduation and dropout gap is substantial for SWDs in NYCDOE schools. A deeper look into the equity of instruction is needed and it starts with co-teaching. Concurrently, in 2017 the same graduation gap existed state-wide in New York (81.8% total, and 55.4% for SWDs) and nation-wide (84.6% total, and 67.1% SWD) (National Education Association, 2019). Getting the co-teaching relationship right is consequential to achieving equitable graduation and dropout rates for SWDs.

This study sought to add to the body of knowledge in co-teaching by studying if teaching experience has an effect on co-teachers' perception of their teamwork. Participants included special and general educators who are currently paired with a co-teacher and come from eight public school districts in New York City. Co-teachers from grades K-12 completed the TTMQ. After conducting a series of multivariate regressions using four independent variables (relationship duration, primary role, collaborative environment, and enjoyment), three covariates (years of teaching experience, years of co-teaching experience, and grade level), and four dependent variables, the Tuckman stages of small group development (forming, storming, norming, performing). Three variables were found to be significant predictors of the Tuckman stages. Those were grade level, relationship duration, and enjoyment.

It was discovered that within the covariate of grade level, high school teachers and middle school teachers had significant negative relationships with the stages of norming and performing, compared to elementary school teachers. These results indicate an increased focus on individual goals in lieu of team goals, reservations about being part of the team, and diminished acknowledgement and acceptance of individual differences and approaches. High school teachers had a significant positive relationship with the stage of storming, compared to elementary school teachers. These results imply high school teachers are more likely to stick to accomplishing tasks "their way" rather than seek consensus or compromise, and disagree about roles, responsibilities, and how to meet team goals.

Within the independent variable of relationship duration, teachers who were paired together for 2 years or more were associated with significantly lower scores for

forming, indicating fewer instances of struggling to find ones place on the team, and fewer feelings of uncertainty and anxiety. Pairs of 3 years or more were associated with significantly lower scores for storming, compared to first year partners, meaning they demonstrate less intra-group conflict, hostility, and fewer power struggles. Third year, partners are more likely to demonstrate healthy dialogue in order to process and navigate disagreements. Finally, within the independent variable enjoyment, it was revealed that teachers who dislike co-teaching are associated with lower scores in norming and performing, and higher scores in storming than teachers who like co-teaching. These results indicate that they are less likely to accept being part of a team, which includes accepting different views and individual approaches of the same process for meeting team goals.

The results generated by this study should not be seen as a criticism of any teacher, but rather serve to highlight areas in need of support. This study should inform schools and districts as to where that support is needed if they intend to improve academic outcomes for their special education population. Teachers are often untrained in co-teaching prior to being assigned to a co-teaching classroom. As a result, some aspects of practice require refinement. Supporting teachers in becoming a co-teaching team requires both technical and adaptive change. Refining pedagogical practice may be technical. For example, if teachers to be assigned to a co-teaching classroom do not fully understand the co-teaching models, a simple professional development to understand how to implement them will suffice. However, some changes will be adaptive and involve more nuance, such as relationship building. As with most adaptive changes, progress can take time and the need for support rather than evaluation is paramount.

APPENDIX A

ST. JOHNS UNIVERSITY IRB APPROVAL MEMO

ST. JOHN'S UNIVERSITY

MEMO

Institutional Review Board
Federal Wide Assurance: FWA00009066

Dr. Raymond DiGiuseppe
Chair, Institutional Review Board
Tel 718-990-1955
digiuser@stjohns.edu

Date: July 25, 2019

To: Asher Samuel

CC: Dr. Stephen Kotok
Dr. Barbara Cozza
Dr. Mary Beth Schaefer

Dr. Marie Nitopi
IRB Coordinator
Tel 718-990-1440
[illegible]

Protocol # 0619-012
Protocol Title: Improving Co-teachers' Relationship: How Teaching Experience Effects Perceptions of Teamwork

Please be advised that your human subject protocol has been reviewed by the IRB and is considered approved/exempt. You are free to begin your project.

Since the proposal is exempt, no further follow-up by the IRB is required. Please notify the IRB of **any** deviation from your proposal since any change may require IRB review and approval.

Best wishes for successful pursuit of this research.

"It is imperative that you keep this on file where it can easily be accessed. You will need to provide copies of this document when involved in further correspondence with the IRB. The IRB will provide you with an additional copy of this document only in the case of an emergency."

APPENDIX B

NEW YORK CITY DEPARTMENT OF EDUCATION IRB APPROVAL MEMO

Institutional Review Board

52 Chambers Street
Room 310
New York, NY 10007

November 26, 2019

Mr. Asher Samuel
104-20 Queens Blvd
5X
Forest Hills, NY 11375

Dear Asher Samuel:

I am happy to inform you that the New York City Department of Education Institutional Review Board (NYC DOE IRB) has completed its Ethics Review of this proposed research and cleared your research proposal, "Improving Co-Teachers' Relationship: How Teaching Experience Effects Perceptions of Teamwork." The NYC DOE IRB has assigned your study the protocol number of **2936.** Please make certain that all correspondence regarding this project references this number. The approval is for a period of one year:

Approval Date:	November 26, 2019
Expiration Date:	November 25, 2020
Review Level:	Ethics Review
Funding:	NA
Data Request:	NA

Approved Study Team Members: Mr. Asher Samuel

Responsibilities of Principal Investigators: Please find below a list of responsibilities of Principal Investigators who have DOE IRB approval to conduct research in New York City public schools.

- Prior to contacting individual schools or principals, all designated personnel named in this protocol to conduct research in NYC public schools with NYC DOE staff or students, or using NYC public school student data, must complete the NYC DOE security clearance process. This includes but is not limited to being fingerprinted by the NYC DOE. To initiate the security clearance process, all named participants must report to NYC DOE Office of Personnel Investigation (OPI) located at 65 Court Street, room 200, Brooklyn, NY 11201 for registration on the IRB PETS roster. Each individual must provide a stamped copy of the IRB or Ethics Board approval or clearance letter, along with government issued photo identification and a valid social security card. Each will be expected to provide personal identifiers such as name, date of birth, social security number, home address, phone number, and working email address. Once registered, the individuals will receive an email from PETSAdminSupport@schools.nyc.gov that will outline all next steps in the security clearance process. Once they have received and acknowledged the email, they can be fingerprinted by the NYC DOE and complete all additional steps. Please be advised the cost of fingerprinting is currently $135, subject to change without notice.
- Approval by this office does not guarantee access to any particular school, individual or data. You are responsible for making appropriate contacts and getting the required permissions and consents before initiating the study.

- Approval by this office does not constitute a determination of compliance with New York City Conflict of Interest Board rules, or other applicable City rules, regulations, policies, laws, or statutes. Researchers are responsible for ensuring compliance with all of the aforementioned.
- When requesting permission to conduct research, submit the Principal Informational letter approved with this protocol to the school Principal summarizing your research design and methodology along with this IRB Approval letter. Each Principal agreeing to participate must sign the Principal Informational letter. A *completed and signed letter for every school included in your research must be attached to your NYC DOE protocol by Amendment.* Principals may also ask you to show them the receipt issued by the NYC Department of Education at the time of your fingerprinting.
- You are responsible for ensuring that the research is conducted in accordance with your research proposal as approved by the DOE IRB and for the actions of all co-investigators and research staff involved with the research.
- You are responsible for informing all participants (e.g., administrators, teachers, parents, and students) that their participation is strictly voluntary and that there are no consequences for non-participation or withdrawal at any time during the study.
- You must use only the study materials associated with this protocol and bearing the IRBManager NYC DOE IRB approval stamp. Stamped documents are available in the Attachments section of this cleared protocol in IRBManager.
- You must provide all research subjects with copies of their signed consent forms; maintain signed consent forms in a secure place for a period of at least three years after study completion; and destroy the consent forms in accordance with the data disposal plan approved by the IRB.

- In the event that this research will involve non-English speaking subjects, you are required to translate all study materials to be used with this subject population and submit all translations to the NYC DOE IRB by protocol Amendment for review and clearance prior to use. All translations must be accompanied by attestations of translation accuracy from a qualified translator, or formal certificates of translation by a transcription service.
- You are required to ensure that CITI Human Subjects Research training remains valid for all research personnel designated in this protocol throughout the duration of the protocol clearance period. You must submit updated or renewed CITI training certificates by Amendment before they expire.
- In the event that contracts, external approvals, or other documents are pending at the time of this approval, they must be submitted for NYC DOE IRB review by Amendment once obtained.
- If the NYC DOE IRB required changes to this research in the course of its review, note that you must seek review and approval of these changes from your IRB of record. Approval of said changes by your IRB of record must be documented and this documentation must be submitted to the NYC DOE IRB by Amendment once obtained.

Mandatory Reporting to the IRB: The Principal Investigator must report to the DOE IRB, within 24 hours, any serious problem, adverse effect, or outcome that occurs with frequency or degree of severity greater than that anticipated. In addition, the Principal Investigator must report any event or series of events that prompt the temporary or permanent suspension of a research project involving human subjects or any deviations from the approved protocol. All reports must be submitted using the IRBManager Protocol Violation, Deviation, Adverse Event, and/or Unanticipated Problem Report form.

Amendments/Modifications: All amendments/modification to this protocol require prospective IRB approval, except those involving the prevention of immediate harm to a

subject, which must be reported within 24 hours to your IRB of record and to the NYC DOE IRB.

Continuation of your research: It is your responsibility to insure that an application for Continuing Review is submitted 90 days before the expiration date noted above. If you do not receive approval to continue research before the expiration date, all study activities, including, but not limited to, analysis of collected data, must stop until said approval is obtained.

Research findings/Study Closures: The NYC DOE IRB requires a copy of the report of findings from this research. Interim reports may also be requested for multi-year studies. Further, you are required to formally close this protocol by submitting a Study Closure form once all research procedures, including, but not limited to, all analysis of coded or identifiable data, have concluded.

Data Request: Note that approval of this research does not constitute confirmation of release of data requested in a Data Request form. All data requests are processed and approved by the Data Request Fulfillment Team. Please email rpsgresearch@schools.nyc.gov with any questions you may have regarding this matter.

If you have any questions, please contact Marianna Azar at 212.374.3913.

Good luck with your research.

Sincerely,

Marianna Azar

Marianna Azar
Director and Chair, Institutional Review Board

APPENDIX C

The Tuckman Team Maturity Questionnaire

RESPONSE SCALE: 1-Almost Never, 2-Seldom, 3-Occasionally, 4-Frequently, 5-Almost Always

1. ——— We are still learning about each other, how we like to work respectively, and how we work best together.
2. ——— We are quick to get on with the task on hand and do not spend too much time in the planning stage.
3. ——— We feel that we are in this together, and share responsibility for our success or failure.
4. ——— We have an agreed upon understanding of our classroom goals and objectives.
5. ——— We don't ask each other for help or input when completing tasks.
6. ——— We have thorough and agreed upon procedures for planning the way we will perform our tasks.
7. ——— We each have our own ways of accomplishing tasks, and want to continue doing them our way.
8. ——— We have flexible procedures, we adjust them as the task or project progresses.
9. ——— We have different opinions on how to complete tasks and reaching a consensus isn't easy.
10. ——— One partner takes a leadership role such as overseeing or checking the other partner's work.
11. ——— We hold each other accountable to follow our agreed upon systems and procedures.
12. ——— We balance both fun and productive times.
13. ——— We have accepted each other as co-teaching partners.
14. ——— We are democratic and collaborative in our roles and responsibilities.
15. ——— We are working towards defining shared goals, and what tasks are needed in order to
accomplish them.
16. ——— We each have our own ideas and goals that may override shared classroom goals.
17. ——— We fully accept and plan our work to account for each other's strengths and weaknesses.
18. ——— We haven't yet explicitly discussed or agreed upon assigned roles and responsibilities.
19. ——— During times of disagreement we refocus on established procedures and practices in order to complete the task.

20. ——— Our classroom goals and individual responsibilities are very different from what I imagined.
21. ——— Differences of opinion are discussed vaguely or not discussed at all, to avoid creating conflict.
22. ——— We are able to settle disagreements and problem solve quickly, and without disrupting the team's workflow.
23. ——— We may disagree on the details, but we agree on the big picture.
24. ——— We enjoy frequent and meaningful communication, with a willingness to share and listen to ideas.
25. ——— We express constructive criticism of each other's ideas.
26. ——— There is a close attachment to our partnership and an advanced sense of responsibility towards helping each other achieve our shared goals.
27. ——— It seems as if little is being accomplished toward the classroom goals.
28. ——— The classroom goals we have established seem unrealistic.
29. ——— Although we are not fully sure of the shared classroom goals and challenges yet, we are excited about our partnership.
30. ——— We feel comfortable taking risks and even failing in front of each other.
31. ——— Our roles and responsibilities are not always even which sometimes leads to confusion in the classroom.
32. ——— We make each other feel supported, valued and productive.

Biographical Information

(multiple choice responses)

1. How many years of experience do you have teaching?

a. 0-4
b. 5-10
c. 11-20
d. 21+

2. How many years of experience do you have co-teaching?

a. 0-4
b. 5-10
c. 11-20
d. 21+

3. How many years have you been paired with your current co-teacher?

a. 0-1
b. 2
c. 3+

4. What grade-band do you teach?

a. High School
b. Middle School

c. Elementary School
5. What is your primary role in your co-teaching partnership?
a. Special education teacher
b. General education teacher
6. How often does your school culture and/or school leadership emphasize teacher collaboration?
a. Rarely
b. Inconsistently
c. Usually
7. How do you feel about co-teaching?
a. Dislike / don't want to continue
b. Indifferent / accepted
c. Like / want to continue

APPENDIX D

NEW YORK CITY DEPARTMENT OF EDUCATION IRB ADULT CONSENT FORM TO PARTICIPATE IN A RESEARCH STUDY

New York City Department of Education

Institutional Review Board

Adult Consent Form to Participate in a Research Study

1. Title of research study and general information.

-Study title: Improving Co-Teachers' Relationship: How Teaching Experience Effects Perceptions of Teamwork

-Study number: 2936

-IRB of Record: St. John's University IRB

-Participation duration: about 10-15 minutes

-Anticipated total number of research participants: 300

-Sponsor/Supporter: none

2. Researchers' contact information.

Principal Investigator: Asher Samuel, Student, St. John's University, M.Ed

Email Address: Asher.Samuel16@my.stjohns.edu

Co-Investigator/Study Coordinator: Dr. Stephen Kotok, Assistant Professor, St. John's University, Ph.D

Phone Number: 718-990-2503

Email Address: Kotoks@stjohns.edu

Faculty Advisor For Student Research: Marie Nitopi, IRB Coordinator, St. John's University, Ed.D

Phone Number: 718-990-1440

Email Address: Nitopim@StJohns.edu

3. What information is on this form?

We are asking you to take part in a research study. This form explains why we are doing this study and what you will be asked to do if you choose to be in this study. It also describes the way we (Researchers) would like to use and share information about you.Please take the time to read this form. We will talk to you about taking part in this research study. You should ask us any questions you have about this form and about this research study. You do not have to participate if you don't want to.

4. Why is this study being done?

We are doing this research study to better understand how co-teachers think about teamwork within their co-teaching partnership. We are doing this research study to learn more about how teaching experience affects the co-teaching relationship. We are asking you to take part in this study because you are scheduled to have a co-teaching partnership during the 2019-2020 school year.

5. Who is being included?

You are being asked to participate in this study because we have determined that people who are co-teaching as either the general or special educator in any grades/subjects will

help us answer our research questions. The following people will not be included because they are not currently co-teaching: Teachers who are not currently co-teaching.

6. What will I be asked to do if I choose to be in this study?

We will ask you to complete one [1] survey independently, on a google survey online which you can complete anywhere you are most comfortable. This study will last approximately 10-15 minutes until you complete the survey. The survey will capture data for 1 month until the link is taken offline. The survey is anonymous and will capture no identifiable information from participants.

7. Are there any risks?

We do not think that the risks associated with taking part in this study are greater in and of themselves, than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests. You may feel uncomfortable when being asked about how you and your co-teacher work together. You can choose to skip questions if they make you uncomfortable. There may be risks or discomforts if you take part in this study. These include: breaches of subject privacy and data confidentiality which will be mitigated by ensuring no identifiable information is obtained during data collection, that all survey responses are coded and kept in a password protected Google drive.

8. Are there any benefits?

You will not benefit from taking part in this study, but your participation will contribute to our understanding of how to best pair and support co-teachers.

9. What about my privacy?

Every effort will be made to keep your personal information confidential. However, we cannot guarantee total privacy. We will not collect or store identifiable information. This survey is completely anonymous and does not collect any information that can identify participants. No one will know who participated in this study, including the Principal Investigator, your employers, and colleagues. All collected research data will be immediately stripped of all identifiers and maintained in a de-identified format in a password protected database. Only the Principal Investigator and the study staff will be able to see this file. If information from this study is published or presented at scientific or professional meetings, your name and other personal information about you can not be used because this study will never collect of have access to that information. Your information from this study will not be used in future research studies. The following people and/or agencies will be able to look at, copy, use and share your research information:

- The investigator, St. John's University and NYC DOE staff and other professionals who may be evaluating the study;
- Authorities from St. John's University and NYC DOE, including the Institutional Review Board ('IRB'). An IRB is a committee organized to protect the rights and welfare of people involved in research.

- The Federal Office of Human Research Protections ('OHRP')

You may change your mind and revoke (take back) this consent at any time and for any reason. To revoke this consent, you must contact the Principal Investigator, Asher Samuel at Asher.Samuel16@my.stjohns.edu. However, if you revoke your consent, you will not be allowed to continue taking part in the Research. Also, even if you revoke this consent, the Researchers may continue to use and disclose the information they have already collected.

10. Will I get paid or be given anything to take part in this study?

You will not receive any payment or other reward for taking part in this study.

11. Will I incur costs if I take part in this study?

There will be no costs to you for being in this study.

12. What are my rights if I take part in this study?

Taking part in this study is your choice. You can decide not to take part in or stop being in the study at any time. If you decide not to participate, there will be no penalty to you, and you will not lose any benefits to which you are otherwise entitled.

13. Who can I call if I have questions?

You may call Asher Samuel at email Asher.Samuel16@my.stjohns.edu if you have any questions or concerns about this research study. If you have any questions about your

rights as a research participant, or if you have a concern about this study, you may contact the Institutional Review Board listed below.

Institutional Review Board

New York City Department of Education

52 Chambers Street, Room 310

New York, NY 10007

Telephone: (212) 374-3913

MAzar@schools.nyc.gov

Institutional Review Board Coordinator

St. John's University

Office of Grants and Sponsored Research

8000 Utopia Parkway

Queens, NY 11439

Tel 718-990-1440

Fax 718-990-6020

Nitopim@StJohns.edu

14. Statement of consent

I have read this consent form. The research study has been explained to me. By electronically signing this consent form, I have not given up any of the legal rights that I would have if I were not a participant in the study.

(Participants may save this consent form by copying and pasting it into your own file for your records.)

QUESTION OF CONSENT: Have you read, understood, and agree to participate in the research study described above?

ELECTRONIC SIGNATURE: Yes, I agree to be in the research study described above.

APPENDIX E

Recruitment Email to Superintendents

Dear Superintendent _____(name)_____,

I am conducting a research study for my dissertation which will examine the effect of teaching experience on co-teaching teamwork. I would like to survey your co-teachers about their teamwork. The survey takes approximately 10 minutes. No school or district information will be collected. The survey is completely anonymous.

Please share the following invitation letter with your principals asking them to forward to their co-teachers. A reminder invitation will be sent directly to principals in 1 week. Please do not add or alter the language of this email. Simply forward to principals by saying "Dear Principals, please forward to co-teachers."

Hello co-teachers,

I am conducting a research study for my dissertation which will examine the effect of teaching
experience on co-teaching teamwork. I am asking co-teachers to individually complete a short
survey online by clicking this link ---> TAKE THE SURVEY HERE. It only takes about 10 minutes.

The survey is voluntary and completely anonymous. Your employer does not expect or require
you to participate. No email addresses or names will be collected. No one, including myself, will
know who participated.

Please feel free to email me with any questions or concerns about the study before participating. I can be reached via email at Asher.Samuel16@my.stjohns.edu. You may also
contact Dr. Raymond DiGiuseppe, IRB Chair, at 718-990-1440.

Thank you for your participation,
Asher Samuel

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VITA

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	Major: Film Production
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Other Degrees	*Master of Science, Touro College, New York, New York*
	Major: Teaching English to Students of Other Languages
Date Graduated	*May, 2009*
Other Degrees	*Professional Certificate, New York City Leaders in Education Apprenticeship Program, New York, New York*
	Certification: New York State Administrative License, School Building Leader
Date Graduated	*May, 2015*
Other Degrees	*Master of Science, Baruch College, New York, New York*
	Major: Education Administration and Supervision
	Certification: New York State Administrative License, School District Leader
Date Graduated	*May, 2016*