EFFECTS OF DISTRIBUTED LEADERSHIP ON
TEACHERS’ ACADEMIC OPTIMISM AND STUDENT
ACHIEVEMENT

By

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Abstract

Distributed Leadership is often considered an optimal form of leadership to improve student achievement. The challenge though is that previous research on distributed leadership has often described what distributed leadership is as opposed to what distributed leadership's impact on student achievement might be. Since leadership has an indirect effect on student achievement, exploring organizational factors that may have a more direct impact on student achievement is important. Academic optimism describes teachers' perceptions of the staff's collective efficacy, the trust experienced between teachers, and between teachers and administrators, and the extent to which academic press (high expectations) is evident in the school. Academic optimism is an organizational factor that improves student achievement according to previous research. This thesis examined patterns of distributed leadership and their correlation to academic optimism. Further I examined the impact that academic optimism has on student achievement. By surveying 2122 teachers in 113 schools in a large school board in south-central Ontario, I determined that planfully aligned distributed leadership had a significant correlation to academic optimism but academic optimism did not have a
significant correlation to student achievement. Rather, academic press, one of the variables within academic optimism, did have a significant correlation to student achievement in language and math. This study concluded that planfully aligned distributed leadership mediated by academic press had a significant impact on student achievement.
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CHAPTER ONE: INTRODUCTION

Background

The purpose of this study was to extend earlier research inquiring about the effects of different patterns of distributed leadership (Mascall, Leithwood, Strauss, & Sacks, 2009), by examining the relationships between alternative patterns of distributed leadership and both teachers’ academic optimism and provincial measures of student achievement in language and mathematics at the school level.

Schools have been given a clear mandate to improve student achievement and a widespread belief exists that leadership makes a significant contribution to that mandate. Determining how leadership influences student achievement is a challenging task. Numerous studies exist on principal leadership and more recently the body of research on distributed leadership has increased. Many studies have attempted to capture which leadership behaviours and attitudes make the greatest difference. Most of those behaviours and attitudes impact student learning indirectly (Day et al., 2007), through their influence on internal school processes which are directly related to student achievement (Hallinger & Heck, 1996; Leithwood, 2006; Robinson, Lloyd, & Rowe, 2008; Robinson & Timperley, 2007); therefore it is productive “to explore how leadership distribution interacts with other variables that can be shown to bear a more direct relationship to student learning” (Anderson, Moore, & Sun, 2008, p. 132).

Academic optimism is one organizational variable linked to improvements in student achievement according to some recent evidence. Academic optimism exists when teachers hold the collective belief that all staff is able to meet the learning needs of each student, trust exists within the school and between the school and parents, and
teachers hold high expectations for their students (Hoy, Tarter, & Woolfolk Hoy, 2006; Smith & Hoy, 2007). Studying the impact that different patterns of distributed leadership have on academic optimism may provide useful insights into improving student outcomes (Mascall, et al., 2009).

The research to date on distributed leadership tends to pursue either descriptive or normative purposes (Leithwood, Blair, & Strauss, 2008). Descriptive studies attempt to capture what distributed leadership is while normative studies attempt to determine whether or not distributed leadership can improve organizational outcomes. The purpose of this study is normative, exploring whether and how different patterns of distributed leadership influences student achievement conceptualizing academic optimism as a mediating variable.

Leithwood, Day et al. (2006) described four categories of effective leadership practices: setting direction, developing people, redesigning the organization and improving the instructional program. This research and related work have informed leadership development policy and programs in many jurisdictions over the last few years. Having said this, little is known about the impact different sources of such leadership practices have on organizational conditions and outcomes (Leithwood et al., 2008). Preliminary evidence does indicate that some forms of distributed leadership have important impacts on the learning conditions in schools (Leithwood & Mascall, 2008).

Distributed leadership has become a popular research focus because of this early evidence. It is believed by some to be the optimal form of leadership to improve student achievement, but empirical evidence about the effects of distributed leadership is still sparse. Much has been written that describes what distributed leadership amounts to in
practice (Bennett, Harvey, Wise, & Woods, 2003; Gronn 2002; Harris, Leithwood, Sammons, & Hopkins, 2007; Harris & Spillane, 2008; Leithwood et al., 2008; MacBeath, 2005; Spillane, 2006; Timperley, 2005a), but very little evidence has been reported about the effects of distributed leadership especially on teachers’ attitudes, teaching practices, and student achievement (Leithwood, et al., 2008).

Distributed leadership is leadership practice shared by many (Harris, 2003; Heller & Firestone, 1995; O'Day, 2002; Plowman, et al., 2007; Spillane, Camburn, & Pareja, 2007; Spillane & Diamond, 2007; Timperley, 2005b, 2008). This leadership is practiced in the “interactions between leaders, followers and their situation” (Spillane, 2006, p. 26). Distributed leadership focuses attention on the expertise that individuals possess rather than the formal position they may hold (Anderson, More & Sun, 2006; Bennet et al., 2003; Heller & Firestone, 1995; Leithwood & Jantzi, 2006) and on how those providing leadership interact to provide such leadership to their organizations. Distributed leadership is not simply a different form of delegation (Penlington, Kington, & Day, 2008). Delegated leadership typically means that the full array of leadership tasks that need to be performed are assigned to others, each of whom will typically enact them independently of others. Distributed leadership is not about people working independently on tasks that the formal leader has requested. Distribution of leadership implies that a network of individuals is working more or less interdependently to enact leadership practices toward a common goal. This network is strengthened through processes that focus their collective work and their learning (Halverson, 2007) such as inquiry processes between teachers that enhance teacher capacity (Copeland, 2003). Distributed leadership shifts away from the heroic model of leadership in which one
person is responsible for leading the organization (Gronn, 2002) to a model of leadership which is spread over formal leaders, other organizational members and their situations (Spillane, 2006).

Identifying the different patterns that distributed leadership takes in schools is a critical part of research on its effects since different patterns may have different effects. This study explores the effects\(^1\) of four patterns identified during the first stage of a larger project within which this study is a subset. These patterns are labeled planful alignment, spontaneous alignment, spontaneous misalignment, and anarchic misalignment (Leithwood et al., 2007; Mascall et al., 2009) and are described more fully in Chapter 2.

Hoy, Tarter, and Woolfolk-Hoy (2006) have studied an organizational variable which they have defined and called academic optimism. Academic optimism exists when teachers hold the collective belief that all staff can successfully meet the needs of students, trust exists within the school and with parents and students, and teachers hold high expectations for their students’ achievement (Hoy et al., 2006; Smith & Hoy, 2007). This organizational variable has been linked to improved student achievement (Hoy et al., 2006).

Three research questions are the foundation for this study:

- Do some patterns of distributed leadership have greater effects on academic optimism than others?

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\(^1\) The terms “effects” and “impacts” are used throughout the study even though evidence from the study is correlational in nature, supporting only weak causal claims. The study’s use of the terms “effects” and “impacts” is consistent with widely accepted reporting conventions for analyses such as those included in this study.
• To what extent does academic optimism mediate the effects of distributed leadership on student achievement?

• Which patterns of distributed leadership have the greatest effects on academic optimism and academic achievement?

**Significance of this Study**

Distributed leadership is widely advocated as a preferred form of leadership to improve schools and student achievement. Distributed leadership facilitates the sharing of expertise which, some argue, is needed to deal with the complex issues that our schools face (Plowman et al., 2007). Further, by facilitating distributed leadership, an organization “can be more intelligent than any one of its individual members” (Leithwood et al., 2008, p. 4). In addition, according to Robinson et al., (2008) “the more leaders focus their relationships, their work, and their learning on the core business of teaching and learning, the greater their influence on student outcomes” (p. 636).

Timperley (2008) argued that it is important to analyze leadership activities in the “interactive web of actors and artifacts rather than focusing on the attributes of a particular leader” (p. 210). This study pointed to the significance of multiple people with different types of expertise engaged in leadership activities for school improvement. Because of the need for greater expertise in schools, concertive activity may be necessary. Concertive activity is the outcome of group problem solving, the outcome of which is often superior to the outcome of individual problem solving. (Bennett et al., 2003; Gronn 2002). Gronn conducted case studies in three schools collecting both observations and interview data. He concluded that formal leaders and those to whom leadership is distributed are both necessary due to the intelligence needed to deal with
complex issues in our organizations (Gronn 2008). An organization may be more “intelligent” and better able to deal with complex matters if distributed leadership is present. However, the research also suggests that distributed leadership can take different patterns and that not all patterns of distributed leadership are equally effective in terms of the impact on teaching and learning.

This study extends earlier research inquiring about the effects of different patterns of distributed leadership on teachers’ academic optimism and standard measures of student achievement at the school level. Because there is little evidence linking distributed leadership to educationally important outcomes, this study clarifies the different forms or patterns of distributed leadership and the relationship between these patterns and both academic optimism and student achievement. By applying the construct used by Hoy et al. (2006), evidence from this study could strengthen the claim they made that it is important to aggregate previously separate variables (collective efficacy, trust and academic press) into the aggregate variable academic optimism. It may also confirm the claims about the positive effects of academic optimism on student achievement and explore the indirect relationship between distributed leadership and student achievement.
Chapter Two: Conceptual Framework and Review of the Literature

Framework for this Study

The conceptual framework or theory of action guiding this study is summarized in Figure 1.

Figure 1: Conceptual Framework

This framework identifies the potentially indirect effects of distributed leadership on student achievement, mediated by academic optimism and moderated by collective school socio-economic status (SES). Guided by this framework, the study examined teacher perspectives about the different patterns of distributed leadership that existed in their school, as well as the amount of academic optimism teachers experienced in their school. This study also examined the impacts different patterns of distributed leadership have on academic optimism and each component of academic optimism. The impacts of academic optimism and each component of academic optimism on student language and math achievement were also analyzed. Finally, conclusions were drawn about the direct
and indirect effects of patterns of distributed leadership on student language and math achievement.

**Patterns of Distributed Leadership**

To understand distributed leadership more clearly, it is important to note that there are different patterns of distributed leadership. Studying the different patterns of distributed leadership and their effects on student outcomes may bring us closer to understanding what forms or patterns of distributed leadership in practice are more likely to improve student achievement as opposed to simply describing distributed leadership as it presently exists in schools.

Distributed leadership exists in every school in some manner though the patterns of this distributed leadership may vary widely. Leithwood et al. (2008) found little consensus in the literature about how best to classify and describe such variation. They found evidence of at least five different classifications of patterns, each capturing variation across different leadership dimensions including:

- the range of organizational members to whom leadership is distributed
- the degree to which distributed forms of leadership are coordinated
- the extent of interdependence among those to whom leadership is distributed
- the extent to which power and authority accompany the distribution of leadership responsibilities
- the stimulus for leadership distribution (Leithwood et al., 2008).

The forms that distributed leadership may take vary depending on the context (Macbeath, 2008). These contexts may include the size of a school, the student achievement results in different schools, whether the school is elementary or secondary and the types of issues and challenges a school may be facing. Distributed leadership may be planned or spontaneous (Leithwood et al, 2007), holistic (deliberate and coordinated) or additive
Distributed leadership may be decisional or consultative, meaning that those who are exercising the leadership have the authority to act or they are simply providing advice. Distributed leadership may be ad hoc (unplanned in a loose structure), autocratic (involvement which is invited within unchanging structures), additive (where simple innovation is desired in an unchanging structure), or autonomous (flexible in a loose structure) (Harris, 2008), and it may be collaborative (two or more leaders working together), collective (two or more leaders working separately but interdependently), or coordinated (leadership routines involve activities that have to be performed in a particular sequence) (Spillane, 2006). Some would argue that these different terms describe similar concepts. Since distributed leadership exists in every organization in some fashion (from a descriptive perspective), it is important for normative purposes to determine the forms and pattern of distributed leadership that will make the greatest contribution to desired organizational outcomes. The remainder of this section reviews studies illustrating each of the five different approaches to capturing patterns of distributed leadership.

**Range of Organizational Members**

In terms of the range of staff members to which leadership is distributed, Spillane and his colleagues studied 52 school principals in a mid-size urban school district (Spillane, Camburn, & Pareja, 2008). Through a mixed method longitudinal study designed to evaluate leadership development, they asked the principals to keep logs, submit questionnaires, and participate in observations and interviews. They also interviewed school staff. This study showed that leadership activity was distributed across a wide range of staff. Gronn argues that the work of schools needs many people
and many forms of leadership (Gronn 2002) and that leaders and followers ought to divide the labour based upon their specialties in order to accomplish group tasks (Gronn, 2000). Gronn and Spillane describe how leadership may be distributed across various people in the organization. Leithwood and Mascall (2008) state that distributed leadership is believed to reflect the division of labour that exists in organizations which could potentially reduce the errors that could occur if only one person was exercising leadership, however, there is little empirical evidence that justifies this belief.

**Degrees of Coordination**

The degree to which distributed leadership is coordinated is also significant. In their study of the National Literacy and Numeracy Strategy in England, Leithwood et al. (2004) commented that distributed leadership means that a set of leadership practices are enacted by people at all levels of the organization and that leadership “pays attention to the interdependence of those providing leadership” (p. 60). In this study, data were collected on three occasions over four years in ten schools and “the results suggest that a large proportion of what leaders at different levels of the organization do is basically the same but that the parts of the organization to which they apply those practices differ” (Leithwood et al., 2004, p. 73). Again, this evidence indicates that many people in the school share leadership, but because people are operating in different parts of the organization, “coordination of distributed action in the service of selected organizational goals is necessary” (Leithwood et al., 2004, p. 73).

**Extent of Interdependence**

The extent of interdependence that exists among those who are exercising leadership is also important. Gronn describes distributed leadership as additive or
holistic (Gronn 2002). When describing additive distributed leadership, he states there may be multiple people involved but the effects of the leadership are dispersed rather than concentrated. This is close to the meaning of delegated leadership. From an additive perspective, leadership is the “sum of its parts” and would be “characterized as a minimalist view of distributed leadership” (Gronn 2002, p. 656). When distributed leadership is more holistic, the unit of analysis is concertive action characterized by intentional leadership in which the sum of all who are exhibiting leadership is greater than what any one individual could do. Holistic distributed leadership possesses the qualities of coordination and intentionality (Gronn 2002). Spillane refers to collective distribution which means that even though two or more persons may be working on a certain project separately, they work interdependently. Therefore, the pattern of interdependence that exists between those who exercise leadership is significant.

**Degree of Power and Authority**

The degree of power and authority that accompanies distributed leadership is another dimension used to describe patterns of distributed leadership. Those in formal leadership positions do impact how leadership is distributed in the school. Since distributed leadership means that expertise is distributed across different people, tension may exist between those formal leaders who lead by using control or delegation and those who possess expertise but who do not hold the formal leadership position in the school (Bennett et al., 2003). On the other hand, teacher leadership thrives when principals make distributed leadership a priority realizing that principals continue to play an important role in terms of setting the direction in the school (Mayrowetz, Murphy, Louis, & Smylie, 2008). Marks and Nance (2007) argue that top-down approaches are needed
in certain circumstances and participatory decision making processes are also needed in
certain situations which indicate that alignment and coordination of leadership functions
and practices are most important if goals such as improving student achievement are to be
realized. Those in formal leadership positions and those who possess expertise to provide
leadership influence in distributed ways seem to play a significant role in developing
planfully aligned patterns of distributed leadership (Anderson, 2008; Day et al., 2007;
Harris, 2004; Leithwood et al., 2004; Penlington et al., 2008; Plowman et al., 2007;
Timperley, 2005a; Togneri & Anderson, 2003). Harris used evidence from case studies
in twelve schools to argue that formal leaders need to coordinate the efforts in the school
community; therefore top-down distributed leadership is often necessary (Harris, 2004).

Using survey data in combination with observations and interviews, Leithwood
and his colleagues (2004) found that clear vision was needed at the top of the
organization and that distributed leadership needed to be embedded into the hierarchical
structure; both distributed leadership and hierarchical leadership are needed in
coordinated forms (Leithwood, et al., 2004).

Penlington and his colleagues conducted interviews with 140 leaders and other
staff in 20 schools. They concluded that the head teacher sets the direction and supports a
culture of change (Penlington et al., 2008). Further, Day and his colleagues (Day et al.,
2007) interviewed 170 leaders, teachers and other staff concluding that the role of the
head is very important in order for the school to develop a shared vision, and to cultivate
ownership and agency among the staff. They found that distributed leadership increased
leadership capacity, staff understanding and staff responsibility yet it was important that
clear communication existed so that staff knew who to approach and who was fulfilling
which role (Day et al., 2007). These findings coincide with the analysis of distributed leadership in five schools by Anderson et al. (2008) which determined that principals were more likely to distribute leadership when developing people and for managing the instructional program rather than when setting direction or creating structures in the school.

Higgins and Bonne (2011) conducted a school case study in a large, urban elementary school that served students with higher socio-economic status (Higgins & Bonne, 2011). One-on-one interviews were conducted over two years and school documentation was also analyzed. They described the importance of hierarchical leadership which refers to those who hold formal positions of leadership in an organization and heterarchical leadership in which different levels of the organization exert influence upon one another. Further, they examined the notion of hybrid leadership, similar to the definition developed by Gronn (2008), describing it as the intermingling of these two types of leadership. They concluded that:

What appears to be important in promoting instructional improvement are hybrid patterns of leadership—the combination of hierarchical and heterarchical leadership enactments—rather than either of these on their own (p. 795).

Timperley interviewed principals in seven schools, analyzed achievement data in these schools and conducted observations over four years (Timperley, 2005a). She determined that principals must develop school cultures, promote teacher development and monitor progress. Anderson and his colleagues analyzed leadership activities in five schools and they determined that principals play an important role in determining what shape distributed leadership would take in the school. They also found that formal
organizational structures create or hinder distributed leadership (Anderson et al., 2008). According to Plowman and his colleagues who conducted interviews with 16 people within a large organization and nine people outside of the organization, leaders help staff make sense of what is happening around them, they destabilize the environment and disrupt existing processes when change needs to occur without pushing so hard that chaos is caused (Plowman et al., 2007). Finally, Gronn conducted case studies in three schools, concluding that those who hold formal positions of leadership and those to whom leadership is distributed need to work together (Gronn 2008).

Harris describes distributed leadership as being either decisional, in which all leaders make decisions, or consultative, in which those to whom leadership has been distributed offer insights and advice to the person who possesses the formal leadership position. The formal leader would eventually make all final decisions (Harris, 2008). Macbeath concluded that distributed leadership may be incremental meaning that the formal leader gradually relinquishes control, or opportunistic meaning that the leadership is dispersed because various people in the community take on leadership. Distributed leadership may also be cultural, meaning that it exists when leadership is expressed more in activities rather than in roles (Macbeath, 2008). In each of these forms, whether leadership is relinquished, taken or exercised through activities as opposed to roles, the amount of authority and power held by the persons who are leading, impacts the patterns of distributed leadership that exists in the organization.

A Distributed Leadership Inventory was given to 1522 teachers in 46 secondary schools in Belgium to determine the relation between school leadership from a distributed perspective and teachers’ organizational commitment (Hulpia, Geert, & Van Keer, 2011).
They found that teachers wanted those in formal leadership positions to set a clear school vision, and help them implement this vision through clear direction and professional development, but that they did not need to receive their support solely from the leadership team. Receiving support is necessary for these teachers to succeed but who provides this support is less important (Hulpia et al. 2011).

All of these studies indicate that persons in formal leadership positions significantly influence how leadership is distributed in their schools. Leithwood and his colleagues state that “hierarchy still seems an essential property of organizations for the purpose of coordination (and possibly direction setting, as well)” (Leithwood et al., 2008, p. 269). Those in formal leadership positions must ensure that coherence exists in the school community and that the expertise in the school community is brought together in a meaningful way (Leithwood et al., 2008).

**The Stimulus for Leadership Distribution and its Impact on Patterns**

The stimulus for leadership distribution may influence the pattern of distributed leadership that emerges. Like Spillane, Harris agrees that leadership is a function of leaders, followers and their situations (Spillane & Diamond, 2007), but she contends that “these interactions are heavily influenced and framed by organizational structures and settings” (Harris, 2008, p. 254). Harris examined 52 hub schools that were part of “development and research” school networks in England. Each of these hub schools was decentralized, meaning they experienced high levels of autonomy, disciplined in terms of the innovations they were proposing, and proficient in distributing leadership (Harris & Spillane, 2008). Harris describes distributed leadership as being “ad hoc”, autocratic, additive, and autonomous. Ad hoc distributed leadership means that the leadership is...
flexible and uncoordinated. Autocratic distributed leadership means that the structure does not change, yet involvement is encouraged within the structure. Additive distributed leadership means that the structure does not change but opportunities are deliberately created for innovative work and autonomous distributed leadership means that there is a flexible, lateral, loose organizational structure in which innovation and change are encouraged in a purposeful and focused way (Harris, 2008). Autonomous distributed leadership is committed to being “loosely yet purposefully coupled” (Harris, 2008, p. 258), and this coupling is actually a form of distributed leadership that is coordinated. Macbeath describes pragmatic distributed leadership as an ad hoc response to the complexity of external forces and strategic distributed leadership as the type of distributed leadership focusing on achieving various goals (Macbeath, 2008). Anderson and his colleagues suggest that school goals focusing on student learning and staff possessing relevant experience can be a stimulus for distributed leadership in an organization (Anderson et al., 2008).

**Focusing on Patterns of Coordination**

This study inquires further about conceptions of distributed leadership concerned primarily with degrees of coordination. In particular, this study examines the effects of four patterns of coordination identified in the research of Leithwood and his colleagues. These results emerged from a multi-step study attempting to discover the patterns of distributed leadership and then to determine which patterns contributed most to organizational improvement and to student learning (Leithwood et al., 2007). In the first stage, the researchers interviewed 67 school district staff including administrators, non-administrative school leaders, and teacher leaders in eight schools to discover patterns of
leadership distribution, sources of leadership functions, characteristics of non-administrative leaders, and the influences on the development of and the outcomes associated with distributed leadership (Leithwood et al., 2007). Results identified four patterns of distributed leadership: planful alignment, spontaneous alignment, spontaneous misalignment and anarchic misalignment. Though the next phase of their research would delve more deeply into the impact of the different patterns of distributed leadership, planful alignment was hypothesized to be the most effective pattern. Planfully aligned distributed leadership existed when reflection and dialogue were the basis for decision making, when trust in the motivations and capacities of one’s colleagues was present, when everyone understood their own and each other’s role in the organization and when cooperation rather than competition described how people worked together (Leithwood et al., 2007).

By surveying 1600 teachers in a large school district in southern Ontario in the second phase of the study, Leithwood et al. (2007) added empirical support to the claim that distributed leadership needed to be planfully aligned in order for it to be effective. As previously determined in the first phase of the study, there are four different ways for distributed leadership to be practiced ranging from spontaneous alignment and misalignment which lack the planning and coordination to be effective, to anarchic misalignment where people make their own decisions outside of any expectations or parameters to planful alignment. When distributed leadership is planfully aligned, “the various sources of leadership consider which leadership practices or functions are best carried out by which source” (Mascall et al., 2009, p. 7). This study was also part of the
second stage of this multi-step study which examined which patterns of distributed leadership matter most to student achievement.

Results of this research to date confirm claims that when distributed leadership is coordinated, intentional, aligned, and focused upon shared goals, it is better able to achieve the goals of the organization. The degree to which distributed leadership is coordinated and the determination of the impact this coordinated leadership has on teachers’ academic optimism and student achievement is the focus of my study.

The extent to which planfully aligned forms of distributed leadership emerge in schools had been found to be influenced by certain conditions. These conditions include mutual decision making in the school, reflection and dialogue, trust and confidence in colleagues, and a commitment to shared goals and cooperation rather than competition (Leithwood, et al., 2007). Planfully aligned distributed leadership relies on clear role clarification, effective communication, a defined understanding of the accountabilities that exist, and the realization of who on staff possesses various expertise (Day et al., 2007). A coherent vision must be maintained in the schools (Mayrowetz et al., 2008) and a common culture is needed to promote effective practice (Elmore, 2000). Planfully aligned distributed leadership means that those who are the sources of leadership in the school determine which leadership practices and functions are needed and who will exercise these functions and practices at any given time (Leithwood et al., 2007; Mascall et al., 2009).

Given the variables in the framework for this study (beginning of this chapter) along with evidence about coordinated forms of distributed leadership, my first hypothesis is as follows:
Hypothesis #1: Planfully aligned forms of distributed leadership have direct effects on teachers’ academic optimism.

Academic Optimism

A small but compelling line of research has found that when teachers a) possess a strong sense of collective efficacy, b) trust parents, students, their fellow educators and leaders, and c) believe that all students have the potential to succeed (academic press), a significant contribution is made to student achievement (Hoy et al., 2006; McGuigan & Hoy, 2006; Smith & Hoy, 2007). These three factors, collective efficacy, trust and academic press, considered together, form the variable Hoy et al. (2006) have labeled academic optimism. This section reviews evidence about each component of academic optimism, first, and then considers research using the aggregate variable, academic optimism.

Collective Efficacy

The concept of collective efficacy flows from social cognitive theory and Bandura’s work on self-efficacy (Bandura, 1986). Social cognitive theory is a framework for understanding learning and motivation (Hoy et al., 2006). According to social cognitive theory, individuals possess a system that enables them to exercise control over their thoughts, feelings, motivations and actions. Many researchers have studied how behaviour is impacted by one’s thoughts, as well as how behaviour is impacted by one’s environment. Social cognitive theory claims that behaviour is not influenced by this dualism of internal or external factors; rather, a reciprocal relationship exists between cognition (what someone believes and thinks), behaviour, and other personal factors and environmental conditions, impacting each other bi-directionally (Bandura, 1986).
Self-efficacy is a foundational component of social cognitive theory. Though many believe that knowledge and skill are the key components of effective performance, Pajares (1996), referring to Bandura’s work, argues:

Knowledge, skill and prior attainments are often poor predictors of subsequent attainment because the beliefs that individuals hold about their abilities and about the outcome of their efforts powerfully influence the ways in which they will behave (p. 543).

Self-efficacy is a form of self-reflection which Bandura believes mediates knowledge and action (Bandura, 1986). Self-efficacy is defined as “people’s beliefs in their capabilities to mobilize the motivation, cognitive resources and courses of action needed to exercise control over events in their lives” (Wood & Bandura, 1989, p. 364). Though knowledge and skills are important, perceived self-efficacy is needed to accomplish desired goals. A telling concept communicated by Bandura is that people’s motivations and actions are influenced more by beliefs than by “objective truth” (Bandura, 1997). When people experience self-efficacy, they engage in certain activities because they have the confidence to do so. They engage in challenging activities for a longer period of time and persevere more often when facing challenges compared to those who may have the knowledge and skills but lack this belief in their own capability (Wood & Bandura, 1989).

Self-efficacy and collective efficacy are closely related (Goddard, Hoy, & Woolfolk Hoy, 2000). The sources of collective efficacy are the same as the sources of self-efficacy: mastery experience, vicarious experience, verbal persuasion and physiological state (Goddard et al., 2000). Learning takes place in different ways: through mastery experiences in which the learner engages directly; through vicarious
experience which usually involves modeling by someone with greater capacity in a certain area; through verbal persuasions which are verbal judgments that must be perceived by the learner as authentic and the goals communicated through these persuasions must be perceived as attainable; and through physiological states which may be characterized as anxiety, stress, fatigue, satisfaction and calm (to name a few examples) which impact the environments in which we live (Bandura, 1986; Wood & Bandura, 1989).

Most behaviour is learned vicariously through observation and imitation of models. Modeling is one of the most influential ways to communicate values, attitudes and to influence thoughts and behaviours (Bandura, 1986). A learner’s responsiveness to a model may be impacted by the model’s credibility, the potential rewards a person may receive that are communicated by the model and the learner’s attentiveness to what the model is attempting to teach (Bandura, 1986). Potentially, in a school with a strong sense of collective efficacy, teachers model for each other. In these schools, the norm is to share responsibility, to make commitments based upon shared beliefs and to learn from each other (Goddard et al., 2000; Tschannen-Moran & Barr, 2004). The perception teachers hold of themselves and of their colleagues will influence their actions. These actions will be judged by the group relative to group norms. In this way, collective efficacy impacts personal perceptions and group norms and these perceptions and norms impact actions (Goddard et al., 2000). High-quality teaching must be internalized in the professional culture of schools. In other words, where collective efficacy exists, teachers may exhibit the ability to persevere and together they accept the challenges they face to improve student achievement for all students.
Collective efficacy increases the likelihood that teachers will accept challenging goals and exert a strong organizational effort. The persistence that collective efficacy promotes may lead to better performance (Goddard et al., 2000; McGuigan & Hoy, 2006). Teachers’ sense of collective efficacy is related to improved student achievement. Collective efficacy influences the level of effort teachers exert because the environment supports teachers to persist in the face of challenges or difficulties (Goddard et al., 2000). Where there is a strong sense of collective efficacy, evidence suggests that teachers are more likely to maintain high standards, to concentrate on academic instruction, to monitor on-task behaviour and to build friendly, non-threatening relationships with students (Ashton, Webb, & Doda, 1983).

**Trust**

There is a positive correlation between teachers’ sense of efficacy and trust between teachers and teachers, teachers and students, and teachers and parents (Tschannen-Moran & Barr, 2004). Hoy et al. (2006) define trust as “one’s vulnerability to another in terms of the belief that the other will act in one’s best interest” (p. 429). Further, trust in schools means that staff is willing to be vulnerable to each other based on the belief that everyone in the community is benevolent, reliable, competent, honest, and open (McGuigan & Hoy, 2006). Where there is a significant sense of trust, teachers report that they feel supported, they feel their interests are reflected, and they are involved in decision making (Louis, 2007). The relationship between distributed leadership and trust is mutual and dynamic (Smylie, Mayrowetz, Murphy, & Louis, 2007).

Trust is a necessary component for school improvement (Bryk & Schneider, 2002; Tschannen-Moran & Hoy, 1998) because without it, teachers would not feel
compelled to work together to bring about change (Louis, 2007), nor would there be the ability to challenge existing structures where necessary (Regine & Lewin, 2000). Systemic change is not possible without trust (Louis, 2007). Schools with relational trust are more likely to implement changes that might be attributed to improved student achievement. By examining 400 Chicago elementary schools over a ten-year period, Bryk and Schneider (2002) concluded that relational trust consists of respect, competence, personal regard for others and integrity and that the success of any reform that is needed in schools hinges upon the degree of relational trust that exists in these schools.

Evidence suggests that trust impacts teacher commitment (Bryk, Camburn, & Louis, 1999) and where trust is present, teachers are more willing to engage in vicarious learning (Goddard et al., 2000). Vicarious learning is an effective way to build collective efficacy because teachers are willing to learn from the expertise of others. This is another indicator of the explicit connection between trust and collective efficacy. Trust is also a foundational element for professional learning communities. Trust is developed when teachers share ideas with one another and through this experience, the members of the professional learning community gain the reputation as being trustworthy (Halverson, 2007). Trust and cooperation are products of common learning goals shared by students, parents and teachers, and teaching and learning improve when trust exists (Hoy et al., 2006).

Trust in schools may improve student achievement. According to Hoy et al., (2006), “trust and cooperation among students, teachers and parents influenced regular student attendance, persistent learning, and faculty experimentation with new practices”
Trust is a necessary ingredient that assists teachers to learn from one another about how to meet the needs of each student in the school. Trust between teachers and especially elementary students, which is highly correlated with the trust between teachers and parents, allows teachers to be innovative without worrying about parental response because cooperation between parents and teachers for the sake of the students is so strong (Hoy et al., 2006). Trust between teachers and teachers, teachers and students, and teachers and parents, potentially allows common learning goals to be created and achieved, leading to improved student achievement.

**Academic Press**

Academic press is the third component of academic optimism. Academic press is the high expectations that are communicated by teachers to students in terms of their academic efforts. Academic press is evident when schools make academic achievement their central purpose (McGuigan & Hoy, 2006), and when teachers believe that students are capable of academic success regardless of their learning styles and needs (Anderson, 2008). Further, academic press is evident when high yet achievable goals are set for students, students work hard and the culture in the schools assists students to respect academic achievement (Hoy et al., 2006).

Academic press is sometimes referred to as academic emphasis and is associated with improving student achievement even when controlling for socio-economic status (Hoy, et al., 2006). Further, Hoy, Tarter and Woolfolk-Hoy (2006) comment on Alig-Mielcarek and Hoy’s work stating “academic emphasis, rather than instructional leadership was the critical variable explaining achievement” (p. 427). According to Bandura, there is a reciprocal relationship between academic press and student
achievement (Bandura, 1997). Potentially, as student achievement improves, teachers will increase academic press which in turn further enhances student achievement.

Previous research has demonstrated significant relationships between some leadership practices and each component of academic optimism: collective efficacy (Goddard et al., 2000; Goddard, Hoy, & Woolfolk Hoy, 2004; Ross, Hogaboam-Gray, & Gray, 2004), trust (Bryk et al., 1999; Bryk & Schneider, 2002; Tschannen-Moran & Hoy, 1998), and academic press (Leithwood & Riehl, 2003). However, this evidence has been derived from studies examining leadership effects on each component of academic optimism separately as opposed to studying these components together. Little is known about the relative effects of leadership on these components collectively. This lack of evidence leads to my second hypothesis:

Hypothesis #2: Planfully aligned forms of Distributed Leadership have similar effects on each aspect of academic optimism.

Academic Optimism and Student Achievement

Collective efficacy, trust and academic press together form the variable academic optimism. Evidence suggests that high levels of academic optimism contribute to student achievement across schools serving students with widely varying family backgrounds (Hoy et al., 2006) This variable has a cognitive function (collective efficacy) which speaks to how teachers perceive their own skills; an affective function (trust) which speaks to the important relationships between teachers and parents, students, others teachers and administrators; and a behavioural function (academic press) which speaks to the way teachers expect students to achieve (Smith & Hoy, 2007). These three components, Hoy et al. (2006) claim have a reciprocal relationship which means that they enhance each other to create effective conditions for learning in schools.
Academic optimism may impact the norms in a school (Smith & Hoy, 2007), and reshape the culture of the school leading to improved student achievement. As Smith and Hoy (2007) report:

One of the major challenges of school leaders is to cultivate a culture of academic optimism in which the faculty believes it can make a difference in the learning of students; the faculty believes in the capabilities of its students to succeed; the faculty believes it can trust students and parents to work cooperatively to improve learning; the faculty focuses on academic performance and students respect academic achievement (p. 565).

This is an important challenge for school leaders to accept because the evidence seems to suggest the significant effects of the above conditions on student achievement.

Three studies provide evidence to support the claim that a significant correlation exists between academic optimism and student achievement. (Hoy, et al., 2006; McGuigan & Hoy, 2006; Smith & Hoy, 2007).

Hoy, Tarter and Woolfolk-Hoy’s study (2006) was conducted with a sample of 96 high schools in a Midwestern U.S. state. Urban, suburban, and rural schools were represented in the study. Data were collected at staff meetings by using instruments that provided information about each of the components of academic optimism. The Organizational Health Inventory (Hoy & Fedmen, 1987) was used to rate academic emphasis. Collective efficacy was measured using a six-point Likert scale and trust was measured using the Omnibus Trust Scale (Hoy & Tschannen-Moran, 2003). Data were also gathered about socio-economic status and student achievement data in mathematics, science, reading, social studies and writing using state sources (Hoy et al., 2006). Results of this study suggested that academic optimism was strongly related to a student achievement at the organizational level.
Smith and Hoy (2007) explored the relationship between academic optimism and student achievement in elementary schools using a sample of 99 urban elementary schools in Texas. These school districts were considered among the poorer districts in Texas. Data were collected from teachers at staff meetings. Using random assignment, some teachers responded to the academic optimism survey while other teachers responded to a different survey that was not related to this study. Socio-economic data were provided by state sources. The same measures used for the secondary study (Hoy et al., 2006) were used in this elementary school study. This study found significant relationships between improvement of student achievement in mathematics and academic optimism (Smith & Hoy, 2007). The authors contend that:

Academic optimism is a powerful motivator because it focuses on potential with its strength and resilience rather than pathology with its attendant weakness and helplessness (Smith & Hoy, 2007, p. 567).

McGuigan and Hoy (2006) explored the enabling structures that enhance academic optimism in a school. Teachers in 40 elementary schools in Ohio were surveyed using the same three scales that were utilized in the previous two studies which measured the levels of academic press, trust and collective efficacy in a school. An Enabling School Structure form (McGuigan & Hoy, 2006) which used a 12-item Likert scale to determine practices that enable or hinder teaching and learning was also used. Student achievement was measured in terms of student proficiency on the state mandated Grade 4 test in reading and mathematics. Enabling structures were described as structures that “guided problem solving rather than punished failure” and a hierarchy of authority that enabled principals and teachers to work cooperatively across recognized authority boundaries, while retaining distinctive roles” (McGuigan & Hoy, 2006, p. 211). The
results of this study suggest that academic optimism is an organizational variable that improves student achievement and that enabling structures support the enhancement of academic optimism (McGuigan & Hoy, 2006).

These three studies provide important insights about the relationship between an organizational variable (academic optimism) and student achievement. The need to enhance this research led to my next hypothesis:

**Hypothesis #3: Academic optimism has a significant direct effect on student achievement.**

**The Mediating Effect of Academic Optimism**

Because the effects of school leadership on student achievement are widely considered to be predominately indirect (Hallinger & Heck, 1996), identifying the variables that mediate leader effects has become important (Day, et al., 2007; Day, Sammons, Hopkins, Leithwood, & Kington, 2008; Hallinger & Heck, 1996; Leithwood & Mascall, 2008; Marzano, Waters, & McNulty, 2005; Robinson, 2010). Only one study to date has examined the mediating effects of academic optimism on the relationship between leadership practices and student achievement (McGuigan & Hoy, 2006). McGuigan and Hoy studied the impact principals have on creating the type of environment that fosters increased academic optimism. This study, like the previous two studies, examined academic optimism and student achievement and it also examined how principal leadership created an environment that enables effective teaching (McGuigan & Hoy, 2006). McGuigan and Hoy (2006) describe an enabling school bureaucracy as:

The extent to which the organization and structures of a school support rather than hinder the tasks of teaching and learning (p. 210).
Enabling structures may support the four sources of efficacy described by Bandura. Teachers are given time to improve their practice which is an example of mastery experience. Teachers have the opportunity to collaborate with one another, to engage in collective inquiry activities and to observe each other, which is an example of vicarious experience and verbal persuasion. Teachers report feeling more positive about their practice when they work in an enabling environment, which in turn positively impacts teacher behaviour (Bandura, 1986; McGuigan & Hoy, 2006).

Enabling structures include teachers involved in problem solving; teachers involved in the creation of rules and procedures and teachers working in a flexible environment that allows them to respond from their professional perspective to the needs of their students (McGuigan & Hoy, 2006). There is a similarity to McGuigan and Hoy’s definition of an enabling structure and conditions that support planfully aligned distributed leadership. This study suggested that principals are the key to creating enabling structures; therefore, a principal potentially possesses tremendous influence to enhance academic optimism in schools.

Academic optimism is an important variable related to student achievement. Academic optimism, consisting of collective efficacy, trust and academic press, potentially creates an environment in a school which may improve student achievement controlling for socio-economic status. Academic optimism appears to be an effective mediator to improve student achievement. It appears that the enabling structures described by McGuigan and Hoy resemble the definition of planfully aligned distributed leadership and these structures enhance academic optimism.
**Socio-economic Status and Student Achievement**

Poor student achievement has often been attributed to low socio-economic status (SES). The Coleman report (Coleman et al., 1966) spoke about the negative consequences of low SES on student achievement citing that the characteristics of the school had a minimal effect on student achievement in the face of socio-economic challenges. Researchers have attempted to disprove this theory for decades and the research on academic optimism has contributed to this body of research (Hoy et al., 2006; McGuigan & Hoy, 2006; Smith & Hoy, 2007).

Hoy et al. (2006) surveyed teachers in 96 high schools in the Midwest United States. Socio-economic status of students was determined by obtaining income, education and mobility data at the state level. A wide-range of SES existed in these high schools. The relationship between SES and student achievement was measured as the proportion of students who passed the mandatory state tests in these areas. The relationship between SES and school-wide student achievement in math and science was .21 and the relationship between teachers’ academic optimism and school-wide student achievement was .21. The relationship between achievement in reading, writing and social studies and SES was .23 and the relationship between student achievement in these areas and academic optimism was .27.

McGuigan and Hoy (2006) surveyed teachers in 40 elementary schools in Ohio. The sample in this study represented schools with a higher average student SES compared to all schools in Ohio and this information was determined by the number of students who participated in the free or reduced lunch program. The relationship between math and reading achievement and SES was .21 and .12 respectively. The relationship
between academic optimism on math achievement was .54 and on reading achievement was .50. Finally, Smith and Hoy (2007) randomly surveyed teachers in 99 urban elementary schools in Texas. These schools served students with lower SES compared to the previous two studies. Between 55% and 92% of the students in these schools participated in the free or reduced lunch program. They found that the relationship between SES and math achievement was -.61 and the relationship between academic optimism and student achievement was .60. In each study academic optimism had a positive impact on student achievement, controlling for SES.

It is notable that the relationship between academic optimism and student achievement was greater in the two elementary school studies compared to the secondary school study. Though it is difficult to speculate the reasons for this difference, the culture of secondary schools is different from elementary schools and the issues that students face are potentially more complex. Further, in many secondary classrooms the method of instruction may focus more on the content that students need to learn rather than the process of learning that some would argue is more prevalent in elementary schools.

The SES in each study was different which may have had an impact on the results. The SES in the sample used by Hoy et al. (2006) was varied. The SES in the sample used by McGuigan and Hoy (2006) was higher compared to all of the schools in that particular state. The SES in the sample used by Smith and Hoy (2007) was much lower than the first two studies. The relationship between SES and student achievement may be more negative in the third study because of the SES challenges faced by students in those schools, but the relationship between academic optimism and student achievement in math in these same schools seems to suggest that academic optimism has
a statistically significant effect in schools serving students with low SES. In the study with higher SES schools (McGuigan and Hoy, (2006)), the relationship between academic optimism and student achievement was also more significant when compared to the Hoy et al. study (2006). Since the Hoy et al. study (2006) used a more diverse sample, this could have influenced the final results.

Because it is important to understand the type of leadership that impacts organizational variables and improves student achievement and because it is important for educators to focus on those things they can control even when educating students challenged by SES, my fourth hypothesis is as follows:

**Hypothesis #4:** Academic optimism significantly mediates the effect of planfully aligned patterns of distributed leadership on student achievement regardless of the socio-economic status of the students and the school.
CHAPTER 3: METHODS

Sample

The sample for this study was taken from 4450 teachers in 165 elementary schools in a school district in south-central Ontario. This district had a long standing commitment to distributed leadership, a significant factor leading to the decision to invite their participation. Because of this commitment, it was believed that there could be a greater chance that distributed leadership in some form would have been experienced by the participants in the survey. Those schools where at least six teachers participated in the survey were included so the final number of respondents used in this study was 2122 elementary teachers in 113 schools. This school district served students in urban, suburban and rural areas and the socio-economic demographic of the families served by this school district varied widely. The district served more than 70,000 elementary students. This study was part of the second phase of a distributed leadership research project conducted in this district over three years.  

Collective leadership is conceptualized as a network of influence (Leithwood & Jantzi, 2012), and many research studies have examined leadership through the perspective of “followers” (often assumed to be teachers in school contexts) (Copeland, 2003; Day et al., 2007; Firestone & Martinez, 2008; Leithwood & Jantzi, 2006; Marks & Louis, 1999; Mascall, Leithwood, Strauss, & Sacks, 2007; Penlington et al., 2008; Smylie et al., 2007). The relationship between leaders and followers is significant (Spillane, 2006), and since the exercise of leadership needs to be felt or experienced, a sample consisting of teachers is a significant way of examining leadership in a school.

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2 This study is a secondary analysis of evidence collected by a study of distributed leadership led by Dr. Ken Leithwood. I was part of the team that designed the study and the analyses in this thesis extends beyond the analysis completed as part of the original project.
Measures

Data for this study were collected through a survey instrument administered to teachers, as well as evidence about student achievement data provided by Ontario’s Education Quality and Accountability Office test (EQAO). Socio-economic status (SES) data for each school were provided by Statistics Canada and further refined by the district itself. The teacher survey requested information about academic optimism, leadership distribution in their schools and factors assumed to influence such distribution.

Statements on the survey used a seven-point scale were adapted from the measure of academic optimism used by Hoy and his colleagues (Hoy et al., 2006; Hoy & Fedman 1987; McGuigan & Hoy, 2006; Smith & Hoy, 2007); from the measure of trust in leaders, (Podsakof et al.,1990; Bryk & Schneider 2002) and trust between teachers (Bryk & Schneider (2002); from the measure of collective efficacy (Ross et al. (2004); and from the measure of patterns of distributed leadership used by Mascall and his colleagues (Mascall et al., 2009) (See Appendix A). In this survey, 20 statements were asked about academic optimism including five statements for trust in leaders, four statements for trust in teachers, five statements for collective efficacy and six statements for academic press.

The specific statements may be found in Table 1 below:

Table 1: Survey questions for academic optimism and each of its components

<table>
<thead>
<tr>
<th>Academic Optimism</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trust in Leaders</strong></td>
</tr>
<tr>
<td>1. I feel quite confident the leaders at my school always try to treat me fairly</td>
</tr>
<tr>
<td>2. I feel a strong loyalty to our school leaders</td>
</tr>
<tr>
<td>3. I would support the leaders at my school in almost any emergency</td>
</tr>
<tr>
<td>4. It's ok in this school to discuss feelings, worries and frustrations with school leaders</td>
</tr>
<tr>
<td>5. Leaders in our school look out for the personal welfare of teachers in this school</td>
</tr>
<tr>
<td><strong>Trust in Teachers</strong></td>
</tr>
<tr>
<td>6. Teachers in this school really care about each other</td>
</tr>
</tbody>
</table>
7. Teachers in this school really trust each other
8. It's OK in this school to discuss feeling, worries and frustrations with other teachers
9. Teachers in this school respect colleagues who take the lead in school improvement efforts

<table>
<thead>
<tr>
<th>Collective Efficacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. If a student doesn't learn something the first time, teachers in this school will try another way.</td>
</tr>
<tr>
<td>11. Teachers in this school really believe every student can learn</td>
</tr>
<tr>
<td>12. If a student doesn't want to learn, most teachers here give up (R)</td>
</tr>
<tr>
<td>13. Teachers in my school need more training to know how to deal with the students who aren't learning (R)</td>
</tr>
<tr>
<td>14. Teachers in my school don't have the skills needed to produce meaningful student learning (R)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Academic Press</th>
</tr>
</thead>
<tbody>
<tr>
<td>15. My school sets high standards for academic success</td>
</tr>
<tr>
<td>16. Students respect others who get good grades</td>
</tr>
<tr>
<td>17. Students seek extra work so that they can be successful</td>
</tr>
<tr>
<td>18. Students try hard to improve on previous work</td>
</tr>
<tr>
<td>19. Academic achievement is recognized and acknowledged at my school</td>
</tr>
<tr>
<td>20. The learning environment in my school is orderly and focused</td>
</tr>
</tbody>
</table>

One statement on the survey was used to measure each of four patterns of leadership distribution: planfully aligned, spontaneously aligned, spontaneously misaligned and anarchically misaligned distributed leadership. For planfully aligned distributed leadership the statement was: Leaders across this school collectively plan who should perform which leadership functions and they tend to follow the arrangements. For spontaneous alignment the statement was: Leadership tasks in this school are distributed with little or no planning. This distribution, however, is usually productive. For spontaneous misalignment the question was: Leadership tasks in this school are distributed with little or no planning. This distribution is not productive and often leads to confusion. For anarchical misalignment the statement was: Leaders coordinate their work carefully within their sub-units (divisions, departments, teams) but they do not coordinate their work with other sub-units.

The survey also requested the following demographic information about each respondent: grade(s) taught, number of years in the present school, years of experience in
education, grades included in the respondents’ schools and the enrolment in the school. The survey was field-tested and refined prior to administration by inviting 16 teachers, representing four geographic areas in the school district to respond to the survey and provide feedback about the clarity and intention of individual survey statements.

The socio-economic status for each school was measured by analyzing the family income and the percentage of parents within the school who had not graduated from high school. The two variables were combined to create a measure of socio-economic status (SES) for each school. Data from the 2006 Census were merged with geographic data from student records. The smallest geographic area for which data were available from the Census was the dissemination area (DA), which is a neighbourhood made up of 400 to 700 people. Student postal codes were linked with their corresponding dissemination areas, which allowed for assignment of Census data to individual students based on where they lived. This was the best option available, given that Statistics Canada does not release data that identifies individual households.

Individual teacher responses were gathered to determine the predominant pattern of distributed leadership that these teachers experienced in their school. These responses also indicated the level of academic optimism each individual teacher experienced. These responses were then used where six or more teachers responded to the survey. Since the unit of analysis was the school, in the 113 schools where six or more teachers participated, the pattern or patterns of distributed leadership they experienced in their schools, and their perceptions of academic optimism were examined in relation to one year of student achievement data. The student achievement data was the percentage of
students who achieved the provincial standard (level 3 or 4) on the provincial standardized test in language (reading and writing) and math in Grades 3 and 6.

**Data Collection Procedure**

All elementary teachers in the school district were invited to participate in this survey. Prior to the survey being distributed, a meeting was held with the Director of Education of this school district and members of the senior team to explain the purpose of this phase of the study and to outline how this phase related to previous phases of the research that had been conducted in this district. A meeting was also held with the two local teacher unions to explain the purpose of the survey. An invitation was sent electronically to every teacher in the district through the principal. The district asked principals to provide time for each teacher to complete the survey on a professional development day. Though this time was provided, teachers were assured by a letter they received from the district and from the Ontario Institute for Studies in Education (OISE) research team that their participation was voluntary. Confidentiality assurances were provided through this letter as well. Teachers were given the opportunity to participate in this survey electronically or on paper. The research department of this district provided the provincial (EQAO) student achievement data.

**Analysis**

The Statistical Package for Social Sciences (SPSS) was used to analyze survey results. Means and standard deviations of each item and scale were determined. The internal reliability of each scale was tested using Cronbach’s alpha. Correlations between variables were estimated and Structural Equation Modeling (SEM) was used for hypotheses testing.
Structural Equation Modeling permits the study of complex relationships among variables. The goal of SEM is to determine if the data supports the researcher’s theoretical model (Schumacher & Lomax, 2004). Various theoretical models may be tested through SEM. A path model focuses on observed variables and allows for the relationship among multiple variables to be examined. Factor models examine observed variables that are believed to measure one or more latent variables. A latent variable is not directly observed or measured (Schumacher & Lomax, 2004). For example, student achievement is a latent variable in this study because it is not being directly observed; rather it is being observed by analyzing standardized test results. Path analysis and factor analysis also allow the researcher to examine the relationship between independent variables, which are not influenced by other variables in the model (patterns of distributed leadership), a mediating variable (components of academic optimism) and a dependent variable which is influenced by another variable or variables in the model (student achievement). In this study, the relationship between different patterns of distributed leadership and each component of academic optimism was examined and then the relationship between each component of academic optimism and math and language achievement was examined. Academic optimism as a single variable was also examined in relation to different patterns of distributed leadership and math and language achievement. In light of the complex analysis of the relationships between both observed and latent variables and independent and dependent variables in this study, structural equation modeling permits the use of path and factor analysis to test the models and to support or dismiss the hypotheses.
The measure of socio-economic status for this study was determined by merging 2006 Census data with geographic data from student records as described above. A measure of SES using family income and level of education was created. The level of education data was the proportion of parents/guardians aged 25 to 64 in a dissemination area who had not achieved their high school diploma. Each student was assigned a value for both variables that were associated with their geographic dissemination area. For example, if Student A lived in a geographic dissemination area with a median income of $40,000 per year and 30% of adults had less than high school, Student A was assigned a value of $40,000 for income and 30% for education. SES was then calculated at the school level. Variables were first standardized so that they were measured on the same scale. The standardized variables were summed for each student to create a student-level SES score. School-level SES was then calculated by averaging the SES scores of all students enrolled at the school.

The student achievement data used for this study were collected by EQAO in 2008. The mean for student achievement in English was determined by averaging the Grade 3 and Grade 6 reading and writing scores for those schools where six or more of the teachers participated in the survey. The mean for math was determined by averaging the Grade 3 and Grade 6 math scores for those schools which were included in this study. This mean represents the average number of students who achieved a level 3 or 4 on this test in 2008. The province has set level 3 as an acceptable standard of achievement for all students.

Teachers’ perceptions of the pattern(s) of distributed leadership, and their perception of the amount of academic optimism and each of its components that exist in
their school, was examined in relationship to the student achievement data in language and math at each individual school. In this way, the correlation between these variables could be determined at the school level.

Though I discuss limitations of this study later in this thesis, it is important to note that asking only one question about the pattern of distributed leadership experienced in the school is one such limitation, especially since multiple patterns of distributed leadership may be operating simultaneously in a school based upon the leadership function being exercised, or the qualities, experience and expertise of the staff in a particular school. Further, the use of only one year’s student achievement data as a dependent measure limits claims the study is able to justify about the impact of either distributed leadership or academic optimism on changes in student achievement. Nonetheless, findings from the study are still able to offer important insights to build on in subsequent research.
CHAPTER 4: RESULTS

The achieved sample for this study was 2122 teachers in 113 schools out of a possible 4451 elementary teachers in 165 schools who participated in this survey, a participation rate of 48% of the teachers and 68% of the district’s elementary schools. Table 2 shows the mean and standard deviation of teachers’ responses to the survey using a Likert scale for four statements about leadership patterns and 20 statements about academic optimism. This table also includes mean SES data for the 113 schools that were included in this study, reports the reliability of the multi-item scales used to measure academic optimism, and describes student achievement averages in both language and math.

Table 2 indicates that the scale for academic optimism and each of its components is reliable (Cronbach’s alpha) exceeding .7, a widely agreed on minimum standard for scale reliabilities (Hoy & Woolfolk, 1993). The mean and standard deviation is provided for the responses from 113 schools. More detailed analysis of this data at the school level is illustrated through the path models found later in this chapter.

<table>
<thead>
<tr>
<th>Leadership Patterns:</th>
<th>Mean</th>
<th>SD</th>
<th>Reliability</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planful Alignment</td>
<td>4.63</td>
<td>.54</td>
<td>NA</td>
<td>1</td>
</tr>
<tr>
<td>Spontaneous Alignment</td>
<td>3.25</td>
<td>.53</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Spontaneous Misalignment</td>
<td>2.73</td>
<td>.65</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Anarchic Misalignment</td>
<td>3.82</td>
<td>.47</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Academic Optimism</td>
<td>5.27</td>
<td>.41</td>
<td>.74</td>
<td>20</td>
</tr>
<tr>
<td>Collective Efficacy</td>
<td>5.42</td>
<td>.46</td>
<td>.91</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 2

Means, Standard Deviations, Scale Reliabilities and Number of Items for Variables in Studies
(N=113 schools (2122 teachers))
Leadership patterns

Teachers were asked to respond to a statement using a Likert scale that identified each of four specific patterns of distributed leadership. If they agreed with the statement completely, they would circle “7”, and if they disagreed completely they would circle “1”. For planfully aligned distributed leadership the statement was “Leaders across the school collectively plan who should perform which leadership functions and they tend to follow the arrangements”. The mean for this statement was 4.63 with a standard deviation of .54 which suggests that teachers in the schools for this study experienced a higher degree of planfully aligned distributed leadership than the other three patterns.

The statement for spontaneous alignment was “Leadership tasks in this school are distributed with little or no planning. This distribution, however, is usually productive”. The mean for this statement was 3.25 with a standard deviation of .53 which would suggest that teachers did not experience this pattern of distributed leadership as much as planful alignment and anarchic misalignment. For spontaneous misalignment teachers responded to the statement “Leadership tasks in this school are distributed with little or no planning. This distribution is not productive and often leads to confusion.” The mean for this statement was 2.73 and a standard deviation of .65 which would suggest that this form of distributed leadership was not extensively experienced by the teachers who were
surveyed. The last pattern of distributed leadership was anarchic misalignment. The statement for anarchic misalignment was “Leaders coordinate their work carefully within sub-units (divisions, departments, teams) but they do not coordinate their work with other sub-units”. The mean response was 3.82 with a standard deviation of .47. This pattern of distributed leadership was experienced to a moderate degree compared to spontaneous alignment and misalignment, but was less than the number of teachers who agreed with the statement describing planful alignment.

Teachers agreed most with the statement describing planfully aligned distributed leadership, followed by anarchic misalignment, spontaneous alignment and finally spontaneous misalignment. The standard deviations for all four patterns fell in a narrow range (.41 - .65) suggesting approximately similar distribution of responses by teachers to items measuring each of the four patterns.

**Academic Optimism**

The results for academic optimism as an aggregate variable, as well as the results for each component of academic optimism, suggested relatively high levels of academic optimism in these schools. As Table 2 indicates, the measures of component variables were found to be more reliable (.91, .96, .96, .86) than the reliability of the aggregate variable (.74) even though the number of items is much greater for the aggregate variable. This finding foreshadows results reported later that call into question the usefulness of academic optimism as a concept, at least as it was defined for this study.

Table 3 reports the means and standard deviations of responses (using a seven-point scale) to the 20 items measuring academic optimism. The mean of 5.27 aggregate for academic optimism was relatively high and teachers did not differ widely in their
perceptions (SD .41). Of the components of Academic Optimism, ratings of Collective Efficacy were 5.42 (SD .46), Trust in Leaders 5.44 (SD .60), Trust among Teachers 5.31 (SD .63) and Academic Press 4.92 (SD .48). These data suggest moderately high levels of academic optimism and its four components; but academic press was rated lowest among the academic optimism components. Table 3 also indicates that there was considerable consistency in teacher responses to the statements. The mean for most of the responses exceeded 5, meaning that the teachers agreed that each aspect of academic optimism was present in their school. Standard deviation fell in a relatively narrow (and low) range (.41 to .74). A reverse scale was used for three statements (12, 13 and 14) determining teachers’ perceptions of collective efficacy.

Table 3 also indicates relatively low ratings (below 4.0) for two items. The two statements were “Teachers in my school need more training to know how to deal with the students who are not learning” and “Students seek extra work so that they can be successful. Because the first statement is a reverse scored statement, the lower mean suggests that a significant number of teachers agree with this statement. This desire or willingness to engage in professional training in order to meet the needs of students who are not learning actually indicates a quality of collective efficacy in which teachers will persevere until they have found the solutions to assist each student’s learning. The second statement refers to the perception teachers hold about their students and this mean suggests many of their students do not seek extra work in order to be successful.

It is important to note that similar to the statement “Teachers in my school need more training to know how to deal with the students who are not learning”, which was mentioned above, two more statements were also reverse scored statements. The two
statements were “If a student doesn't want to learn, most teachers here give up” and “Teachers in my school don't have the skills needed to produce meaningful student learning”. For these three statements a higher response means that teachers did not agree with the statement and obviously a lower response would mean more agreement. Though there was moderate agreement that teachers may need more training to deal with students who are not learning, there was disagreement that teachers give up on students who do not wish to learn (5.77) and teachers do not have the skills to produce meaningful student learning (5.81).

Table 3

Mean and Standard Deviation for each Survey Question

<table>
<thead>
<tr>
<th>Academic Optimism</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I feel quite confident the leaders at my school always try to treat me fairly</td>
<td>5.44</td>
<td>0.63</td>
</tr>
<tr>
<td>2. I feel a strong loyalty to our school leaders</td>
<td>5.29</td>
<td>0.67</td>
</tr>
<tr>
<td>3. I would support the leaders at my school in almost any emergency</td>
<td>6.06</td>
<td>0.51</td>
</tr>
<tr>
<td>4. It's ok in this school to discuss feelings, worries and frustrations with school leaders</td>
<td>5.18</td>
<td>0.68</td>
</tr>
<tr>
<td>5. Leaders in our school look out for the personal welfare of teachers in this school</td>
<td>5.22</td>
<td>0.74</td>
</tr>
<tr>
<td>Trust in Teachers</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>6. Teachers in this school really care about each other</td>
<td>5.54</td>
<td>0.66</td>
</tr>
<tr>
<td>7. Teachers in this school really trust each other</td>
<td>5.14</td>
<td>0.70</td>
</tr>
<tr>
<td>8. It's OK in this school to discuss feeling, worries and frustrations with other teachers</td>
<td>5.24</td>
<td>0.65</td>
</tr>
<tr>
<td>9. Teachers in this school respect colleagues who take the lead in school improvement efforts</td>
<td>5.32</td>
<td>0.66</td>
</tr>
<tr>
<td>Collective Efficacy</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>10. If a student doesn't learn something the first time, teachers in this school will try another way</td>
<td>5.86</td>
<td>0.45</td>
</tr>
<tr>
<td>11. Teachers in this school really believe every student can learn</td>
<td>5.74</td>
<td>0.50</td>
</tr>
<tr>
<td>12. If a student doesn't want to learn, most teachers here give up (R)</td>
<td>5.77</td>
<td>0.54</td>
</tr>
<tr>
<td>13. Teachers in my school need more training to know how to deal with the students who aren't learning (R)</td>
<td>3.91</td>
<td>0.59</td>
</tr>
<tr>
<td>14. Teachers in my school don't have the skills needed to produce meaningful student learning (R)</td>
<td>5.81</td>
<td>0.55</td>
</tr>
<tr>
<td>Academic Press</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>15. My school sets high standards for academic success</td>
<td>5.63</td>
<td>0.60</td>
</tr>
<tr>
<td>16. Students respect others who get good grades</td>
<td>5.03</td>
<td>0.57</td>
</tr>
</tbody>
</table>
Socio-economic Status

SES was measured using median family income and the proportion of working age population with less than a high school education. As was previously described, this number is a school-based SES score determined from the individual score of each student in the school. Since these two variables have different units of measurement (i.e., $ for income and % for education), the standardized scores (also referred to as Z scores) were computed for each variable. For each school, Z scores were calculated for both income and education. This allowed for the combination of income and education into a single value because they were now measured using the same unit (i.e., number of standard deviations from the mean). By standardizing values in this way, the resulting distribution of values is always normal, with a mean of 0 and standard deviation of 1.

For example, School A might have a Z score of 0.215 for income and -0.125 for education. This means that the median income of School A is 0.215 standard deviation units above the mean and the % of adults with less than high school is 0.125 standard deviation units below the mean.

To compute SES, the two values for each school were averaged. Because the average of the two values was computed (as opposed to just adding them together), a mean of 0 and a standard deviation of 1 was retained for the distribution of SES scores. So, for School A, SES is computed as .045 standard deviation units above the mean of 0. Because the data from this school district were created to determine the schools with the
lowest SES, a reverse code was used. In other words, positive numbers refer to schools with lower SES and negative numbers refer to schools with higher SES. The SES values in this district ranged from 2.671 (the school with the lowest SES) and -2.229 (the school with the highest SES) with a mean of 0 and a standard deviation of 1; therefore, a mean of .040 and a standard deviation of .92 would suggest that these 113 schools represent socio-economic diversity but serve a slightly lower SES demographic when compared to the rest of the district.

**Student Achievement**

To determine the mean for student achievement (Table 2), the 2008 EQAO Assessment for Grade 3 and Grade 6 students was used for the 113 schools where at least six teachers participated in the survey. This assessment determines student proficiency in reading, writing and math. A student is considered to be at standard when they score a level 3 or 4 (out of 4) on this assessment. The language score is the average of the reading and writing results and the numeracy score is the math result. For both scores, the average of Grade 3 and Grade 6 was determined. For example, if the score in Grade 3 reading was 68, in Grade 3 writing was 72, in Grade 6 reading was 74 and in Grade 6 writing was 71, the student achievement score in language for this school was calculated in the following way: (68+72+74+71= 285/4 = 71.25).

The mean for student achievement in language was .73 (SD .11). The mean for student achievement in math was .73 (SD .13). The mean for both math and language indicates the percentage of students who achieved level 3 and 4 on these assessments in the 113 schools. The 113 schools participating in this study would be considered similar to all of the schools in this district because the district average in math and language was
also .73 in both subjects. The relatively small standard deviation in language (.11) and math (.13) indicates that most students in these 113 schools performed successfully. Compared to the Ontario provincial EQAO average in 2008 which was .65 for both language and math these 113 schools performed above the province average in 2008.

The Relationship between Leadership Patterns and Academic Optimism

Table 4 reports the correlations between the four patterns of distributed leadership and academic optimism including its component variables. These data begin to address one research question “Do some patterns of distributed leadership have greater effects on academic optimism than others?” and two hypotheses, “Planfully aligned forms of distributed leadership have significant direct effects on teachers’ academic optimism while other patterns have little or no effect” and “Planfully aligned forms of distributed leadership will have similar effects on each aspect of academic optimism: collective efficacy, trust and academic press.”

<table>
<thead>
<tr>
<th></th>
<th>Academic Optimism</th>
<th>Collective Efficacy</th>
<th>Trust in Leaders</th>
<th>Trust in Teachers</th>
<th>Academic Press</th>
<th>SES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planful Alignment</td>
<td>.54**</td>
<td>.40**</td>
<td>.52**</td>
<td>.32**</td>
<td>.38**</td>
<td>-.07</td>
</tr>
<tr>
<td>Spontaneous Alignment</td>
<td>-.04</td>
<td>-.08</td>
<td>-.06</td>
<td>-.07</td>
<td>.09</td>
<td>-.04</td>
</tr>
<tr>
<td>Spontaneous Misalignment</td>
<td>-.50**</td>
<td>-.31**</td>
<td>-.57**</td>
<td>-.34**</td>
<td>-.24*</td>
<td>.10</td>
</tr>
<tr>
<td>Anarchic Misalignment</td>
<td>-.26**</td>
<td>-.18</td>
<td>-.30**</td>
<td>-.34**</td>
<td>.11</td>
<td>.00</td>
</tr>
<tr>
<td>Collective School SES</td>
<td>-.31**</td>
<td>-.12</td>
<td>-.26**</td>
<td>-.21*</td>
<td>-.32**</td>
<td>1.00**</td>
</tr>
</tbody>
</table>

**Correlation is significant at the 0.01 level (2-tailed)
*Correlation is significant at the 0.05 level (2-tailed)
Planfully aligned distributed leadership is significantly and positively related to academic optimism as well as each of its components. Spontaneous alignment is negatively, (though not significantly) related to academic optimism and each of its components with one exception; the correlation between spontaneous alignment and academic press is positive yet insignificant. Spontaneous misalignment is negatively and significantly related to academic optimism and each component, while anarchic misalignment has a negative correlation to academic optimism and its components, with the exception of the correlation between anarchic misalignment and academic press where there is a positive yet insignificant correlation similar to spontaneous misalignment. The negative correlation is only significant between anarchic misalignment and academic optimism, trust in leaders and trust in teachers.

The correlation between SES and academic optimism and SES and each aspect of academic optimism is negative. This correlation is significant for the relationship between SES and academic optimism as a whole and between trust in leaders, trust in teachers and academic press. These results indicate less incidence of academic optimism in schools serving students with lower socio-economic status. SES has a negative correlation to each pattern of distributed leadership with the exception of spontaneous misalignment. None of these correlations are significant.

Planfully aligned distributed leadership is the only leadership pattern that has a positive and significant correlation to academic optimism and its components - collective efficacy, trust and academic press - providing support for the hypothesis that “planfully aligned forms of distributed leadership will have significant direct effects on teachers’ academic optimism while other patterns have little or no effect” (except that spontaneous
misalignment has a significant negative relationship). These results also support the hypothesis that planfully aligned forms of distributed leadership have similar effects on each aspect of academic optimism. The strength of the relationship between planfully aligned distributed leadership and each component of academic optimism is a moderate one ranging from .32 to .54.

**The Relationship between Academic Optimism and Student Achievement**

Previous studies suggested that academic optimism had a positive impact on student achievement (Hoy et al., 2006; McGuigan & Hoy, 2006; Smith & Hoy, 2007). Table 5 reports the correlations between SES and student achievement and academic optimism and student achievement in the 113 schools in this study. These data address the research question “To what extent does academic optimism mediate the effects of distributed leadership on student achievement?” and the hypothesis that “academic optimism has a significant direct effect on student achievement.”

These results do not replicate previous findings (Hoy et al., 2006; McGuigan & Hoy, 2006; Smith & Hoy, 2007). The correlation between aggregate academic optimism and language achievement is a non-significant .13 and between aggregate academic optimism and mathematics achievement a non-significant .11. Some previous studies have reported a statistically significant relationship between academic optimism and math and language achievement of .21 and .27 respectively (Hoy, et al., 2006), .54 for math and .50 for language (McGuigan & Hoy, 2006) and .34 for math (Smith & Hoy, 2007).
Table 5
Relationships between SES, Academic Optimism and Student Achievement on 2008 EQAO Tests (Correlation Coefficients, N = 113)

<table>
<thead>
<tr>
<th></th>
<th>Language</th>
<th>Mathematics</th>
<th>SES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic Optimism</td>
<td>.13</td>
<td>.11</td>
<td>-.31**</td>
</tr>
<tr>
<td>Collective Efficacy</td>
<td>.04</td>
<td>.03</td>
<td>-.12</td>
</tr>
<tr>
<td>Trust in Leaders</td>
<td>.06</td>
<td>.06</td>
<td>-.26**</td>
</tr>
<tr>
<td>Trust in Teachers</td>
<td>-.14</td>
<td>-.16</td>
<td>-.21*</td>
</tr>
<tr>
<td>Academic Press</td>
<td>.52**</td>
<td>.50**</td>
<td>-.32**</td>
</tr>
<tr>
<td>Collective School SES</td>
<td>-.38**</td>
<td>-.32**</td>
<td>1.00**</td>
</tr>
</tbody>
</table>

**Correlation is significant at the 0.01 level (2-tailed)
* Correlation is significant at the 0.05 level (2-tailed)

Though this study does not show a statistically significant correlation between academic optimism and student achievement in language and math, there is a statistically significant and positive correlation between academic press and language achievement of .52 and between academic press and math achievement of .50. There is not a statistically significant positive correlation between student math and language achievement and any other component of academic optimism. These findings vary from previous studies which concluded that the proportion of between school variance in student math and language achievement explained by collective efficacy was .53 and .69 respectively (Goddard et al., 2000), and the proportion of between school variance explained by trust was .81 for both math and reading achievement (Goddard, Tschannen-Moran, & Wayne, 2001). Similar findings were found previously in terms of academic press whereby the proportion of between school variance in math achievement explained by academic press was .47 and in reading achievement .50.
These results challenge the hypothesis that academic optimism has a significant direct effect on student achievement. Rather, these results indicate that academic press alone has a significant and positive impact on student achievement.

**Effects of Planfully Aligned Distributed Leadership and Academic Press**

Results described in earlier sections of this chapter justify modifications of the conceptual framework guiding this study. Results described in this next section limit attention to only one pattern of distributed leadership and one component of academic optimism. Path models were calculated using planfully aligned distributed leadership as the independent variable, academic press as a mediating variable, and students’ math and language achievement as the dependent variable. Results of testing these two models are described in Figures 1 and 2 which also demonstrate the effects of SES, treated as a moderator.

**Language Achievement**

Figure 1 illustrates the effects of planfully aligned distributed leadership and academic press on language achievement. In this figure, the regression coefficient between planfully aligned distributed leadership and academic press is .36. This effect is statistically significant as is the regression coefficient between academic press and student language achievement which is .44. Collective school SES has a negative but statistically insignificant effect on planfully aligned distributed leadership (-.07) and a negative but statistically significant effect on academic press (-.30). The effect of collective school SES on student language achievement is negative and statistically significant (-.24) as would be expected from previous research.
Figure 1: SES, Planful Alignment, and Academic Press Effect on Language Achievement

Explain Variance:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Leadership</td>
<td>.00</td>
<td></td>
</tr>
<tr>
<td>Academic Press</td>
<td>.24</td>
<td></td>
</tr>
<tr>
<td>Student Language</td>
<td>.32</td>
<td></td>
</tr>
</tbody>
</table>

Fit Indices

<table>
<thead>
<tr>
<th></th>
<th>Standardized Total Effects of:</th>
<th>Student Achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>RMSEA</td>
<td>.00</td>
<td>SES</td>
</tr>
<tr>
<td>RMR</td>
<td>.02</td>
<td>Leadership: Planful Alignment</td>
</tr>
<tr>
<td>AGFI</td>
<td>.96</td>
<td>Academic Press</td>
</tr>
<tr>
<td>NFI</td>
<td>.99</td>
<td></td>
</tr>
<tr>
<td>$\chi^2 = .93$, df=1, p= .33</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The fit indices for the Figure 1 path model suggest that the data fit the model. The Chi square test shows that the ratio between Chi squared and degrees of freedom is .07. A model is suitable when the ratio is close to 0 and less than 2. The Root Mean
Square Error of Approximation (RMSEA) is 0. A factor less than .05 is suitable. The Root Mean Square Residual (RMR) is .02. A value less than .08 is considered a good fit. The AGFI is .96 and it indicates a suitable fit because it exceeds .90. The Normal Fit Index (NFI) is .99. This is suitable because it exceeds .95. In each case the fit index indicates that the model is suitable.

Figure 1 indicates a statistically significant and moderately strong direct effect (regression coefficient = .36) of planfully aligned distributed leadership on academic press and a slightly stronger significant direct effect (regression coefficient = .44) of academic press on students language achievement. Collective school SES has negative direct effects on all three of the other variables in this model; this effect is statistically significant in the case of both academic press (-.30) and student language achievement (-.24).

The Figure 1 model, as a whole, explains 24% of the variation in academic press and 32% of the variation in student language achievement. Of the 32% of variation in student language achievement accounted for by this model (Standardized Total Effects data) academic press explains a statistically significant 44% while planfully aligned distributed leadership explains a statistically significant 16%. Most of the remaining variation is accounted for by collective school SES (-.38). Witziers reported a direct effect size of .02 when studying the direct effects of leadership on student achievement. This conclusion was drawn from the meta-analysis of 37 multinational studies (Witziers, Bosker, & Kruger, 2003). According to Marzano et al. (2005) who studied the direct and indirect effect of leadership on students’ achievement, the effect that was determined from this meta-analysis was .40. Since the standardized total effect of planfully aligned
distributed leadership and academic press is .60, this result exceeds the effect concluded from previous studies. Therefore, this model supports the positive effect planfully aligned distributed leadership and academic press together have on student achievement.

**Math Achievement**

Figure 2 illustrates the effects of planfully aligned distributed leadership and academic press on math achievement. In this figure, the effect of planfully aligned distributed leadership on academic press is .36. This effect is statistically significant. The effect of academic press on student math achievement is .46; again this is a statistically significant effect. The collective school SES has a negative yet insignificant effect on planfully aligned distributed leadership (-.07) and a negative and significant effect on academic press (-.30). The effect of collective school SES on student math achievement is negative and significant (-.17).

The fit indices for this path model suggest that the model is suitable. The Chi square test shows that the ratio between Chi squared and degrees of freedom is 1.41. The fit indices indicates a good fit in terms of NFI (.97) and RMR (.04) but not with RMSEA (.11) and AGFI (.89). Even though only two of the four indices suggests a good fit, this model may still be used.

Figure 2 indicates a statistically significant and moderately strong direct effect (regression coefficient = .36) of planfully aligned distributed leadership on academic press and a slightly stronger significant direct effect (regression coefficient = .46) of academic press on students’ mathematics achievement. Collective school SES has negative direct effects on all three of the other variables in this model; this effect is
significant in the case of both academic press (-.30) and student language achievement (-.17).

Figure 2: SES, Planful Alignment, and Academic Press Effect on Mathematics Achievement

Explained Variance:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Explained Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leadership</td>
<td>.00</td>
</tr>
<tr>
<td>Academic Press</td>
<td>.24</td>
</tr>
<tr>
<td>Student Mathematics Achievement</td>
<td>.29</td>
</tr>
</tbody>
</table>

Fit Indices

<table>
<thead>
<tr>
<th>Fit Indices</th>
<th>Standardized Total Effects of:</th>
<th>Student Achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>RMSEA</td>
<td>.11</td>
<td>SES</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-.32*</td>
</tr>
<tr>
<td>RMR</td>
<td>.04</td>
<td>Leadership: Planful Alignment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.17*</td>
</tr>
<tr>
<td>AGFI</td>
<td>.89</td>
<td>Academic Press</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.46*</td>
</tr>
<tr>
<td>NFI</td>
<td>.97</td>
<td></td>
</tr>
<tr>
<td>X2 = 2.41, df= 1, p= 0.12</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Figure 2 model, as a whole, explains 24% of the variation in academic press and 29% of the variation in student mathematics achievement. Of the 29% of variation in student mathematics achievement accounted for by this model (Standardized Total
Effects data) academic press explains a significant 46% while planfully aligned distributed leadership explains a significant 17%. Most of the remaining variation is accounted for by collective school SES (-.32). Since the standardized total effect of planfully aligned distributed leadership is .17, this effect is significant compared to direct leadership effects concluded from previous studies.

**Summary of Results**

Planfully aligned distributed leadership is the only pattern of distributed leadership that had a positive correlation to academic optimism. This form of leadership seems to have a direct effect on teachers’ academic optimism while other patterns have no effect or a negative effect. Spontaneous misalignment has a significant negative effect on each aspect of academic optimism and anarchic misalignment has a significant and negative effect on certain aspects of academic optimism. Planfully aligned patterns of distributed leadership have a similar correlation to each aspect of academic optimism. However, academic optimism, an aggregate variable, does not have a direct effect on student achievement and does not mediate the effects of planfully aligned distributed leadership on student achievement. Rather, academic press, a component of academic optimism, does have a direct effect on student achievement and does mediate the effects of planfully aligned distributed leadership on student achievement. Planfully aligned distributed leadership and academic press together have a 60% standardized total effect on student language achievement and a 63% standardized total effect on student math achievement.

The conceptual framework and hypotheses for this study suggested that planfully aligned distributed leadership mediated by academic optimism would improve student
achievement. However, the results from this study indicate that planfully aligned distributed leadership mediated by academic press has a significant, positive effect on student achievement.
Chapter 5: Discussion and Conclusions

This study explored how teacher perceptions of four distinct patterns of distributed leadership related to academic optimism and its components, as well as to student achievement. The research questions for this study were focused on understanding the effect of each pattern of distributed leadership on academic optimism and ultimately student achievement and determining to what extent academic optimism mediates the effects of distributed leadership on student achievement. Built on previous research which suggested that planfully aligned distributed leadership enhanced academic optimism (Mascall et al., 2009), and academic optimism significantly contributed to student achievement (Hoy et al., 2006; Smith & Hoy, 2007), this study intended to add to the sparse amount of research that exists regarding distributed leadership’s impact on student outcomes. The evidence that was gathered through this study will now be applied to the four hypotheses outlined earlier.

**Hypothesis #1: Planfully aligned forms of distributed leadership have significant direct effects on teachers’ academic optimism while other patterns have little or no effect.** The evidence from this study indicated that planfully aligned distributed leadership is the only pattern of distributed leadership that has a positive and significant effect on academic optimism. These data do show that spontaneous misalignment and anarchic misalignment do have a significant negative effect on academic optimism. Therefore, planfully aligned distributed leadership is the only form of distributed leadership likely to enhance academic optimism in a school assuming the relationships tested in this study are eventually found to be causal. These findings align with the previous study in the larger project that arrived at the same conclusion (Mascall et al., 2009).
Hypothesis #2: Planfully aligned forms of distributed leadership will have similar effects on each aspect of academic optimism: collective efficacy, trust and academic press. The evidence from this study showed that planfully aligned distributed leadership did have a similar effect on each aspect of academic optimism.

Hypothesis #3: Academic optimism has a significant direct effect on student achievement. The evidence from this study did not support this hypothesis. Academic optimism had small, insignificant effects on student achievement. Academic press was the only aspect of academic optimism that had a positive and significant direct effect on student achievement in Grade 3 and Grade 6 language and math. The evidence from this study does not replicate the findings from previous studies claiming that academic optimism has a positive significant effect on student achievement (Hoy, et al., 2006; Smith & Hoy, 2007).

It is not clear why the findings in this study do not replicate the findings in previous studies. The samples from the three previous studies were not identical to the sample used in this study which was 113 urban, suburban and rural elementary schools serving students from a varied socio-economic background. The sample in the study conducted by Hoy et al. (2006) was 96 high schools in a Midwestern U.S. state. Smith and Hoy (2007) studied 99 urban elementary schools which served a predominately socio-economically disadvantaged student body from school districts in Texas, and McGuigan and Hoy (2006) studied 40 elementary schools serving a slightly wealthier student population in one large urban centre in Ohio.

None of these previous studies actually reported the number of teachers who participated. The Hoy et al. study (2006) did suggest that between 10 and 40 teachers
from 96 secondary schools participated, but did not report the achieved sample. Further, 40 elementary schools were used by McGuigan and Hoy (2007) and 99 elementary schools were used by Smith and Hoy (2007), but the exact numbers of respondents to their surveys were not reported either. If the sample sizes between these studies and the present study vary, this variance could have had an influence on these differing results.

Further, in the previous studies, trust was defined as trust between teachers and parents/students, while trust between teachers and teachers as well as teachers and administrators was the focus for this study. Earlier research conducted by Hoy and his colleagues focused on trust within the school, between teachers and teacher and teachers and administrators but they eventually determined that trust between teachers and parents/students was a better predictor of student achievement (Hoy, 2012). This change in the definition of trust could help account for some of the differences in results.

The conceptual framework used by McGuigan and Hoy (2007) was very similar to the conceptual framework used in this study. “Enabling structure” was used instead of distributed leadership and its influence on academic optimism and student achievement. They studied the effects of academic optimism on math and reading. Yet, the characteristics of enabling structure that McGuigan and Hoy (2007) discussed very much mirror the characteristics of distributed leadership.

Hoy et al. (2006) looked specifically at the impact academic optimism had on student achievement and also included the influence of previous student achievement as well as urbanicity, which is the density of the population where a school is located, but did not consider distributed leadership. The present study did not examine previous student achievement and urbanicity. Further, Hoy et al. (2006) analyzed the effect of
academic optimism on math, science, reading, writing and social studies compared to language and mathematics in this study Smith and Hoy (2007) did not examine distributed leadership and included school size as one of their variables, a variable not examined in this study. Their conceptual framework analyzed the effect of academic optimism on math omitting any analysis of the effect academic optimism might have on language achievement. Different measures of student achievement used in previous studies could lead to different results. Finally, previous studies examined collective efficacy and trust in relationship to student achievement separately and this could lead to a different result when compared to this study where these variables were studied together.

Though similarities exist between this study and the previous studies on academic optimism and student achievement, therefore, there are also some differences. Though these differences do not appear to be extensive, they may help account for differences in results. The potential variations in the sample, the definition of trust used by the previous studies and the different numbers of respondents to the surveys may have impacted the results leading to a different conclusion compared to the previous three studies (Hoy et al. 2006; McGuigan & Hoy 2007; Smith & Hoy 2007). But not one of these differences provides an obvious explanation.

**Hypothesis #4: Academic optimism significantly mediates the effect of planfully aligned patterns of distributed leadership on student achievement regardless of the socio-economic status of the students and the school.** As mentioned above, the evidence does not support this hypothesis that academic optimism mediates planfully aligned distributed leadership on student achievement; rather, the evidence does
suggest that academic press mediates the effects of planfully aligned distributed leadership on student achievement in language and math. This study indicated that the combined direct and indirect effects of planfully aligned distributed leadership and academic press together explained 60% of the variation in language achievement and 63% of the variation in math achievement. Of that total explained variation (60% and 63%) planfully aligned distributed leadership accounted for 16% and 17% in language and math achievement respectively. Planfully aligned distributed leadership and academic press have large significant effects on student achievement.

Socio-economic status had a large negative effect on both language and math achievement (38% and 32% respectively). This SES data also showed a negative impact on academic optimism and each of its components, most importantly academic press (-.30) The SES data for the 113 schools suggests that the sample schools served students whose families were slightly below the average SES of families in the district as a whole. Student achievement results for language and math in these 113 schools exceeded the provincial average and matched the district’s average. Teachers in these schools reported a significant amount of planfully aligned distributed leadership and academic optimism. Even though SES had a negative impact on academic press and student achievement, student achievement was positively impacted by the planfully distributed leadership and the academic press in these 113 schools.

As mentioned previously, though teachers in these schools did experience planfully aligned distributed leadership and academic optimism, the path models used in this study indicate that academic press impacted student achievement and not academic optimism. Some reasons have already been given regarding why these results may have
been different. These reasons include a slightly different conceptual framework used in previous studies, potential differences in sample size, different socio-economics in the schools that were studied, and a different definition of trust. Regardless of these differences, academic press, not academic optimism, mediated the effects of planfully aligned distributed leadership on student achievement in this study.

**Limitations of This Study**

This study provided evidence from one school district that had been focusing on student achievement and distributed leadership for a number of years. Although the district was large and a large number of teachers and schools responded, the culture of this district may have shaped teacher responses. This study could be conducted using teachers from different school districts in order to determine if conclusions might be replicated when a sample from multiple school districts is used.

Another limitation is that there was only one statement on the survey for each pattern of distributed leadership. Multiple statements would insure that the participant understood the particular pattern and the results could potentially be more reliable.

The student achievement data used as the dependent variable in this study were one-year averages. These results do not explain the possible impact of planfully aligned distributed leadership and academic press on changes in student achievement over time. It is not clear from one-year averages if the schools being used in this study sustained their students’ academic achievement results. By including additional student achievement data over a longer period of time, and if student achievement continues to improve, the argument that planfully aligned distributed leadership, mediated by academic press, improves student achievement would become more compelling.
Similarly, it would be optimal to track changes in teacher perception over time in terms of the patterns of distributed leadership and the level of academic optimism as well as each component of academic optimism in their school. By observing any changes to teachers’ perceptions in relation to student achievement data, these findings could be more conclusive regarding the on-going impact of planfully aligned distributed leadership and academic press on student achievement.

Very little research has been conducted on the impact of distributed leadership on desired outcomes such as improving student achievement, impacting professional development or enhancing staff commitment to shared goals (Leithwood et al., 2008). Part of the reason for this lack of research is because without some agreement regarding the forms distributed leadership can take, researchers find it very difficult to determine how distributed leadership impacts desired outcomes (Leithwood et al., 2008). Further, we do not have a substantial amount of research on the sources of influence that impact teachers’ practice (Robinson, 2009). Robinson (2009) argues that “if distributed leadership is to serve students, then more research is needed on the conditions under which teachers, especially those without positional authority, succeed in influencing their colleagues in a way that benefits students” (p. 236). One of the conditions that would benefit students is the enhancement of academic press in the school. Distributed leadership research needs to be more closely related to those conditions which create effective learning environments for students (Day et al., 2007; Harris, 2004; Rorrer, Skrla, & Scheurich, 2008; Timperley, 2008). Instead of simply researching what distributed leadership is, further studies need to articulate the impacts of particular types of distributed leadership practice (Robinson, 2009) as this study did.
Previous research about academic optimism demonstrates an influence on student achievement. But this research, while compelling, is still very limited in quantity. More study is needed to either confirm or deny the contribution of academic optimism to student achievement in different settings and with different sample sizes and characteristics. This study began to address this limitation.

A final limitation is related to the quantitative nature of this study. While the design of this study has much strength, it does not allow for a deeper understanding of the participants’ perspectives, something that could be gained from more qualitative study. Findings from this quantitative study, for example, could be extended by engaging in qualitative studies to further understand the role that planfully aligned distributed leadership and academic press play in terms of improving student achievement. This concept will be more fully developed in the next section.

**Implications for Theory and Research**

Planfully aligned distributed leadership appears to have positive and significant relationship to student achievement greater than other patterns of distributed leadership. Planfully aligned distributed leadership has a standard total effect on language and math achievement (16% and 17% respectively), a total effect greater than most previous studies have concluded. These results warrant further study. A qualitative approach might provide further insight into how planfully aligned distributed leadership is implemented in schools to better understand how to implement this pattern of leadership in a way that improves student achievement.

Though some research exists on the importance of creating enabling environments that support educators to fulfill their professional commitments, further study is needed to
understand how planfully aligned distributed leadership affects the beliefs and attitudes
teachers hold about their students and their learning and enables teachers to improve
student achievement. It is important to better understand why shared decision making in
schools, the creation of a shared vision, and the determination of the focus for
professional learning (to name a few enabling factors) need to be distributed in a
coordinated way in order to improve student outcomes.

In terms of academic press, educators have always discussed the importance of
holding high expectations for students and for fellow staff members. Academic press
does involve creating a culture of high expectations in the school but it also includes
additional components. Some of these components include dispositions by staff toward
excellence that “press” students to achieve. Though graduation is important, schools with
a healthy sense of academic press want every student to excel, a goal much more
ambitious than simply graduating. When academic press is evident, every student has
high achievable goals supported by the staff and in orderly and safe learning
environments, students achieve these goals. In schools with a healthy sense of academic
press, teachers believe in the ability of each student, and students respect that academic
achievement is the priority. Students are also encouraged to participate in a broad array
of rigorous courses (Hoy et al., 2006; McGuigan & Hoy, 2006; Smith & Hoy, 2007).
Though possessing high expectations for student and staff is widely discussed, I would
suggest that educators do not always know what it means to create a culture that increases
academic press in schools. Further, teachers seem to possess less academic press in
schools serving students with a lower socio-economic status. Studying schools where
academic press is more evident, regardless of the students’ SES, would further the understanding of how to strengthen academic press in every school.

Academic press refers to teachers’ beliefs about their students’ capabilities. Where academic press is evident in a school, that school performs better and when they perform better, academic press increases (Goddard, Sweetland, & Hoy, 2000). Though research has been conducted on changing the attitudes and beliefs of teachers that block academic press (Timperley & Robinson, 2002), and on the types of instructional decisions teachers make and the classroom environments they create based upon their attitudes about their students (Rubie-Davis, Flint, & McDonald, 2011), more research is needed regarding what leaders could do to create a culture where academic press is the norm.

The relationship between planfully aligned distributed leadership and academic press needs further examination. Since academic press is a significant mediator of planfully aligned distributed leadership on student outcomes, further study is needed regarding what supports the enhancement of academic press in schools, what challenges or blocks this enhancement and how we might become more collectively able to create school environments where students and staff increase academic press in authentic ways. Further research is also needed to understand how planfully aligned distributed leadership enhances and influences academic press in a school. If greater academic press is needed, determining how to best assist staff to strengthen academic press in schools may also be an important focus for further study. This assistance for teachers would be strengthened by evidence regarding how academic press is created, enhanced, and sustained in a school community.
Though the findings from this study suggested that planfully aligned distributed leadership mediated by academic press, not academic optimism had a significant, positive effect on student achievement, more study may provide insight into how collective efficacy and trust impact academic press. Prior to the existence of the variable called academic optimism, research had been conducted on each component of academic optimism - collective efficacy, trust and high expectations. The relationship between these variables reported in these studies is very strong. Tschannen-Moran and Barr (2004) determined that efficacy and trust are positively correlated. They also found that when teachers possess collective efficacy, they hold high expectations for students. Further, Goddard et al. (2000) determined that trust allows for more vicarious learning where teachers are willing to learn from someone who possesses expertise. This learning leads to collective efficacy. Where collective efficacy exists in a school, the staff is more likely to maintain high standards (Ashton, et al., 1983). Each component of academic optimism has the potential to shape the norms in a school. As Goddard et al. (2001) states:

The consequence of high collective teacher efficacy will be the acceptance of challenging goals, strong organizational effort and a persistence that leads to better performance (p. 486).

One could argue from this previous research that trust supports teacher learning that leads to collective efficacy. Collective efficacy creates a culture in a school that naturally supports academic press because the teachers have the confidence to persist in their efforts, plan and instruct effectively, and accept responsibility for improving each student’s achievement (Goddard et al., 2001). Though academic press was the variable that mediated the effect of planfully aligned distributed leadership on student
achievement in this study, further research may provide greater clarity regarding the relationship between collective efficacy and trust on academic press.

In light of the fact that this study occurred in one district and the evidence that emerged from this study did not replicate previous research on the impact of academic optimism on student achievement, further study involving samples from different districts in different states and provinces would be important. Are some aspects of the wider policy environments found in those provinces and states moderating the relationships explored in this study?

Finally, this study adds to the normative body of distributed leadership research. Describing what distributed leadership should do as opposed to simply defining distributed leadership is a necessary focus for further study. Understanding distributed leadership’s impact on student achievement has been neglected to date. This research, coupled with other research suggest that planfully aligned distributed leadership has an impact on student achievement especially when it is mediated by academic press. This result warrants continued attention to distributed leadership and to those mediators of leadership practice that are known to improve student achievement, especially academic press. Further, Robinson et al. (2008) have concluded that instructional leadership is needed to improve student achievement. This leadership consists of the pursuit of clear goals, the strategic use of resources, effective planning and coordination of teaching and learning in the school, creating a culture where all staff, including administrators, learn together and create a safe and orderly learning environment. According to Robinson (2009), “if distributed leadership is to serve students, then more research is needed on the conditions under which teachers, especially those without positional authority, succeed in
influencing colleagues in the ways that benefit students” (p. 236). Understanding the relationships among planfully aligned distributed leadership, academic press and these important instructional factors would add significant insight to the body of knowledge regarding how planfully aligned distributed leadership mediated by academic press improves student achievement.

**Implications for Policy and Practice**

In light of these findings, every principal should be able to provide evidence that planfully aligned distributed leadership is effectively exercised in their school. This means that school districts need to explicitly support administrators to create conditions in their schools that allow this type of distributed leadership to flourish. We need to teach prospective formal leaders through leadership preparation programs and we need to support existing formal leaders so that they may share leadership in coordinated and effective ways. Further, all educators must see themselves as leaders in order for this type of professional culture to exist in every school. The formation of school environments where all staff members share their experience and expertise in coordinated ways, as well as their questions and concerns, needs to be a priority in every school and in every district. The insights gained through this study are foundational for leadership development programs, leadership policy, performance appraisal processes for administrators and various training programs.

Examining those conditions that enhance or diminish academic press in schools is also important. It is not enough to simply say that we need to hold high expectations for all students and staff. Enhancing academic press in the school must be part of professional learning activities and part of any school improvement planning process. As
teachers engage in professional learning communities, and in the process of collaborative inquiry, it is important for them to start this inquiry process by setting high yet achievable goals for their students, for each other and for the entire school. They need to determine how they will encourage their students to focus on their learning and accept nothing less than excellence. They need to reflect upon their own beliefs about their students. Do teachers believe their students will achieve? Further, teachers need to set high and appropriate academic standards for their students and ensure that the instruction that they provide is effective and differentiated. Teachers must engage their students so that students achieve their goals and fulfill the expectation that they set for themselves as well as the expectations created by teachers and parents. They will learn effectively because they are working hard to achieve these goals and meet these challenges (Leithwood, Patten, & Jantzi, 2010). By focusing on academic press in the context of professional learning, teachers and administrators may challenge those beliefs that become obstacles to enhancing academic press in every school. By experiencing their students’ success because of effective instruction, teachers may be better able to enhance the academic press that exists in their classroom and in their schools (Ross & Gray, 2006).

Timperley and Robinson (2002) explored the concept of understanding the schema that operates in every school. They define schema as the attitudes and beliefs that are collectively held by staff. This schema could be positive such as all students in our school will learn, or this schema can be negative such as our parents do not support their child’s learning or our students do not come prepared to start school in kindergarten. This schema impacts the instructional decisions that are made, the learning tasks that are assigned, and the expectations for student success that are held. Further, data is usually
understood in the context of this schema so that it is possible for teachers to hold beliefs that are not true and to find the data that supports these incorrect assumptions. Because academic press appears to have a positive impact on student achievement, it will be important for each school to examine their own schema to ensure that academic press is the greatest influence on that schema. Where schools may not be able to create a culture where academic press is the norm, they may need assistance from an outside source who brings data to their attention that contradict the beliefs they are presently holding (Timperley & Robinson, 2002).

Further, when teachers expect their students to do well, they treat their students in a way that enhances their students’ potential for success and they actually increase students’ self-belief in their ability to achieve (Rubie-Davis, Peterson, Irving, Widoson, & Dixon, 2010). When teachers hold high expectations for students, they provide enhanced opportunities for students to achieve; they facilitate learning and offer students a wide variety of choices; they offer engaging tasks for all students regardless of ability and they do not separate student with higher abilities from those with lower abilities. Teachers who hold high expectations for students monitor student progress continuously so that each student is working on and succeeding with an appropriate task that will allow that student to improve (Rubie-Davis et al., 2011). Rubie-Davis et al. (2011) offer a powerful insight into the significance of academic press and the relationship collective efficacy and trust have on the classroom experience for students:

It may be argued at times that student outcomes vary because teachers vary in their instructional practice, in their beliefs, in their expectations, in their efficacy for teaching, in their goal orientation and in ways in which they construct the social emotional climate in the classroom, rather than that student outcomes always vary because
students differ (p. 17).

In order for teachers to create classroom environments where academic press is evident, beliefs and understanding may need to be shifted. Further, for teachers to create the type of classroom described above, both self-efficacy and collective efficacy are necessary. In order to support teachers to create classroom where academic press is evident, special attention needs to be paid to the types of professional learning experiences that are offered to teachers. This professional learning takes place as close to the schools as possible, in learning teams that challenge and support its members in order to enhance the development of knowledge and skill in terms of instruction and assessment. Professional learning opportunities also invite necessary shifts in attitudes if deficit thinking about students is the norm or schema in the school.

Academic press and planfully aligned distributed leadership influence the norms in a school. When teachers shift their thinking from a deficit position, (what their students cannot accomplish) to an asset position (what their students can accomplish), according to the findings in this study, student achievement improves. Planfully aligned distributed leadership influences academic press because as teachers share leadership according to their expertise, colleagues potentially have the ability to challenge deficit thinking in favour of attitudes and practices that will accept nothing less than all students achieving.

Socio-economic status of students and their families has often impacted teachers’ perceptions of what student may achieve. Numerous studies have been conducted that comment on the negative impact SES has on student achievement. Further, the data from this study would argue that SES has a negative impact on language and math
achievement and a negative impact on academic press. There is a danger for teachers in schools who serve students with lower SES to lower their expectations because of the deficit thinking under which they may be operating. This thinking suggests that students are not able to succeed at the same rate as their peers in other schools serving a higher SES population. Further, these teachers may not provide learning opportunities that engage the students, offer them choice and provide the necessary environment to close achievement gaps (Rubie-Davis, Hattie, & Hamilton, 2006). Planfully aligned distributed leadership was not impacted negatively by SES; therefore the results of this study would suggest that this pattern of distributed leadership could positively impact the academic press needed to improve student achievement. In order for a school to hold high expectations for their students and to believe that their students will succeed regardless of the socio-economic status of their students, teachers and administrators may create this learning environment by sharing leadership in coordinated ways in order to change attitudes, knowledge and instructional practice. A student’s socio-economic status is not something that educators can influence or control. Ensuring that leadership is distributed in coordinated ways and creating cultural norms in the school that promote academic press is something that educators can influence. This study suggests that policy and practice that improves student achievement should pay attention to the importance of planfully aligned distributed leadership and academic press in every school.

The results from this study agree with previous findings that leadership in schools does matter. In order to create the conditions that improve student achievement, effective leadership is necessary. This study suggests that planfully aligned distributed leadership mediated by academic press has a positive correlation to student achievement. The
formal leader possesses an important role to ensure that leadership is distributed in a planfully aligned way. Realizing that leadership is about setting direction, developing people, redesigning the organization and improving the instructional program (Leithwood et al., 2006), formal leaders must create conditions where teachers share decision making, work interdependently, and challenge each other’s thinking and practice in coordinated and aligned ways. Foundational to all school improvement processes should be the strengthening of planfully aligned distributed leadership and the enhancement of academic press. The process of professional learning communities in schools is potentially an example of planfully aligned distributed leadership in action. The collaborative inquiry that exists in professional learning communities potentially enhances academic press in schools if teachers, through their learning, challenge their beliefs and understandings about their students’ potential and also focus on what they can do to improve their students’ learning through effective instruction. Measuring the strength of planfully aligned distributed leadership and academic press in a school is an important aspect of school improvement processes.

In conclusion, planfully aligned distributed leadership and academic press are needed in schools. Planfully aligned distributed leadership seems to have a significant positive effect on academic press which potentially mediates the effects of planfully aligned distributed leadership on student achievement. Though the original intent of this study was to examine patterns of distributed leadership and the impact that these patterns have on academic optimism and student achievement, the results illustrated the importance of focusing on academic press. Evidence suggests that collective efficacy
and trust influence academic press and ultimately they might have an impact on student achievement, but academic press emerged as the significant variable.

Supporting our leaders to share leadership in coordinated ways and to enhance academic press in their schools is necessary in order to improve student outcomes. Assisting all educators to participate in this leadership as well as in the learning opportunities that enhance academic press is also important. Though this study focused on leadership practices (planfully aligned distributed leadership) mediated by teacher beliefs (academic press), these two factors are not the significant end result. According to Timperley (2008), “the ultimate goal is to enhance student learning rather than to change leaders’ or teachers’ practices” (p. 198). Our focus needs to be on improving student outcomes. This study adds to the growing body of research which does not simply describe sources and patterns of leadership and the attitudes and beliefs of teachers; rather this study suggests that planfully aligned distributed leadership mediated by academic press may improve student achievement. Understanding leadership effects and understanding teachers’ attitudes and beliefs are important as long as this understanding adds to our body of research helping educators fulfill their mandate to improve student achievement. Because planfully distributed leadership mediated by academic press seems to improve student achievement, educators may be more confident that by enhancing planfully aligned distributed leadership and academic press, student achievement will improve.
**Appendix A**

**Teacher Survey**

Dear Teacher,

You are invited to take part in a research study exploring that conditions that enable you to meet the needs of your students. A research team from the Ontario Institute for Studies in Education (OISE), led by Dr. Ken Leithwood, is exploring how leadership and decision-making, shared beliefs and understandings, teacher autonomy, board expectations, and school culture impact the work of teachers.

Please answer these questions based on your actual experiences in your present school not on what you believe the answer should be. The survey will take no more than 15 minutes to complete.

No school or individual respondent will be identified in any way and all information gathered from these surveys will be kept completely confidential.

We thank you in advance for your participation.

Indicate the extent of your agreement with the statements below, where

1= Disagree completely, 4= neither agree nor disagree, 7= Agree completely

<table>
<thead>
<tr>
<th>Statement</th>
<th>1</th>
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</thead>
<tbody>
<tr>
<td>1. Teachers at this school really care about each other</td>
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<td>2. Teachers in this school trust each other</td>
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<td>3. It’s OK in this school to discuss feelings, worries and frustrations with other teachers</td>
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<td>4. Teachers here respect colleagues who take the lead in school improvement efforts</td>
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<td>5. I feel quite confident the leaders at my school always try to treat me fairly</td>
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<td>6. I feel a strong loyalty to our school leaders</td>
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<td>7. I would support the leaders at my school in almost any emergency</td>
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<tr>
<td>8. It’s OK in this school to discuss feelings, worries and frustrations with school leaders</td>
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<td>9. Leaders in our school look out for the personal welfare of teachers in this school</td>
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<td>10. If a student doesn’t learn something the first time teachers in this school will try another way</td>
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<td>11. Teachers in this school really believe every student can learn</td>
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<td>12. If a student doesn’t want to learn most teachers here give up</td>
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<td>13. Teachers in my school need more training to know how</td>
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to deal with the students who aren’t learning

14. Teachers in my school don’t have the skills needed to produce meaningful student learning

15. My school sets high standards for academic success

16. Students respect others who get good grades

17. Students seek extra work so that they can be successful

18. Students try hard to improve on previous work

19. Academic achievement is recognized and acknowledged at my school

20. The learning environment in my school is orderly and focused

Leadership Distribution

For items #21 to 24 think about how things are in your school at this time rather than your image of the ideal situation. Indicate the extent of your agreement with the following statements regarding how leadership is distributed at your school, where 1= Disagree completely, 4= Neither agree nor disagree, 7= Agree completely

21. Leaders across the school collectively plan who should perform which leadership functions and they tend to follow the arrangements

<table>
<thead>
<tr>
<th>Disagree completely</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>Agree completely</th>
</tr>
</thead>
</table>

22. Leadership tasks in this school are distributed with little or no planning. This distribution, however, is usually productive

<table>
<thead>
<tr>
<th>Disagree completely</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>Agree completely</th>
</tr>
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</table>

23. Leadership tasks in this school are distributed with little or no planning. This distribution is not productive and often leads to confusion

<table>
<thead>
<tr>
<th>Disagree completely</th>
<th>1</th>
<th>2</th>
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<th>5</th>
<th>6</th>
<th>7</th>
<th>Agree completely</th>
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</table>

24. Leaders coordinate their work carefully within their sub-units (divisions, departments, teams) but they do not coordinate their work with other sub-units

<table>
<thead>
<tr>
<th>Disagree completely</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>Agree completely</th>
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</thead>
</table>
Demographic Information

26. What grade(s) do you teach you work with?
   ___ K–Grade 3   ___ Grade 4-6   ___ Grade 7-8

30. How many years have you been at this school?
   ___1-3   ___4-6   ___7-10   ___More than 10

31. How many years of experience in education?
   ___1-3   ___4-6   ___7-10   ___More than 10

32. What grades are in your school?
   ___ K-Grade 4   ___ K-Grade 8   ___ Other ____________

33. What is the student enrolment of this school?
   ___ Fewer than 200   ___200-400   ___400-600   ___More than 600


