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Educators’ Sensemaking of Data within an MTSS Framework: An Exploratory Case Study

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Educators’ Sensemaking of Data within an MTSS Framework: An Exploratory Case Study

by

Stephanie Marie Green

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Curriculum and Instruction with an concentration in Measurement and Evaluation Department of Educational and Psychological Studies College of Education University of South Florida

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Keywords: Data literacy, Multi-tiered systems of support, Data use cultures, Equity

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DEDICATION

This dissertation is dedicated to my mom, Sandra Lee Dallman. Anything that I have been able to accomplish in life has been because of her love, her values, and her sacrifice.
I want to take a moment to acknowledge and thank all of the people that supported me in this very long, twisty, and often turbulent process, starting with the members of my committee. I met Dr. Agosto on my very first qualitative research project, back in 2013. Even though I was so new to the world of qualitative research, she treated me like a colleague and helped to build my confidence in that realm. Since then, she has let me publish and present with her, and has provided important guidance throughout the dissertation process.

I first met Dr. Ferron in 2010 when I was unsure if I even qualified to apply for the master’s program in measurement and evaluation. Back then, he was serving as the department chair, and took the time to not only email back and forth with a random undergraduate, but to actually meet with me in his office to go through my background and assure me that I was qualified to apply. Throughout my master’s and doctoral studies, he has continued to provided me with encouragement that helped me feel like I was where I belonged.

Dr. Castillo has served multiple roles, first as my boss, and then as my committee member and outside chair. I do not think I would have finished this dissertation without the support—emotionally, and in terms of dedicated work time—that José provided me. He was always telling me to prioritize my dissertation work, and then asking about my progress and how he could best support me to get it finished. This type of support was invaluable in actually getting the work done. His insights into the topic, inclusion of MTSS, and the logistics of getting
the data collection done were all key as well. I feel very fortunate that I was hired to work for him and to have learned about MTSS in the process.

The final member of my committee is Dr. Jennifer Wolgemuth. I was in the last course of my master’s program in 2013 when I met Jenni in her introductory qualitative research class. Since then, she has always been there for me—from having me involved in her research, to being a TA for one of her classes, to connecting me with and encouraging me to apply for my current job, to being my major professor for this dissertation. She has cared about me personally and professionally, being a mentor to help me grow as a person and a researcher. Without Jenni’s support, I doubt I would even be a qualitative researcher, let alone one that finished a qualitative dissertation. Her support and insights strengthened this study in innumerable ways.

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more downs—providing an environment where I could just focus on my work and not worry about the rest.
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ABSTRACT

The purpose of this study was to examine how educators working within a multi-tiered system of supports (MTSS) framework make sense of data, how they use data for instructional decision-making, and how the data use cultures at the district and school levels influence this data use. The study was designed with a theoretical framework informed by the sensemaking about student outcomes model (Bertrand & Marsh, 2015), the data literacy for teaching framework (Mandinach & Gummer, 2016c), and the data use cultures framework (Firestone & Gonzales, 2007). I explored these issues through a case study methodology, utilizing semi-structured interviews, observations, document analysis, and researcher reflexive journaling for data collection.

My case was bounded by a single elementary school within a Florida school district. The particular district and school were selected as an exemplar case based on MTSS specialists at both the state and district level identifying them as implementing MTSS with fidelity and using data well. There were six total participants, including an assessment coordinator and MTSS specialist at the district level, and a principal, MTSS coach, and two third-grade teachers at the school level. All participants were interviewed at least once, with four of the six completing two interviews. Three grade-level data chats were included in the observations, and documents reviewed included things like the School Improvement Plan and district data use documents.

Using reflexive thematic analysis (Braun & Clarke, 2006), I created three themes to represent the findings—Data Use and MTSS are Complicated, Data Use and MTSS Require
Mindset Shifts, and Educators are Limited in Making Data-Informed Decisions. Different meanings of data, different understandings of the purpose of data use for MTSS, and varying contexts influenced how educators made sense of their data. Educators’ beliefs and attributions also influenced how data were used, with participants believing that there are necessary mindset changes for data use to be implemented effectively and ethically. Additionally, the participants in this study were limited in their ability to use data for instructional improvement because of constraints like lack of teacher agency, time, and professional development and other supports.

There were several implications from these findings. First, school and district leaders that want to implement data use initiatives should ensure that the purpose is communicated clearly. This also includes clarifying if the data use process is going to be used punitively and for accountability, or more formatively for continuous improvement. Enough time also needs to be given for these initiatives, such as setting aside meeting time specifically for using data collaboratively. There is also a need for further professional development and other supports to help build educators’ capacity for using data well.

Limitations of this study include having less participants than I originally planned, with less data collection opportunities in the form of district level observations and no follow-up interviews for some participants. These limitations come from a combination of personal participant decisions and the impact of the Covid-19 global pandemic that disrupted the Florida school systems in the middle of my data collection. Additionally, though equity became a focus during analysis, the study was not designed with such a focus, so I was limited in my discussions around equity for this case. Future research is needed to explore data use for equity within an MTSS. Other areas of future research include examining specific areas of data use within an MTSS, such as the problem-solving process, examining how to best provide supports to
educators in using data well, and exploring this same topic through different methodologies that allow for the generalization of results.
CHAPTER ONE:  
INTRODUCTION

“I’m going to give you a sling. I hope it’s your arm that’s broken, because if it’s your leg, you’re out of luck.”

She was not talking to me directly, but to her teammates that were gathered around the table as she expressed her frustrations with what she saw as her district’s one-size-fits-all intervention plan. School and district teams from across central Florida were gathered for the first day of a training on implementing a multi-tiered system of supports (MTSS) and determining specific learning disability (SLD) eligibility. As the evaluator for the project that was presenting the training, I was moving around to different teams as they completed activities to observe and take notes, ultimately to see if the project was hitting the mark on impacting educator beliefs and practices about MTSS and SLD eligibility.

A few minutes ago, the teams learned about examining discrepancies in student test scores, viewed several examples, and were prompted with questions about their own processes for reviewing student data to make instructional decisions. Each team was asked to bring in a case study of individual student data to aid in their discussion, and while the team technology coordinator for the day was still pulling up the data on their laptop, the rest of the team continued talking about the limitations of their data for making appropriate intervention decisions.

“Yeah, we have i-Ready data, but we don’t have info on how he compares to his grade level.”
“Well, we can do subgroup gap analysis by gender, ELL, ethnicity…, but we don’t usually use it for Tier 1. Should we compare him to ELL even though he isn’t? If his performance is still low, that tells you something.”

“Does the data system have these functionalities? I don’t think we have access at our level.”

“When you have data you don’t have access to, how useful is it? The district really limits access to data.”

The technology coordinator interrupted the conversation, showing her teammates the data on her screen. She had pulled up the student’s behavior, attendance, and achievement data showing that the student had repeated third grade twice- his cohort was now part of the fifth grade, but he was still performing at a second-grade level. The team, knowing the student and his family well, also discussed his siblings and their prior performance. A lot of students at the school were not meeting their expected performance levels, but they attributed this to the school’s low average socioeconomic status.

“What do you do when your school is lower performing and there is a Tier 1 issue? None of our students would qualify for SLD. Like, his score is a 47 but the average is a 49, so it isn’t well below the average.”

“So, does he really have a learning disability, or are there environmental factors?”

“Those are variables we can’t control. So, no kid from poverty can qualify? If they went to a different school, it’d be like ‘oh yeah.’”
Study Context

Data use is seen as a solution to student achievement problems in the U.S. (Duncan, 2009a, 2009b, 2009c, 2010a, 2010b; Easton, 2009, 2010; Fullan, 2000; Haycock, 2001; Johnson, 1996; Love, 2004; Schmoker, 1999; Zalles, 2005), with state and federal governments investing significant money for upgrades to local data systems (National Center for Educational Statistics, 2013). In 2018, twenty-four states passed educational data use laws about what to measure and how to ensure that data collected support student learning (Data Quality Campaign, 2018a). Eighteen states also passed laws to enhance the ability of schools to use data, focusing on conditions of data use like time, training, and infrastructure.

Underlying the push for data use in educational reform is the assumption that it will transform educational practice (Mandinach & Gummer, 2013b). Though the results of data-driven efforts are often mixed or limited (e.g., Booher-Jennings, 2005; Carlson et al., 2011; Crocco & Costigagn, 2007; Diamond & Cooper, 2007; Heilig & Darling-Hammon, 2008; Turner & Coburn, 2012), data use can help teachers to more consistently monitor student progress (Reeves & Honig, 2015) and better individualize their instruction (Carlson et al., 2011; Coburn & Turner, 2012; Hamilton et al., 2009; Lai et al., 2014; Means et al., 2009). But despite being an expectation for educators (Coburn & Turner, 2011, 2012; Hamilton et al., 2009; Ikemoto & Marsh, 2007; Mandinach, 2012; Spillane, 2012), many are struggling with how to interpret data (Espin et al., 2017; Hamilton et al., 2009; Jacobs et al., 2012; Supovitz & Klein, 2003), and often have difficulty making the connection between using data and changing their instructional practices (Farrell & Marsh, 2016a; Gannon-Slater et al., 2017; Horn et al., 2015).

Data use is not a new concept for those in the areas of school psychology or special education (Deno & Mirkin, 1997), and is now routinized through the use of universal screening
tools, progress monitoring, and data-based problem solving (Bryant & Pedrotty-Bryant, 2008; Fuchs & Fuchs, 2006; National Association of State Directors of Special Education, 2006; National Joint Committee on Learning Disabilities, 2005). The most recent reauthorization of the Individuals with Disabilities Education Act (2004) requires schools to show evidence of established goals for the academic performance of children with disabilities, and the Every Student Succeeds Act (2015) also mandates increased learner access to effective instructional practices, such as a multi-tiered system of supports (MTSS) (Marx, 2016).

Using data to make educational decisions is a key element in the implementation of an MTSS, defined as “an evidence-based model of schooling that uses data-based problem-solving to integrate academic and behavioral instruction and interventions” (MTSS Implementation Components, n.d., p. 3). But MTSS is not implemented solely by school psychologists for students with disabilities. MTSS is a tiered model that starts with examining general education to ensure all students receive appropriate instruction (Fuchs & Fuchs, 2007). All educators, at both school and district levels, are involved in the implementation of an MTSS, so teachers situated within an MTSS framework are also facing difficulties and uncertainties in using data appropriately (Kressler, 2014; Murphy, 2016; White, 2018).

Data use is an inherently interpretive act (e.g., Farrell & Marsh, 2016b, Garner, 2018; Horn et al., 2015), influenced by past experiences, beliefs, values, and culture (Datnow & Hubbard, 2015; Marton, 1981). Data mean different things to different people (Mandinach, 2012), leading to difficulties with data-driven instructional changes (Farrell & Marsh, 2016b; Heritage et al., 2009; Oláh et al., 2010) and data-based problem-solving (Kressler, 2014; Murphy, 2016, White, 2018). Human capacity is critically important for data use to be successful, but this element is often missing in data driven reform (Choppin, 2002; Datnow,
Purpose and Significance of the Study

The purpose of the present study was to explore how educators working within a multi-tiered system of supports framework conceptualize data, and how that plays out in their instructional responses. Education is undergoing data-driven reform (Data Quality Campaign, 2018a; Mandinach & Gummer, 2013c), but “data” alone cannot drive anything because they require an individual’s interpretation to have meaning (Farrell & Marsh, 2016b, Garner, 2018; Horn et al., 2015; Mandinach, 2012; Spillane, 2012). When the data are centered as the actor in traditional models of data-driven reform, the human element is left unexamined (Bertrand & Marsh, 2015; Choppin, 2002; Datnow, Park, & Wohlstetter, 2007; Feldman & Tung, 2001; Herman & Gribbons, 2001; Kerr et al., 2006; Mandinach, 2009a; Miller, 2009; Young, 2006).

But examining educators’ role in data use is important because their beliefs about data shape their interpretations and instructional practices (Bertrand & Marsh, 2015; Coburn et al., 2009; Coburn & Turner, 2011; Farrell & Marsh, 2016b; Garner, 2018; Jimerson, 2014). Within an MTSS framework, data use is embedded into the day-to-day work of educators (Bryant & Pedrotty-Bryant, 2008; Fuchs & Fuchs, 2006; National Association of State Directors of Special
Education, 2006; National Joint Committee on Learning Disabilities, 2005), but the foundational concepts of what are considered data, how are they conceptualized, and how these beliefs influence practice are taken for granted.

This study aimed to highlight how educators play an active role in the data-driven decision-making process, learning what they consider to be data, how they decide what data to use, how they attribute and interpret data, and ultimately how they use (or do not use) data to make changes to their instructional practices. Doing so provides a different and more complex view of educator data use (Hammer & Elby, 2002; Schraw et al., 2017; Spillane & Miele, 2007), helping researchers and practitioners better understand the human-driven nature of data use. This enhanced understanding can allow those in the fields of educational reform, pre-service teacher preparation, and continuing educator professional learning to better support educators in using data by acknowledging, addressing, and prioritizing the human element in data use.

**Research Questions**

The following research questions will guide this study:

1. How do educators working within a multi-tiered system of supports framework make sense of data?
2. How do these educators use data for instructional decision-making?
3. How do data use cultures at the district and school levels shape how data are understood and used?
Theoretical Framework

This study drew on four ideas to inform the design and analysis: (1) the data use cultures framework (Firestone & Gonzalez, 2007), (2) the sensemaking about student outcomes model (Bertrand & Marsh, 2015), (3) the data literacy for teaching framework (Mandianch & Gummer, 2016c), and (4) the key principles of data use for equity (Datnow & Park, 2015). Individual educators’ data use is subtly influenced by the school and district data use culture, which helps to shape their purpose and motivation for using data (Firestone & Gonzales, 2007). In their data use cultures framework, Firestone and Gonzales (2007) delineate between cultures of data use for accountability and for organizational learning. Though they acknowledge that educators will often need to navigate between the demands of both, the more dominant culture can inform what data are looked at and how they are used. This framework for identifying the prevailing district and school data use culture is embedded in my research questions and my analysis as I aim to examine the role of the district context on understanding and using data.

Sensemaking theory is concerned with how and why people come to know what they know, and what they do with that information once they have it (Weick, 1995). This theory posits that any action is determined by how a person selects information from their environment, creates meaning from it, and then acts on those interpretations (Coburn, 2001). An implication of this theory is that what gets noticed as relevant depends on the mental representations we have already created from our prior experiences (Spillane & Miele, 2007; Weick et al., 2005), which aligns with findings that “people tend to search for and see aspects of data that support their beliefs, assumptions, and experiences and do not even notice data that might contradict or challenge these beliefs” (Coburn & Turner, 2011, p. 177).
Bertrand and Marsh’s (2015) model for sensemaking about student outcomes takes sensemaking theory one step further by adding in attribution theory. This addition accounts for an educator’s thoughts about the causes of outcomes to influence their instructional responses. The locus of causality (internal or external), the stability (enduring or transitory), and the ability to control the outcome (Seifert, 2004; Weiner, 2010) affect how an educator responds to the data. This model helped me to understand and interpret the multifaceted nature and varying patterns of instructional responses to data, and aligns with the interpretive process that undergirds data use (Bertrand & Marsh, 2015; Cho & Wayman, 2014; Datnow et al., 2012; Park et al., 2013; Spillane & Miele, 2007).

Teacher data literacy is broadly how teachers turn data into action through the process of collecting, analyzing, and interpreting various types of data to inform their instructional planning (Gummer & Mandinach, 2015). In their data literacy for teaching framework, Mandinach and Gummer (2016c) outline their five-step cycle of data use, and contextualize data use for teaching with different knowledge bases necessary for successful data use. These include content knowledge, curriculum knowledge, knowledge of the learners and their characteristics, knowledge of educational purposes, pedagogical knowledge, and knowledge of educational contexts. This framework is tied to my second research question, and helped me make sense of my data around how educators use data to improve their instruction.

Lastly, I used Datnow and Park’s (2015) key principles of data use for equity to examine my case through an equity lens. As I began learning about my case district and reviewing their demographic data, equity became an important focal point for understanding their data use and data use culture. So although this last idea did not inform the design of the study, it was a key part of my analysis and interpretation of my data. Datnow and Park explain that there are five
key principles of data use for equity, which include articulating your purpose and commitment to equity, not rushing, using caution, focusing on student engagement, and using professional judgment. I used these principles, specifically the first three, to make sense of the practices I observed at the case school and to interpret how the prevailing data use culture shaped how data was used toward equitable ends.

Methodology

Underlying my choice of study design and methods were my epistemological beliefs and theoretical perspective (Crotty, 1998; Guba & Lincoln, 1994; Hofer & Pintrich, 2002; Paul, 2005; Shand, 1993). Epistemology is the branch of philosophy that is concerned with the nature of knowledge (Allison & Pomeroy, 2002; Crotty, 1998; Hofer & Pintrich, 2002; Paul, 2005). I align with the constructionist epistemology, believing that we construct knowledge through our interactions with other people and the world (Braun & Clarke, 2013; Crotty, 1998). In this orientation, there is not a single universal truth, but instead there are multiple truths specific to their contexts. As such, this study does not claim any form of objectivity from social contexts or make claims to singular truths. My subjectivity as the researcher is embedded in the study, with decisions as broad as the choice of topic and as narrow as specific codes being influenced by how I construct knowledge.

In line with these beliefs, I chose an interpretive theoretical perspective to guide the design of this study. Interpretivism acknowledges that we play an active role in the construction of knowledge (Paul, 2005). This approach to research seeks an understanding of how people make sense of their lives and looks for “culturally derived and historically situated interpretations of the social world” (Crotty, 1998, p. 67). Data use is an interpretive act (Farrell
& Marsh, 2016b, Garner, 2018; Horn et al., 2015), and conducting a study that does not acknowledge this nature in design and analysis would be missing an important part of the story. The interpretive perspective allowed me to provide space for my participants to share the accounts of their realities and experiences in order to understand their conceptualizations and uses of data in their contexts (Crotty, 1998).

The design of this study is a case study that was bounded by a single school district in Florida. Case studies use multiple modes of in-depth data collection to examine the complexities of the selected case, resulting in thick, rich, and contextualized descriptions (Creswell, 2013; Gering, 2006; Yin, 2009). Data use and MTSS implementation are both influenced by the system they are in, so this study examined conceptualizations and uses of data at both the school and district level, with data collection occurring at the central district office and in one elementary school.

Participants were selected through snowball, purposive, and internal sampling techniques (Bogdan & Biklen, 1992; Patton, 2002), where my professional network of contacts were leveraged to help identify a district, and then key contacts within the district identified potential schools and data-use teams. At the school level, participants included members of a grade-level professional learning community (PLC), as well as the MTSS coach and the principal. District level participants included an MTSS specialist and a district assessment coordinator.

Data Collection and Analysis

In order to collect the depth of information necessitated by my research questions and design, I used interviews, observations, document review, and my research journal as my methods. Interviews were semi-structured, and included a series of two interviews for most
participants to allow time for them and myself to reflect on the first interview and the observations. Observations were only conducted at the school level, and included three data chats. Documents on MTSS and data use, as provided by the school and district or retrieved from publicly-available sites, were reviewed to assist in building the rich case description and in contextualizing the district and school data use cultures. My research journal helped me to collect my thinking processes and understand my role during the study (Braun & Clarke, 2013; Janesick, 2011).

Data analysis followed Braun and Clarke’s reflexive thematic analysis process (2006). This approach centers the researcher’s subjectivity in the analysis, and asserts that there is not a right or wrong way to code data, instead saying there are weaker and stronger codes (Braun & Clarke, 2019). Stronger codes are developed through a deep and iterative process of reviewing and analyzing the data, as found in the six steps of their reflexive thematic analysis. This form of analysis aligns with the interpretive perspective taken in the study by acknowledging that there are many compelling stories that are “plausible, coherent, and grounded in the data” (Braun & Clarke, 2019, p. 20).

Role of the Researcher

As the researcher, my role in this study needs to be transparent. My goal was to infuse the study with my voice and be clear about how and why I made the analytical decisions that happened. I am currently positioned as an evaluator for a state-funded project that provides supports to districts across Florida in implementing MTSS. Though I have long been interested in data use and data literacy, my choice of situating the study within an MTSS framework was influenced by my professional position. Prior to this, I worked in the research, accountability,
and assessment department for a school district in Florida. My experiences there shaped my views on data use, and highlighted the need for data literacy that was previously unknown to me.

**Definition of Terms**

- **“Bubble kids”:** students that are considered close to, or on the “bubble” of proficiency (Booher-Jennings, 2005).
- **Data-based/driven decision-making:** the systematic collection and analysis for data to inform instructional decisions (Mandinach, 2012; Reeves & Honig, 2015).
- **Data literacy:** the ability to collect, analyze, and interpret all types of educational data to determine instructional decisions (Gummer & Mandinach, 2015).
- **MTSS:** system-wide strategies, practices, and resources for supporting students both academically and behaviorally (Averill & Rinaldi, 2011).
  - **Tier 1:** instructional and behavioral supports that all students receive (MTSS Implementation Components, n.d.)
  - **Tier 2:** more intensive supports that some students receive (MTSS Implementation Components, n.d.)
  - **Tier 3:** the most intensive support level that only a few students receive (MTSS Implementation Components, n.d.)
- **PBIS:** Positive Behavioral Interventions and Supports; research-based strategies to improve social-emotional and academic outcomes for students, including those with disabilities or from marginalized groups (OSEP, 2017)
• **Progress Monitoring**: A system of monitoring students’ academic performance, assessing rate of improvement, and evaluating effectiveness of instruction. (Progress Monitoring, n.d.)

• **RtI**: Response to Intervention, defined as “the practice of (1) providing high-quality instruction/intervention matched to student needs, and (2) using learning rate over time and level of performance to (3) make important educational decisions” (Batsche et al., 2005, p. 5).

• **Universal Screening**: Screening that helps to identify or predict students that may be at risk. They are typically brief and given to all students in a grade level. (Universal Screening, n.d.)

**Organization of the Study**

In Chapter One, I introduced the purpose of the study, which is to gain a better understanding of how educators make sense of data and how data are used to change instructional practices within a multi-tiered system of supports. Chapter Two provides a deeper context for the study by exploring the broader fields of literature surrounding data use, data literacy, MTSS, and educator epistemologies. Chapter Three covers the methodological considerations, including the philosophical underpinnings of the study and a more in-depth look at the data collection and analytic methods. Chapter Four provides a narrative description of the case, such as background on the school and district, along with reflections on the interviews and observations with each participant. Chapter Five presents the main themes with supporting data, and Chapter Six discusses the implications of the findings for my research questions and the research field.
CHAPTER TWO:
LITERATURE REVIEW

This study sought to explore how educators working within a multi-tiered system of supports (MTSS) framework conceptualize data, and how that plays out in their instructional decision-making. Before I detail how I plan to study this phenomenon, I need to situate my study in the broader field of literature surrounding data use, MTSS, and educators’ epistemologies. First, I survey the field of data use, data literacy, and data-driven decision making, with special attention to issues of how researchers talk about “data,” why data are important in K-12 educational settings, and how data use and literacy impact professional practice. Then I examine how data play a central role in the implementation of an MTSS. Finally, I delve into epistemological research in education as I position the present study, and provide a rationale for its importance and relevance to the larger conversations happening in the fields of educational data use and tiered systems of support.

Data Use

Teacher data use is now a given (Coburn & Turner, 2011, 2012; Hamilton et al., 2009; Ikemoto & Marsh, 2007; Mandinach, 2012; Spillane, 2012), and terms like “data-driven” abound in school and district reform efforts (Marsh et al., 2006), though results of data-driven efforts are often mixed or limited (e.g., Booher-Jennings, 2005; Carlson et al., 2011; Crocco & Costigagn, 2007; Diamond & Cooper, 2007; Heilig & Darling-Hammon, 2008; Turner & Coburn, 2012).
But when looking at the literature around data use, data literacy, and data-driven decision making, there is an important tacit assumption that everyone has the same understanding of what “data” means. Given that data use is complex and inherently interpretive (Coburn & Turner, 2012; Farrell & Marsh, 2016b, Garner, 2018; Horn et al., 2015), research in the field of data use necessitates a deeper examination and problematization of the term “data.”

**What Do We Mean by “Data?”**

“Data” can mean something different to different people (Mandinach, 2012). Educational data use varies by role (Schildkamp & Kuiper, 2010), but even those in job-alike groups vary in how they define and ultimately interpret data (e.g. Coburn, 2010; Farrell & Marsh, 2016b; Honig & Ikemoto, 2008; Jimerson, 2014; Spillane & Miele, 2007). In reviewing the literature on data use, many studies were not explicit about defining the term “data,” but the few that did had some key commonalities. First, they indicated that data are factual (Gelderblom et al., 2016; Young et al., 2018). Gelderblom and colleagues (2016) state that data are “any factual material that are systematically collected and [sic] relates to the functioning of a school, its teachers, and the learning outcomes of its students,” furthering the idea that data need to not only be based in facts, but that data also need to be useful for examining educational outcomes (p. 2).

Epistemologically (what is knowledge?), all definitions of data from the reviewed literature agree that knowledge cannot be created from data without interpretation (Davenport & Prusak, 1998; Gelderblom et al., 2016; Mandianch, 2012; Young et al., 2018)—otherwise, data are “simply numbers.” (Mandinach, 2012, p. 73). Young and colleagues (2018) exemplify this when they say “data are primarily facts and statistics, not valuable in isolation, but become valuable through analysis, interpretation, and judgements” (p. 135). But what are educators
interpreting? What are the raw materials that educators use to make those judgements about their students, their staff, their systems, or themselves (Davenport & Prusak, 1998; Young et al., 2018)?

Many people automatically associate “data” with student achievement data (Mandinach, 2012). Until the mid-2000s, policymakers and educational administrators relied solely on summative state assessments to guide their work (Nichols & Berliner, 2007; Petrides, 2006). Large scale, summative assessments are of learning, measuring what and how much students learned, but they can be difficult to use to adapt instruction because they are not sufficiently sensitive to varying individual instructional goals (Stecher & Hamilton, 2006). As a contrast, there is a move to utilize more assessments for learning (i.e., formative assessments) to decrease the disconnect between state assessments and instructional relevance (Stecher & Hamilton, 2006).

There are other types of data beyond student achievement data though, and the call to be data-driven requires educators at all levels to use a broad range of data effectively to inform their work (Mandianch, 2012). Bernhardt (2013) describes a taxonomy of four main types of educational data. The first is demographic data to provide background context for not only students, but also staff and schools. The second is school process data, describing the policies, practices, procedures, and professional learnings that are taking place in the school. The third is student learning data, defined broadly as indicators of student performance, and lastly there is perception data about the learning environment.

When looking specifically at the types of data that teachers use, most are student achievement data. These include state achievement tests (Beaver & Weinbaum, 2015; Gallagher et al., 2008; Marsh et al., 2006; Wayman et al., 2015), as well as district and industry created
interim tests that are designed to help prepare students for the state achievement tests (Marsh et al., 2006; Supovitz, 2012). Classroom work and assessments (Gallagher et al., 2008; Marsh et al., 2006; Wayman et al., 2010), informal discussions and observations of students (Marsh et al., 2006), and some non-academic data, like attendance and mobility (Gallagher et al., 2009, Marsh et al., 2006, Wayman et al., 2010) also factor into a teacher’s assessment of their students. Teachers also tend to rely on anecdotal data to shape their understandings (Brunner et al., 2005; Honey, et al., 2002; Light et al., 2004; Mandinach et al., 2005; Mandinach et al., 2006).

**Conditions that Influence Data Use**

Ultimately, what data get used—and how—will depend on a number of factors, such as the data use culture (Datnow et al., 2012; Diamond & Spillane, 2014; Nelson et al., 2012), job role (Mandinach, 2012; Schildkamp & Kuiper, 2010), and capacity for data use (Farley-Ripple & Buttram, 2014; Jimerson & Wayman, 2015; Marsh, 2012; Marsh et al., 2015). Data use is a situated phenomenon (Coburn & Turner, 2012), so it is important to explore these underlying contextual factors that shape what data use looks like in the schools.

The school and district culture surrounding data use influences the underlying motivation for using data, shaping what data are reviewed and toward what end (Firestone & Gonzalez, 2007). Though schools can embody aspects of both, the literature paints a dichotomy between two cultures of data use—one for accountability, and the other for school improvement and organizational learning (Firestone & Gonzalez, 2007; Visscher & Coe, 2013; Wrigley, 2013). Both ideas take the need for organizational change seriously, but their motivations for and understanding of needed changes are different. The first culture is reactive and driven by
the need to raise test scores as an end in itself. The second is more proactive, views test scores as an indicator, and seeks to improve student learning. (Firestone & Gonzalez, 2007, p. 141).

Firestone and Gonzalez (2007) outlined a cultures of data use framework for distinguishing between accountability and organizational learning cultures on five different dimensions: (1) Student Focus, (2) Educator Focus, (3) Data Use, (4) Time Frame, and (5) Teacher and Principal Voice. Table 1 addresses the key differences between the cultures on each dimension.

Table 1
Key Features of Firestone & Gonzalez’s (2007) Data Use Culture Framework

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Accountability Culture</th>
<th>Organizational Learning Culture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Focus</td>
<td>Test scores</td>
<td>Learning</td>
</tr>
<tr>
<td>Educator Focus</td>
<td>Compliance</td>
<td>Improving instruction</td>
</tr>
<tr>
<td>Data Use</td>
<td>Identify problems and monitor compliance</td>
<td>Identify, diagnose, and correct problems</td>
</tr>
<tr>
<td>Time Frame</td>
<td>Short/short-sighted</td>
<td>Long/focused on systemic change</td>
</tr>
<tr>
<td>Teacher and Principal Voice</td>
<td>Excluded/top-down leadership</td>
<td>Included/distributed leadership patterns (PLCs)</td>
</tr>
</tbody>
</table>

This framework paints a portrait of two theoretical schools where data are used in dramatically different ways. In the first school, teachers use data primarily for compliance purposes (Anderson et al., 2010), with a narrow focus on data for the small group of students considered on the “bubble” of proficiency instead of on all students (Booher-Jennings, 2005). The goal for students is to be proficient on an assessment, and that assessment data is then used to hold teachers, leaders, the school itself, and its district accountable for improvement and
proficiency on predetermined, standardized indicators of achievement (Firestone & Gonzalez, 2007). Within this culture of data use, complex constructs like student learning are reduced to numbers, remediation is valued over instructional improvement, and practices are counterproductive to effective data use for instructional change (Agosto et al, 2019; Booher-Jennings, 2005; Garner et al., 2017; Green et al., 2015; Horn et al., 2015; Marsh et al., 2016).

In the other school, data are leveraged to improve learning and teaching decisions (Garner et al., 2017). Teachers have the ability to be more reflective of their practice and open to considering how their instructional choices contributed to the results in the student outcome data (Marsh et al., 2015; Nelson et al., 2012). Organization routines, such as grade-level team meetings with school leader support, are in place to generate shared understandings about the data (Datnow et al., 2013; Ikemoto & Marsh, 2007; Schnellert et al., 2008), which in turn promotes improved instructional decision making (Gallimore et al., 2009; Katz & Dack, 2014; Lachat & Smith, 2005; Means et al., 2010, Schnellert et al., 2008; Vanhoof and Schildkamp, 2014). Data-driven reform efforts put teachers in a situation where they have to balance these two competing agendas of data use for both external accountability and to make instructional changes (Datnow & Park, 2018; Lai & Schildkamp, 2016), but the overarching school or district culture can determine whether data are predominately used to promote inquiry and reflective practice, or if they are largely reduced to a tool for monitoring and compliance (Datnow et al., 2012; Diamond & Spillane, 2004; Nelson et al., 2012).

Aside from the data use culture, the unique role of the person looking at the data can also determine what data they review, or what information they glean from a particular data source (Mandinach, 2010; Mandinach, 2012; Schildkamp & Kuiper, 2010). Different forms of data matter for teachers (Rose & Fischer, 2011; Supovitz, 2012). Teachers tend to look for formative
data at the micro, individual student level, where school administrators are more interested in summative and aggregate data (Schildkamp & Kuiper, 2010). Even when looking at the same state assessment data, a teacher might look for individual student strengths and weaknesses, but a school leader might look at the summary statistics to assess school effectiveness (Mandinach, 2012; Schildkamp & Kuiper, 2010).

Educator capacity for data use encompasses the knowledge, skills, and dispositions needed for educators to effectively interpret and use data to inform their instruction and decision making (Huguet et al., 2014). Their capacity, or lack thereof, mediates how educators are able to select and utilize data (U.S. Department of Education, 2008). For example, educators that do not believe assessment data reflect their teaching are less likely to use data to transform their instructional practices (Hoogland et al., 2016). Teachers also report low levels of confidence in their data-related knowledge and skills (e.g., Athanases et al., 2012; Dunlap & Piro, 2016; Wayman & Jimerson, 2014), leading to difficulties in actually using the data to make instructional changes (Datnow & Hubbard, 2016; Mandianch & Gummer, 2013a; Reeves & Honig, 2015).

Data Use Frameworks

The data use culture and the personal characteristics of the educators using the data influence what data are used and towards what ends (Datnow et al., 2012; Diamond & Spillane, 2014; Farley-Ripple & Buttram, 2014; Jimerson & Wayman, 2015; Mandinach, 2012; Marsh, 2012; Marsh, Bertrand, & Huguet, 2015; Nelson et al., 2012; Schildkamp & Kuiper, 2010). But while many researchers have developed frameworks to describe the data use process, most do
not include a component addressing how data are selected, leaving these personal and cultural conditions that influence data use unexamined.

Of the frameworks developed, all position data use as procedural and cyclical (e.g. Coburn & Turner, 2011; Hamilton et al., 2009; Ikemoto & Marsh, 2007; Mandinach & Gummer, 2016a, 2016c; Marsh, 2012; Means et al., 2009; Poortman et al., 2016). Keuning, Van Geel and colleagues (2016) contend that there are four iterative components of data use for educational decision making: (1) evaluate and analyze student results, (2) set learning and performance goals for each student, (3) determine an instructional strategy to accomplish these goals, and (4) execute the planned strategies in the classroom. Marsh’s (2012) data use framework consists of five steps: (1) accessing or collecting data, (2) filtering, organizing, or analyzing data into information, (3) combining information with expertise and understanding to build knowledge, (4) knowing how to respond and taking action or adjusting one’s practice, and (5) assessing the effectiveness of these actions. Both frameworks do not model how data are first selected before being used to inform decision making.

Others have addressed this missing component by grounding their inquiry cycles in the identification of a problem that necessitates data collection (Mandianch & Gummer, 2016a, 2016c; Schildkamp & Poortman, 2015). Figure 1 demonstrates one such inquiry cycle from WestEd, based on the work of Mandinach and Gummer (2016a, 2016c). In this model, the specific problem identified leads to data collection that is relevant to the problem at hand. As mentioned previously, data do not have meaning without context and interpretation (Mandianch, 2012), so data first have to be transformed into information before they can be used to make an instructional decision. Once a decision is made, the final step is to see if that decision made an
impact on the identified problem. The inquiry cycle continues on, using the new evaluative data to identify more problems.

Some researchers would argue that this model still does not adequately depict the entire data use process (Bertrand & Marsh, 2015). While Mandianch and Gummer present a more detailed model depicting the inquiry process for data literacy (Mandinach & Gummer, 2016c), theirs does not include the concept of teacher beliefs or how their epistemological conceptualizations of data influence that inquiry cycle. Bertrand and Marsh (2015) problematize these current portrayals of the data use process to account for beliefs, which I will discuss later in the chapter under Educator Beliefs and Epistemologies.

**Calls for Data Use**

Rhetoric around educational data advances its use as a remedy for the faults in the educational system (Duncan, 2009a, 2009b, 2009c, 2010a, 2010b; Easton, 2009, 2010; Fullan, 2000; Haycock, 2001; Johnson, 1996; Love, 2004; Schmoker, 1999; Zalles, 2005). One assumption underlying this push for data use in education is that it will not only inform decision-making, but it will also enhance practice (Mandinach & Gummer, 2013b). Because of this, in schools and districts across the nation, data use is no longer optional, but instead a mandate that shows no signs of going away (Mandinach, 2012, Mandinach & Gummer, 2013c).

According to the Data Quality Campaign (2018a), in 2018, 24 states passed educational data use laws about what to measure and how to ensure data collected support student learning. Eighteen states also passed laws to make data use possible, targeting conditions of data use such as time, training, and infrastructure. In 2013, the U.S. Department of Education invested over 600 million dollars in grant money for state educational agencies to upgrade their data systems
so that they would have access to higher quality data, like longitudinal student records linked to individual teachers (National Center for Educational Statistics, 2013). The development of both statewide and local data systems has removed roadblocks for educators using data (Mandinach & Gummer, 2013c; Means et al., 2010), but focusing on the data systems first has left many districts data rich and information poor because they have not yet built the human capacity to use the systems and data (Mandinach & Gummer, 2013a, 2013c).

The demand for data use in education is not just governmental. Teacher accreditation groups have also added standards that relate to data use (Council of Chief State School Officers, 2008, 2011; National Council for Accreditation of Teacher Education, 2010). The 2010 Blue Ribbon Panel of the National Council of Accreditation of Teacher Education embedded data use language in two of the ten skills and knowledges for teachers to have,

To be successful teachers in challenging and changing environments, candidates must learn to use multiple assessment processes to advance learning and inform their practice with data to differentiate their teaching to match their students’ progress…Those who lead the next generation of teachers throughout their preparation and induction must themselves be effective practitioners, skilled in differentiating instruction, proficient in using assessment to monitor learning and feedback, persistent searchers for data to guide and adjust practice, and exhibitors of the skills of clinical education (pp. 5-6)

Those involved in teacher preparation are hopeful that the inclusion of accreditation standards for data use will lead to pre-service programs providing more opportunities for their students to learn about data before becoming classroom teachers (Bron et al., 2013; Greenberg & Walsh, 2012; Mandinach & Gummer, 2013c; Popham, 2011).
Data Use for Equity

While results of studies on data use interventions have been mixed (e.g., Booher-Jennings, 2005; Carlson et al., 2011; Crocco & Costigagn, 2007; Diamond & Cooper, 2007; Heilig & Darling-Hammon, 2008; Turner & Coburn, 2012), there are benefits to incorporating data use into educational systems of practice. Data use can help teachers move from a process of assessing their students based on intuition alone, to a consistent way of monitoring student progress (Reeves & Honig, 2015). Doing this can allow teachers to better target their instruction to students (Carlson et al., 2011; Coburn & Turner, 2012; Hamilton et al., 2009; Lai et al., 2014; Means et al., 2009), and to address assumptions about the root causes of student achievement patterns (Lachat & Smith, 2005).

Lachat and Smith (2005) found that when teachers performed a careful examination of their student achievement data, they realized that the low scores they observed were not related to attendance as they initially had thought. Instead, low scores had to do with the quality of the instruction. This finding is important from an equity standpoint. Some subgroups of marginalized students, such as students of color and those with disabilities, often face low expectations (Cook et al., 2000), with teachers attributing low achievement to perceived deficits rather than their own teaching (Elliot, 2013; Orosco & Klingner, 2010; Thorius et al., 2014). The use of data, like Lachat and Smith (2005) observed, can help educators address these misconceptions and assumptions.

Datnow and Park (2015) also explored data use as a means of pursuing equity. Acknowledging that many data use studies show limited impact, they remarked that “data use provides a lever for school improvement, but if the process isn’t implemented effectively, it won’t deliver” (p. 49). In their paper, they reflected on their study of data use for equity and
explained that promoting equity must go beyond promoting data use practices and include a
discussion of purposes and beliefs. To this end, they described five key principles of data use for
equity—1) Articulate your purpose and commitment to equity, 2) Don’t rush, 3) Use caution, 4) Focus on student engagement, and 5) Use professional judgment. Here, there must be shared visions of data use being explicitly for equity from the top down. When that happens, data would be used to identify gaps in opportunities for learning, focusing on “organizational conditions that support or hinder student performance” (p. 50). Without this type of focus, they argue that data use can actually cause inequity, such as in Booher-Jennings’s (2005) study where data reviews were focused on “bubble kids,” leaving those students thought of as too low or high achieving ignored.

In another paper, Datnow and Park (2018) explored how data is used for equity given the different tensions that schools face between the data use cultures for accountability and organizational learning. While Firestone and Gonzalez’s (2007) model listed PLCs as a practice for organizational learning, Datnow and Park continued to argue that it takes more than just practices to use data for equitable ends. As an example, they discussed how these PLCs could be focused on administrative compliance instead of deeper inquiry around student outcomes. Despite having a PLC model in place to review data, the data were not used for equity when the focus was on compliance. This relates back to their first key principle of needing a clearly stated purpose for these data use initiatives (2014). This finding was also found in a paper by Gannon-Slater and colleagues. In their study, they examined two schools that had teams of teachers review data. But this practice alone was not enough to lead to data use for equity, and they found that the overriding accountability culture led to a narrow focus on technical aspects of teaching, not allowing for the richer conversations around equity to happen.
Despite the promises of data use to inform instructional change, with changes to practice as the end goal in the models of data use (e.g. Keuning et al., 2016; Mandinach & Gummer, 2016a, 2016c; Marsh, 2012), there are assumptions undergirding calls for data-driven reform that should be questioned. As Farrell and Marsh (2016b) point out, these assumptions rely on a socio technical, rational belief in the power of data, where data are seen as neutral, objective, and safe from the politics and ideologies of schools and school systems...This logic assumes there is a straightforward pathway between data and instructional decisions that will improve student outcomes. That is, a teacher will engage with data in an instrumental fashion, weighing the merits of alternative courses of action and identifying an instructional response that is the best solution to the problem. In this view, data are often treated as a monolithic entity, with little attention paid to the types or sources (p. 424).

As with data use cultures, data are anything but free from the politics and ideologies of school systems. Data use can be a critical strategy for transforming instructional practice and student achievement (Duncan, 2009b; Easton, 2009; Fullan, 2000; Haycock, 2001; Johnson, 1996; Love, 2004; Schmoker, 1999; Zalles, 2005), but ignoring the human elements that influence data use paints an incomplete picture of the process, leaving educator beliefs unaddressed (Farrell & Marsh, 2016b).

**Data Literacy and Data-Driven Decision Making**

Using data to make instructional decisions is a cornerstone of the data-driven reform movement (Marsh et al., 2006), and though models of data use are limited in fully exploring educators’ active role in the process (Farrell & Marsh, 2016b), the concept of data literacy
acknowledges the importance of human capacity for data use. This next section further explores data use within educational contexts as I examine data literacy and data-driven decision making. What does it mean to be a data literate educator? How are data used to inform decision making? How does all of this influence the ultimate goal of the data-driven reform movement, which is to better align instructional practice to the needs of students, and by doing so, increase student learning outcomes (Coburn & Turner, 2012; Mandinach & Gummer, 2013b)?

**What is Data Literacy?**

Data literacy is not new—it has roots in teacher inquiry, where teachers reflectively ask questions about their practice, collect and analyze data, and then make instructional changes (Nelson & Slavit, 2008), though perhaps in less than systematic ways (Hamilton et al., 2009). And though researchers agree that data literacy comprises the ability for educators to turn data into actionable knowledge, the field lacks common language and an agreement on what it means to be data literate (Mandinach & Gummer, 2011, 2013b; Orland, 2013). “While the need to more precisely define the concept of data literacy may appear so obvious as to be trite, the education policy landscape is littered with vague, multiple, and conflicting definitions of policy concepts and objectives” (Orland, 2013, p. 50).

In 2015, Gummer and Mandinach set out to conceptualize the complex construct of what it means to be a data literate educator. In their paper, they reviewed professional development materials, conferenced with researchers and data literacy developers, and examined state licensure and certification documents to create a framework for the components of data literacy for teachers. Ultimately, they defined data literacy for teaching as “the ability to transform information into actionable instructional knowledge and practices by collecting, analyzing, and
interpreting all types of data (assessment, school climate, behavioral, snapshot, longitudinal, moment-to-moment, and so on) to help determine instructional steps” (Gummer & Mandinach, 2015, p. 2).

Mandinach and Gummer (2016c) provided a model for this comprehensive data literacy for teachers framework. It situates the five components of their data use inquiry cycle—(1) Identify Problems/Frame Questions, (2) Use Data, (3) Transform Data into Information, (4) Transform Information into Decision, and (5) Evaluate Outcomes—within the context of the additional knowledge bases that undergird successful data use. In this model, the data use inquiry cycle represents the core domains of skills needed to be considered data literate (Gummer & Mandianch, 2015). Based on their work (Mandinach & Gummer, 2016a, 2016c), WestEd has released a list of discrete skills within each domain (2016a), along with a task-based assessment for teacher data literacy. Knowledges, processes, and skills that comprise data literacy for teachers include:

- Working in data teams to examine data (Halverson et al., 2007; Long et al., 2008)
- Formulating hypotheses about students’ learning needs and instructional strategies (Boudett et al., 2007; Halverson et al., 2007; Herman & Gribbons, 2001; Love et al., 2008; Mandinach et al., 2008)
- Collecting and using multiple sources of data (Bernhardt, 2008; Boudett et al., 2007; Goldring & Berends, 2009; Kerr et al., 2006; Love et al., 2008; White, 2005)
- Drilling down to the item level to gain a deeper understanding of performance (Boudett et al., 2007; Love et al., 2008)
- Focusing on all children, not just the “bubble kids” (Booher-Jennings, 2005; Brunner et al., 2005; Love et al., 2008)
• Looking for causes of failure that can be remediated (Boudett et al., 2007; Love et al., 2008)
• Modifying instructional practice according to the data collected (Abbott, 2008; Bernhardt, 2008; Mandinach et al., 2008)
• Differentiating instruction to meet the needs of all students (Long et al., 2008; Love et al., 2008)
• Monitoring outcomes (Easton, 2009; Love et al., 2008; Mandianch et al., 2008)

While the ability to understand assessment data is an important part of data literacy (Brookhart, 2011; Heritage & Yeagley, 2005; Herman & Gribbons, 2001; Popham, 1999; Shaw, 2005), data literacy actually subsumes assessment literacy (DuLuca & Bellara, 2013; Mandinach & Gummer, 2013c). The two concepts are often mixed together (CCSSO, 2012; Greenberg & Walsh, 2012; Mandinach & Gummer, 2013b, 2013c), but assessment literacy is much narrower in scope (Mandinach & Gummer, 2013c), and is often defined in very technical terms (van Geel et al., 2017). There is a need for greater distinction in the field between these two concepts though, as Mandinach (2012) found out when she asked a dean of a school of education if they had any courses in data. He replied “oh yes, we teach formative assessment and value-added modeling” (p. 80).

Administrator data literacy is defined similarly as for teachers, but administrators have an additional need for educational leadership and management skills (Mandinach & Gummer, 2013c). These skills include being able to plan for data use, prepare group structures, and understanding and allowing for collaboration (Chen et al., 2005; Halverson et al., 2007; Lachat & Smith, 2005; Supovitz & Klein, 2003). They also need to be able to establish a vision for what data use should look like in their school or district (Hamilton et al., 2009), as well as provide for
distributed leadership and the alignment of learning goals with the available data (Lachat & Smith, 2005; Park & Datnow, 2009).

**What is Data-Driven Decision Making/Data-Based Decision-Making?**

Data-driven or data-based decision making is defined as the skills of data literacy applied to practice (Reeves & Honig, 2015). Often in the literature, studies use the terms data-driven decision making (DDDM) and data literacy interchangeably, though DDDM focuses on the specific aspect of data literacy where the systematic collection and analysis of data is used to inform instructional policies, practices, and procedures (Mandinach, 2012). The process of DDDM follows the same inquiry cycle as data literacy. Key components for DDDM include having the technological tools in place to support data collection and analysis, as well as having the human capacity for data literacy (Mandinach, 2012).

Many technical tools are available to support DDDM (Wayman, 2005a, 2007), such as data warehouses, student information systems, instructional management systems, and assessment systems. But, the reliance on technical tools leaves smaller districts at a disadvantage (Wayman et al., 2007). Technology systems can also become a barrier to effective data use (Wohlstetter et al., 2008) when they are overly complex and confusing, making it difficult to actually gather and analyze the data (Schildkamp, 2007). Data systems can also house such a multitude of data that educators become overwhelmed (Coburn & Turner, 2011; Datnow et al., 2013; Schildkamp & Kuiper, 2010; Wayman & Stringfield, 2006).

With the focus on building technology systems to aid in DDDM, human capacity for data literacy has received less attention and funding (Duncan, 2010a; Mandinach, 2009b). Human capacity is one of the key factors that influences data use, and as Mandinach (2012) points out,
“for the technology solutions to be actualized, educators at both the state and local levels must
know how to use data to inform practice” (p. 76). Anecdotally, I have seen this first hand in my
previous position within a school district. The proliferation of various data technology systems,
with professional development surrounding how to navigate the systems, but not on the data
literacy skills needed to appropriately use them, is one of the main reasons that I became
interested in this field of study.

Difficulties with Data Literacy

Achieving data literacy is harder and more complicated than many realized (Horn et al.,
2015; Nelson et al., 2012; Schildkamp & Kuiper, 2010; Slavit et al., 2013). Some educators
become ambivalent about data because of the barriers to its effective use (Mandinach, 2012;
Wayman et al., 2012), or are even wary of data as they fear it is part of a “gotcha” plan
(Mandinach et al., 2015). Educators often lack the knowledge and skills to feel confident using
data (e.g., Athanases et al., 2012; Dunlap & Piro, 2016; Datnow & Hubbard, 2015; Wayman &
Jimerson, 2014), and many schools themselves are not ready to create a data use culture to
support their teachers (Mandinach, 2012; Mandinach & Honey, 2008). Data use is labor
intensive and costly, and it takes time to get comfortable with using data (Mandianch, 2012).
Many teachers get frustrated and find the demands of being data literate not feasible in their
current realities (Huffman & Kalnin, 2003; Kerr et al., 2006; Supovitz, 2006).

Even with all of the systemic barriers to educators becoming data literate, there is a
running theme throughout each section reviewed so far—they human capacity is a real issue (e.g.
Choppin, 2002; Datnow, Park, & Wohlstetter, 2007; Feldman & Tung, 2001; Herman &
Gribbons, 2001; Kerr et al., 2006; Mandinach, 2009a; Miller, 2009; Young, 2006). Basic
understanding of how to interpret data is lacking (Espin et al., 2017; Hamilton et al., 2009; Jacobs et al., 2012; Supovitz & Klein, 2003). Teachers struggle with identifying what questions to ask (Means et al., 2011; Wayman & Jimerson, 2014), and then knowing what data are appropriate for answering their questions (Avramides et al., 2014). When Supovitz and Klein (2003) surveyed teachers and administrators about their data use, they found that only 29% felt they had the skills to use data to answer the questions that they were interested in. Hamilton and colleagues (2009) found that most teachers were able to find information on a graph, but they had a limited understanding of key statistical concepts, like test validity and score reliability, which can lead to invalid inferences.

Teachers also struggle with analyzing and interpreting data (Datnow & Hubbard, 2016; Mandinach & Gummer, 2013a; Oláh et al., 2010; Reeves & Honig, 2015; Wayman & Jimerson, 2014). Means and colleagues (2009) found that teachers struggle when trying to examine multiple data points, distinguishing absolute values and proportions, and identifying patterns in the data. In their framework of key skills, these fell within the Data Comprehension and Data Interpretation domains. Pre-service teachers identify analysis of student work as one of the most challenging parts of their practice (Athanases et al., 2013; Stobaugh et al., 2010), which is not surprising since there are minimal opportunities for preservice teachers to collaborate around data use and gain skills with analysis and interpretation (Bron et al., 2013; Greenberg & Walsh, 2012; Mann & Simon, 2010; Mandinach et al., 2011).

There is a demand for data-driven reform in schools because of the assumption that data use will enhance teacher practice (Mandianch & Gummer, 2013b). But, study after study finds that teachers do not end up changing their instructional practice, despite engaging with data (Carlson et al., 2011; Farley-Ripple & Buttram, 2014; Farrell & Marsh, 2016a; Firestone et al.,
Responses to data are dependent on beliefs, skills, and the data use culture, so they are likely to vary teacher to teacher (Farrell & Marsh, 2016b; Heritage et al., 2009; Oláh et al., 2010). Additionally, there is a lack of professional development for both in-service and pre-service educators on how to connect data to specific instructional strategies (Goertz et al., 2009; Jimerson & Wayman, 2015; Mandinach & Gummer, 2013c). The connection between data and instructional practices is key to this present study, and will be explored in more depth later in this section.

Supporting Data Literacy

There are a wide range of supports that educational leaders have invested in to help teachers use data to inform their instruction (Farley-Ripple & Buttram, 2014; Jimerson & Wayman, 2015; Marsh, 2012; Marsh et al., 2015). Building data systems (Park & Datnow, 2009; Wayman et al., 2012), and providing technical tools (Mandianch & Gummer, 2012a; Wayman, 2005a, 2007) are common, but fail to address the major concern of human capacity for data literacy (Mandinach, 2012). Researchers agree that there is a need for professional development to support data use (e.g., Conrad & Eller, 2003; Datnow & Hubbard, 2015; Jacobs et al., 2009; Honig & Venkateswaran, 2012; Wayman et al., 2012), but there is a dearth of research on the ways in which educators can gain the skills to become data literate (Mandinach, 2012), and there is a lack of consensus on when data literacy capacity should be built (Mandinach & Gummer, 2013c).

When asked, 90% of districts say they are involved in some sort of data training for staff, though these typically only include principals and other building leadership (Means et al., 2010).
Fifty percent of districts responded that they are providing training to teachers on how to use data to improve instructional practice (Mandinach & Gummer, 2013a), but the details on what this looked like were not reported. Often, districts rely on a train-the-trainer model of professional development (Mandianch, 2012), where a small group of district staff are trained by professionals—frequently at high expense—who in turn train the school leadership, who then train the teachers. (Mandinach, 2012).

The literature identifies some best practices for data use professional development. The Data Quality Campaign and the American Productivity & Quality Center studied sixty-nine school districts to identify best practices in DDDM (Sanchez et al., 2009). They found that the best-practice districts use professional development twice as much for new teachers, and 50% more for returning teachers than do other districts. Their professional development is focused on the process of meaning making instead of on utilizing the data systems technology, and is grounded in a data use culture for school improvement and organizational learning. Professional development on data use should be on-going and customized to specific needs of those in the training, instead of being viewed as a one-time event (Hamilton et al., 2009; Mandinach & Gummer, 2013b).

Beyond formal professional development trainings, three other supports have been proposed: Coaching, Collaboration, and Systems Thinking. Supporting data literacy through coaching adheres to the belief that data literacy can be improved if teachers have the ability to practice with instructional materials, reflect, and then get feedback from an expert (Lockwood et al., 2010). Utilizing a coaching support model has been shown to improve instructional skills in other areas of education (e.g. Cornett & Knight, 2009; Marsh et al., 2010; McKenna et al., 2010; Sailors & Price, 2015; Teemant, 2014; Teemant et al., 2014; Teemant et al., 2011). For data use,
a coaching model would include connecting teachers with appropriate data, helping to interpret them, and then support in making that all-important jump for analyzed data to instructional responses (Carlisle & Berebitsky, 2011; Coburn & Woulfin, 2012; Lachat & Smith, 2005; Kruse & Zimmerman, 2012; Means et al., 2009).

In their study on building teacher data use capacity, Huguet and colleagues (2014) were interested in the ways that data coaches and instructional coaches can impact teacher knowledge and skills with data. They drew on sociocultural theory to situate data learning as a social process, relying on “stakeholder understanding and expertise to become actionable knowledge” (p. 5). They purposefully selected six middle schools that were low performing, but also had existing conditions to support data use interventions. While the purposeful sampling was important to find cases that were likely to show coaching around data use, the results are not necessarily indicative of all schools since many lack the support of a data use culture for school improvement and organizational learning (Mandianch & Honey, 2018). In these best-case scenarios though, they found that coaching did have the possibility of helping teachers build their data use skills. Whether this happened or not did not rely on the official title of the coach as a data coach or an instructional coach, but it did depend on the coaches’ expertise with data and their interpersonal skills.

Data coaches have also been part of larger data use interventions, where the goal of the research was to increase data literacy. In one such study based in Dutch secondary schools, Kippers and colleagues (2018) provided professional development to teachers to help them increase their data use skills. In addition to collaborating with colleagues on data teams, having leadership on those teams, and providing them time to learn and change, they also supported
each team with an experienced data coach from their university. Using a pretest posttest design, they found that teacher data literacy increased significantly due to the intervention provided.

While the role of the data coach cannot be isolated from other supports provided in this study, another study conducted in Dutch primary schools focused exclusively on the effects of coaching on teachers’ instructional skills (van der Scheer et al., 2017). The participants consisted of 34 fourth grade teachers in the 2013-2014 school year. Each teacher was recorded during a math lesson, and then received coaching supports through instructional feedback seven times during the school year, and support reviewing student standardized test data three times. They found a significant improvement in teachers’ data use skills for instructional improvement, and any initial differences in skills between teachers were not related to their ability to develop data literacy skills—that is, all teachers were shown to have the ability to develop data literacy skills, regardless of their background experiences with data use.

As part of their study on data use in the context of accountability, Jacobs and colleagues (2009) found six different conditions for teachers using data to inform instructional decision making. The sixth condition involved a culture of support, which included data coaches. In reviewing the literature on teacher capacity for data-driven decision making, Datnow and Hubbard (2016) also found coaches to be key in supporting teacher data use. Like Huguet and colleagues, they highlighted the need for coaches to have interpersonal skills, as well as content and pedagogical knowledge in order to be effective. They also warned that an overreliance on data coaches, or using data coaches as a means to provide teachers with data and interventions instead of supporting them in the data use process can mean that teachers do not ever develop their own data literacy skills.
Another type of support for data literacy is collaboration (Marsh, 2012). Group decision-making is important for continuous improvement (Huffman, & Kalnin, 2003; Ingram et al., 2004), as it provides a space for teachers to identify student needs (Wayman & Stringfield, 2006) and to draw connections between their work and student practices (Gallimore et al., 2009). Mandinach and Gummer (2013b) found that data teams were not only able to help teachers identify questions, analyze results, and determine next steps, but also served as a forum where they could question each other’s assumptions and reconsider their previously held ideas.

Poortman and Schildkamp (2016) studied school data teams composed of four to six teachers, and one to two school leaders. These teams went through a guided data process to address a problem each team had identified. The researchers gathered their problem statements before the intervention, and then collected data on how and if the problem was solved at the end. They found that five of the nine teams were able to solve their problem through the use of the data team collaboration. Four of those teams also significantly improved student achievement data in the process as well.

Horn and colleagues (2015) used discourse analysis within a comparative case study to explore how team conversations shape their data use learning opportunities. Conversations were coded as epistemic stances (Hall & Horn, 2012), representations of practice (Little, 2003), activity structures, or problem framing (Goffman, 1974). They found that some aspects of their conversations limited their learning and narrowed their ability to make appropriate inferences about what students knew and learned. Teams focused on the “bubble kids” (Booher-Jennings, 2005), and did so broadly, not digging in deeper into how to adapt practices due to time constraints. These limitations can come from an accountability culture of a school district, where the need to raise test scores is viewed as an end in itself (Firestone & Gonzalez, 2007).
Continuing to situate data use collaboration within cultures, Gannon-Slater and colleagues (2017) used Firestone and Gonzalez’s (2007) framework for data use cultures to examine how elementary teacher professional learning communities (PLCs) responded to data policies within different data cultures. Data was collected via observations of team meetings, and they found that collaboration was much stronger in organizational learning cultures where PLCs are more teacher driven, as compared to accountability cultures where the school leader drove the meeting. Despite the differences in collaboration, in both cultures, the teachers did not have all of the skills necessary to be data literate, so their responses were lacking any connection to their instruction. For example, the accountability-oriented team reviewed a single source of data, focused on the kids in the red (very low performing/way off track) and yellow (low performing/not on track) labels only, and discussed causes surrounding the students’ abilities or ELL statuses. The organizational learning team looked at different data sources and had richer conversations including other student factors, but they still never made the connection to their own instruction. In her review of the literature, Marsh (2012) also found that effects of collaboration were limited from accountability policies, with data teams focusing on “gaming the system” to improve test-taking skills instead of content knowledge (Murnane et al., 2008), or only focusing on “bubble kids” (Kerr et al., 2006; Marsh et al., 2008; Moody & Dede, 2008; Porter & Snipes, 2006).

In an attempt to “understand the interrelationships among components in a complex system,” researchers are conceptualizing support for data literacy through a systems thinking lens (Mandinach & Gummer, 2013c, p. 33). Doing so recognizes the hierarchical nature of data literacy, operating on multiple levels such as teachers within schools, within districts, within states (Mandinach & Cline, 1994; Mandinach et al., 2006; Senge et al., 2000; Williams &
Hummelbrunner, 2011). Applying systems thinking to data literacy support is grounded in the identification of key stakeholders in the system (Mandinach & Gummer, 2013c). School and district educators, state education agencies, the U.S. Department of Education, professional organizations, and schools of education all play a role in the development of educator data literacy (Mandinach & Gummer, 2013c). School and district leadership, via the culture they cultivate, have a more direct impact on building data literacy (Firestone & Gonzales, 2007). State agencies have the ability to outline district requirements, such as the recently passed laws for data use (Data Quality Campaign, 2018a). More broadly, the federal government also shapes policies for data use, and can provide funding to build capacity as well (Mandinach & Gummer, 2013c). Professional organizations and schools of education both establish what is required of pre-service teacher preparation, and have the ability to integrate data literacy concepts into their training (Mandinach & Gummer, 2013c).

When Mandinach and Gummer (2013c) conceptualized what a system to build educators’ data literacy would look like, they came up with three main directives. First, data literacy must be part of educator preparation, starting in preservice, but also continuing into their careers. Next, they task schools of education with integrating these skills into their programs. And finally, they implore other stakeholders in the system (i.e. federal and state governments and professional organizations) to create the environment for this to happen. Having the systematic support for data literacy would enable educators to better use data to transform instructional practice (Mandinach & Gummer, 2013c).
Data Literacy and Instructional Practice

As was found in supports for data literacy, teachers do not always make the leap from looking at data to making instructional changes (e.g. Farrell & Marsh, 2016a; Gannon-Slater et al., 2017; Horn et al., 2015). But, the quality of a teacher’s instruction plays a critical role in their students’ learning processes (Ball & Rowan, 2004; Darling-Hammond, 2010; Gelderblom et al., 2016; Hattie, 2009; Hattie & Timperley, 2007; Marzano, 2000; Rowan et al., 2002; Scheerens, 2007). In the context of a system that has a culture oriented towards organizational learning, with supports to build human capacity for data literacy, analyzing student data has the ability to help teachers identify strong and weak parts of their instruction (Schildkamp et al., 2013; Young, 2006). The assumption that data use can inform decision making, enhance practice, and ultimately lead to improvement in student performance is the basis of the demand for data-driven reform (Chen et al., 2005; Feldman & Tung, 2001; Kerr et al., 2006; Mandinach & Gummer, 2013c; Schmoker & Wilson, 1995).

Gelderblom and colleagues (2016) have identified four aspects of instruction that are linked to data literacy and contribute to student learning outcomes. Purposeful teaching is when a teacher’s instructional actions are focused on student learning, which relies on the teacher’s knowledge of realistic goals to be working toward. Because students differ in how they learn (Sammons et al., 1997), teachers also need to be able to practice adaptive instruction. Providing feedback on the gap between where students are and where they are expected to be is also important for teachers, which should lead to interventions to reduce the gap (Sammons et al., 1997; Locke & Latham, 2002). Finally, the amount of time devoted to learning has an impact on student outcomes (Carroll, 1963, 1989; Rosenshine & Berliner, 1978).
Jacobs and colleagues (2009) also developed a framework for examining data use and instructional practices. Their phenomenological study was grounded in an interpretivist framework, believing that the school context influences the way that teachers use data. They identified six different conditions for supporting data use: (1) On-going attention to multiple sources, (2) A focus on student needs, (3) A sense of urgency related to data use, serving as a catalyst for action, (4) Changes in professional practice, (5) Sophisticated professional knowledge, and (6) A culture of support.

In their comparative case study, Kerr and colleagues (2006) conducted surveys, interviews, and focus groups with principals and teachers to examine strategies for promoting data use for instructional improvement. Sample strategies implemented by the schools included the development of interim assessments, developing technology systems to house and report data, providing professional development on how to interpret and use test results, and conducting learning walks to assess the quality of classroom instruction. The researchers found that the most positive student outcomes occurred when teachers had weekly time to review multiple sources of data that were disaggregated by subgroup and topic. Other researchers have also found that reviewing multiple sources of data provides a more comprehensive and accurate look at a student’s progress when making instructional decisions (Baker et al., 2002; Fu & Lamme, 2002; Jacobs et al., 2009).

Farrell and Marsh (2016a) were interested in teachers’ instructional responses to data. In their Spencer Foundation funded study, they utilized a qualitative comparative analysis for 245 cases of teachers’ data use within five middle schools. The selected schools all had long-term initiatives in place to support data use, including data coaches and PLC structures. In their interviews with the case study teachers, coaches, PLC leads, and school administrators, they
elicited discussion around instructional responses to data using object probes, which in this case
was an index card with a variety of data types written on it. The teachers responded with how
they might have engaged with that type of data recently, and how they might use it for
instructional practice. The researchers also asked participants to bring in their own data artifacts
to the interview. Initial codes were based on the empirical literatures, with new codes added
throughout the analysis. They overwhelmingly found that teachers did not change the delivery of
their instruction in response to data. Instead, they retaught material with the same approach, or
referred students to additional tutoring outside of class. This finding was attributed to the
prevailing accountability culture in the case study districts, leaving data to be viewed in isolation.

Gelderblom and colleagues (2016) used their four aspects of instruction framework
discussed above to see how teachers determine their instructional responses to data. Their study
took place in Dutch primary schools using interviews and surveys. They found that almost all
teachers said they wanted and intended to use data to improve their instruction, but they
ultimately did not. Teachers skipped important steps in the data use process, like not using all
available data or missing analyses, and tended to only turn to data when their own students had
poor outcomes, instead of using data for general monitoring of progress.

In contrast to the above studies, some researchers have found positive changes in
instructional practice as a result of increased time, use of differentiation, and positive attitudes
toward data. Through interviews and observations, Feldman and Tung (2001) studied six
schools in Massachusetts that were engaged in a data-based decision-making process. They
found several different ways that teachers changed their data use practice that impacted their
instructional decisions. First, they started using data in deeper ways to allow them to target
instructional decisions. They also became less reactive to data, which allowed them to be more
reflective of their role in the student outcomes. In a different study, Means and colleagues (2011) conducted data scenario interviews with elementary and middle school teacher teams. The teams were purposefully selected to represent the best cases of data use. In these scenarios, the researchers were trying to uncover existing strengths and challenges to data use informing instruction. They found that teachers were able to use student assessment results to discuss differentiating their instruction, including grouping students, increasing instructional time, or trying out new instructional strategies. But this study did not include any kind of follow-up observations to see if the teachers actually did make the changes, and as with Gelderblom et al. (2016), teachers may say one thing, but do another.

**Multi-Tiered System of Supports**

The Every Student Succeeds Act (2015) mandates increased learner access to effective instructional practices—such as MTSS—and improvements for the way educators identify and support students with disabilities (Marx, 2016). States now have responsibility to help districts invest in professional learning that includes MTSS, PBIS, UDL, and other evidence-based practices to improve academic outcomes, as well as address and reduce the use of harmful aversive practices such as the use of seclusion and restraint (National Council on Disability, 2018, p. 35)

State accountability plans must also include plans for students with disabilities who are not progressing (Marx, 2016). MTSS specifically is currently required in some states, as well as in some parts of Canada (Dunn, 2018). The site of the present study, Florida, has been engaged in work around the implementation of MTSS since 2004 (History and Future of MTSS in Florida, n.d.).
Data use is an everyday function within a multi-tiered system of supports (MTSS) (Bryant & Pedrotty-Bryant, 2008; Fuchs & Fuchs, 2006; National Association of State Directors of Special Education, 2006; National Joint Committee on Learning Disabilities, 2005), defined as “an evidence-based model of schooling that uses data-based problem-solving to integrate academic and behavioral instruction and interventions” (MTSS Implementation Components, n.d., p.3). MTSS pulls from Response to Intervention (RtI) and Positive Behavioral Interventions and Supports (PBIS) models to create system-wide strategies, practices, and resources for supporting students both academically and behaviorally (Averill & Rinaldi, 2011). As is in the name MTSS, this is a tiered model that begins in general education to ensure all students receive appropriate instruction (Fuchs & Fuchs, 2007).

In their document on MTSS Implementation Components (n.d.), Florida’s Problem Solving/Response to Intervention (PS/RtI) project outlines the relationship and progression between the tiers. Tier 1 comprises the instruction and behavioral supports that all students receive, as is based on district core curricula, state standards, and district behavioral policies. Tier 2 is the instruction and supports that some students received, based on student data. These supports are more intense by providing more time with targeted instruction or behavioral interventions, with the goal to help improve student performance under the general Tier 1 standards and expectations. Tier 3 is the most intensive support level. Only a few students receive Tier 3 supports, where instruction and interventions are for small groups or individual students. This tier is for students that have significant barriers to learning academic or behavioral skills.
Critical Components of MTSS

There are six critical components for effective MTSS implementation that are shown in Figure 3 below (Stockslager et al., 2016; Systems Coaching & Leadership, n.d.). MTSS implementation happens through a complex systems change process (Batsche et al., 2007; Castillo et al., 2016; Sansosti & Noltemeyer, 2009), necessitating a systems thinking approach as demonstrated in their model (Stockslager et al., 2016). Leadership is critical to implementing MTSS at the school level (Hamilton, 2010; Putnam, 2008; Richter et al., 2012; Stockslager et al., 2016). Leadership is responsible for providing on-going professional development for MTSS implementation, as well as communicating a mission and vision for MTSS in their school and providing the resources and strategic plan to make it happen (Stockslager et al., 2016).

As was the case with data use, human capacity is a core component of MTSS implementation as well (Bineham et al., 2014; Castillo et al., 2018; Kressler, 2014; March et al., 2016; Sanger et al., 2013; Sansosti et al., 2011; Stockslager et al., 2016). In this model, the building capacity and infrastructure domain includes ongoing professional development, particularly within two of the other domains—data-based problem solving and multi-tiered instruction and intervention—in addition to the logistical conditions that allow for this process to happen (Stockslager et al., 2016).

The communication and collaboration domain refers to the ongoing and open conversations with stakeholders to build consensus for MTSS implementation, as well as engaging stakeholders in collaboration throughout the process (Stockslager et al., 2016). This domain also relies on the infrastructure being built that allows for such communication and collaboration to happen. The concept of a framework with multiple tiers of instruction and intervention is the namesake of the MTSS implementation process. This domain outlines the
three different tiers, with varying levels of intensive support discussed above (Stockslager et al., 2016).

The last two domains focus heavily on data. Data-based problem-solving is an integral part of MTSS, providing a four-step approach to examine and troubleshoot problems with student outcomes, as well as barriers to schoolwide MTSS implementation (Elliott, 2013; Stockslager et al., 2016). The PS/RtI project (Planning/Problem-Solving Process, n.d.) describes the process as cyclical and consisting of four essential questions: (1) What’s the problem? (2) Why is it occurring? (3) What are we going to do about it? (4) It is working?

The process begins with identifying a problem and determining the difference between what is expected and what is currently occurring. Then, data are analyzed to determine hypotheses for why this issue might be occurring. Data are also used to examine the validity of these hypotheses, ultimately ending with a best guess at why the issue is happening. Based on these analyses, a plan to address the problem is developed. The plan utilizes evidence-based interventions and is designed to explicitly address how data will be used to monitor the student’s or group of students’ progress toward the performance goal. Finally, data are analyzed again to measure the response to the intervention and determine if the plan worked.

The data-evaluation domain ties into this last step of the problem-solving process, as well as to data literacy. In order for educators to go through the problem-solving process, they need to be data literate (Stockslager et al., 2016). This domain also highlights the data policies, procedures, and systems that need to be in place for educators to access the data and know what to do with them. (Stockslager et al., 2016).
Data Use and Data-based Decision Making in an MTSS Framework

While the push for teachers to be data-driven in general education is fairly new—thanks in part to No Child Left Behind (2001) and the Every Student Succeeds Act (2015) (Datnow & Hubbard, 2016; Mandinach, 2012; Schildkamp et al., 2012)—data use in special education has been going on for a long time under the name data-based program modification (Deno & Mirkin, 1977). The assumption undergirding data-based program modification is that you cannot tell ahead of time if an intervention will work for a student, so you have to treat programs like hypotheses and collect data before deciding about the intervention effectiveness for that particular student (Deno & Mirkin, 1997).

In more recent years with the advance of RtI and MTSS models for interventions, data use continues to play a critical role in providing needed supports for all students. Data are used to make decisions about the appropriateness of instruction within the tiers, and about the effectiveness of individual interventions (Fuchs & Vaughn, 2012). The process of data use is integrated into teachers’ daily lives through the use of universal screening tools, progress monitoring, and data-based problem solving (Bryant & Pedrotty-Bryant, 2008; Fuchs & Fuchs, 2006; National Association of State Directors of Special Education, 2006; National Joint Committee on Learning Disabilities, 2005). And as research about MTSS begins to focus on Tier 3, there has also been a reinvigorated interest in data-based program modification (Berry Kuchle et al., 2015). “Individuals with severe and persistent learning and behavior difficulties should be treated as instructional hypotheses that need to be empirically tested to determine their effectiveness” (Espin et al., 2017, p. 10).

As discussed above, data use is critical to the MTSS implementation process, and is a key aspect of two of the six components of MTSS (Stockslager et al., 2016). Types of data utilized in
an MTSS framework include standardized test scores, student work, teacher anecdotal notes, student projects, demographic data, portfolios, and progress monitoring intervention data (Fuchs et al., 2003; National Association of State Directors of Special Education, 2006; Strahan et al., 2003). Within the context of an MTSS framework, data use can assist teachers in focusing on individual student needs (Jacobs et al., 2009), leading to differentiated instruction based on data results (Coburn & Turner, 2012; Gelderblom et al., 2016; Farrell & Marsh, 2016b; Means et al., 2011; van der Scheer et al., 2017).

Some studies show that like teachers in general (e.g. Datnow et al., 2007; Kerr et al., 2006; Mandinach, 2009a; Miller, 2009; Young, 2006), teachers situated within an MTSS framework also struggle to use data appropriately, and their data use practices vary greatly (Kressler, 2014; Murphy, 2016, White, 2018). Kressler (2014) studied teachers in a high school MTSS setting, and wanted to get at their perceptions of data-driven decision making (DDDM) for improving academic outcomes for at-risk students. Her study was also situated in Florida, where the same MTSS model and four-step problem-solving process was in place. She utilized interviews and observations of six high school teachers to elicit information on their perceptions. Her main finding was that teachers did not understand the meaning or purpose of MTSS, and that the overall culture of accountability impacted the students that they targeted for supports.

In a similar vein, Murphy (2016) used a quantitative survey to investigate data-based decision making for teachers within an MTSS model. The teachers were K-3 general education teachers in South Carolina. She found that often teachers went through the data-based decision-making process, but they relied on informal or unsystematic measures of student progress. White (2018) conducted 18 interviews with elementary school teachers in New York City to see how they perceived the use of assessment data within an MTSS framework. She found that while they
did use data to inform their instruction, the types of assessments they used were inappropriate for their purposes, and the instructional changes made were not always evidence-based.

While these studies on data use within an MTSS do acknowledge the role of educators in the data-based problem solving process, they are focused on the appropriateness of the data and interventions that the educators select. The present study extends the current literature on the active process of data use in an MTSS context by examining how educators come to define, understand, and use data, and how their beliefs shape these decisions.

**Educator Beliefs and Epistemologies**

“Schools are comprised of students, educators, and other personnel who each possess beliefs, values, knowledge, skills, experiences, and economic advantages or disadvantages, among other variables, that contribute to the unique context in which practices are implemented” (Castillo et al., 2015, p. 3). Up to this point in reviewing the literature on data use—both generally and within an MTSS framework—human capacity has shown up as a major factor in whether and how data are used. Using data is an inherently interpretive act (e.g., Farrell & Marsh, 2016b, Garner, 2018; Horn et al., 2015), influenced by past experiences, beliefs, values, and culture (Datnow & Hubbard, 2015; Marton, 1981). Data are meaningless without interpretation, and ultimately what data mean to a teacher varies (Farrell & Marsh, 2016b; Mandinach, 2012), leading to difficulties with data-driven instructional changes (Farrell & Marsh, 2016b; Heritage et al., 2009; Oláh et al., 2010) and data-based problem-solving (Kressler, 2014; Murphy, 2016, White, 2018). In this section, I discuss studies on educator beliefs and epistemologies in order to situate these persisting difficulties as necessitating deeper study into educator conceptualizations of data.
Epistemology is the branch of philosophy concerned with the origin, nature, limits, methods, and justification of human knowledge (Hofer & Pintrich, 2002). This includes not only what can be and is known, but also how knowing happens (Paul, 2005). Epistemologies tacitly underlie any empirical investigation (Crotty, 1998; Hofer & Pintrich, 2002; Shand, 1993), including the use of data for educational decisions.

Epistemological understanding is changeable (Bendixen & Crokill, 2011; Brownlee, 2004; Fives, 2011; Jimerson, 2014; Schraw et al., 2017; Walker et al., 2011; Watkins et al., 2017), though it can be difficult to reconcile initial beliefs, new experiences, and the construction of explanations for these events (Jordan & Stanovich, 2003). For example, Watkins and colleagues (2017) found that teachers’ thinking strategies changed after a summer professional development workshop that was focused on how their thinking strategies impacted their practice. Despite this, other researchers have found that “people tend to search for and see aspects of data that support their beliefs, assumptions, and experiences and do not even notice data that might contradict or challenge these beliefs” (Coburn & Turner, 2011, p. 177), so attempts to challenge or change epistemologies have to be done carefully.

Several researchers have created frameworks for conceptualizing or identifying epistemological stances. Schommer-Aikins (2002) describes her 1990 model of personal epistemologies as a system of beliefs, not just a singular belief. She felt that these beliefs were independent from each other, and that they do not develop at the same time and with the same experiences. She also conceptualized these beliefs as being more like frequency distributions than dichotomies or continuums. As an example, she states a person might believe that a small amount of knowledge is unchanging, but that a lot of knowing is evolving.
Fitzgerald and Cunningham (2002) disagreed, and their framework is a table with various dichotomies and continuums of responses to identify epistemological stances. Their seven questions used to determine a stance are:

1. Can we have knowledge of a single reality which is independent of the knower?
2. Is there such a thing as truth?
3. What primary test must proposed knowledge pass in order to be true?
4. Is knowledge primarily universal or particular?
5. Where is knowledge located relative to the knower?
6. What are the relative conditions of sense data and mental activity to knowing?
7. To what degree is knowledge discovered versus created?

Moving along their table, the answer choice for each question are dichotomies like yes/no (Q1 & 2) and discovered/created (Q7), or categories like correspondence/coherence/pragmatic (Q3), that then point to different epistemological stances like postpositivism or constructivism.

Other researchers have turned to sensemaking theory to understand beliefs and epistemologies (e.g., Bertrand & Marsh, 2015; Coburn, Touré, & Yamashita, 2009; Farrell & Marsh, 2016b; Horn et al., 2015; Slavit et al., 2013; Snodgrass Rangel et al., 2017b; Spillane & Miele, 2007). The central questions within sensemaking theory are how and why people come to know what they know, and what they do with that knowledge once they have it (Weick, 1995). According to sensemaking theory, an action is “based on how people notice or select information from the environment, make meaning of that information, and then act on those interpretations, developing culture, social structures, and routines over time” (Coburn, 2001, p. 147).

The sensemaking process starts with examining how people come to understand objects and events in their environments (Coburn et al., 2009; Spillane & Miele, 2007). This involves
filtering external cues through the lens of our existing knowledge framework (Starbuck & Milliken, 1998), and what gets noticed as relevant depends on the mental representations we have already created from our prior experiences (Spillane & Miele, 2007; Weick et al., 2005). Spillane and Miele (2007) provide an example by saying whether a teacher notices that a student is confused depends on if the teacher’s representation of a confused student includes various indicators of uncertainty, including the one that the student in question is exhibiting.

Exploring how someone interprets their newly developed information as for or against their previously held beliefs is the next step in the sensemaking process (Spillane & Miele, 2007). This includes exploring the knowledge representations that are created, such as schemas and mental models. Schemas represent theories about how things we encounter are loosely related to each other, where mental models are more sophisticated and represent causal relationships (Spillane & Miele, 2007). These representations are automatically activated when we interact with stimuli, and they guide our sensemaking by allowing us to add to our initial understanding of the stimuli and to make inferences about events that were not directly experienced (Spillane & Miele, 2007).

Sensemaking theory is grounded within an interpretivist or constructivist paradigm, acknowledging that the meaning of information is not a given, but instead must be constructed (Coburn et al., 2009; Weick, 1995). These constructions happen socially, and are shaped by the organizational and political contexts (Coburn et al., 2009), as well as our own motivational and cognitive biases, which are often unknown to us (Spillane & Miele, 2007). For educators, this means that teachers’ personal perspectives, perceptions, and values all come into play as they are making meaning of new information, particularly during times of uncertainty (Spillane et al., 2002; Weick, 1995).
To account for the idea that data use does not often follow the straightforward inquiry model provided by many scholars in data research (Coburn & Turner, 2012; Farley-Ripple & Buttram, 2014; Slavit et al., 2013), Bertrand and Marsh reconceptualized the data use model in Figure 1, shown in the preceding chapter. This model acknowledges teachers’ beliefs and past experiences, as well as how teachers attribute student outcomes as factors that shape a teacher’s instructional decision making.

This model pulls from attribution theory, which says that when teachers are deciding on next steps to address student outcomes, their thoughts about the causes of the results influence their decision-making process (Nelson et al., 2012; Oláh et al., 2010; Schildkamp & Kuiper, 2010). Three characteristics that influence attribution are the locus of causality (internal or external), the stability (enduring or transitory), and the ability to control the outcome (Seifert, 2004; Weiner, 2010). As an example, Bertrand and Marsh (2015) explain that a teacher may attribute poor student assessment scores to prior instruction (internal) on an “off day” (unstable), but generally views herself to have control over the quality of the instruction, and would then be motivated to improve instruction. Or, a teacher could attribute it to her students (external), considering them to be ‘slow learners’ (stable and out of her control), making it less likely to improve her instruction (p. 865).

The use of this model helps in clarifying the complex and varying patterns of instructional responses to data (Bertrand & Marsh, 2015; Cho & Wayman, 2014; Spillane & Miele, 2007), recognizing the interpretative processes that undergird data use (Datnow et al., 2012; Park et al., 2013). I used this model in the present study to frame my view of how individual educators make sense of data, having it inform the types of questions I asked my participants and guiding my discussion of the findings.
Importance of Examining Beliefs in Educational Research

Studying beliefs in education can provide an alternative view for understanding the issues surrounding teacher data use and practice (Hammer & Elby, 2002; Schraw et al., 2017; Spillane & Miele, 2007). Teachers’ personal epistemologies are critical to their instructional planning and delivery (Kagan, 1992; Pajares, 1992), and their beliefs shape what they perceive, what they know, and how they teach (e.g., Brownwell et al., 2006; Coburn & Turner, 2011; Jordan & Stanovich, 2003; Lewis, 1990; White, 2000). For research on educational data use specifically, understanding what is perceived as evidence is critical for understanding data use (Contandriopoulos et al., 2010; Johnson et al., 2009; Schneider, 2014; Spillane & Miele, 2007).

Jimerson (2014) explored this topic, questioning how educators conceptualize data in relation to evidence. She conducted interviews, focus groups, and surveys, and relied on theories of mental models to analyze her data. She found that educators use a range of mental models to conceptualize data as evidence, with some being narrowly focused on test scores and thought to be a hinderance, where others found useful purposes in data use.

Teachers see some data as more credible than others (Coburn & Talbert, 2006; Farrell, 2014; Ingram, et al., 2004; Jennings, 2012). They may also select data based on what kind of information they feel they are able to gain from them (Farrell & Marsh, 2016b). The teachers in Ingram and colleagues’ (2004) study preferred locally developed assessments over standardized ones because they felt those tests provided better information on how to assess their instructional practices. Farrell and Marsh (2016b) found that teachers valued classroom assessments more than district benchmark assessments because they felt they were more reflective of recent classroom learning, and thereby more relevant to their data use needs.
Datnow and Hubbard (2016) surveyed the literature in their study on the relationship between teacher beliefs and the capacity for data-driven decision making. They found that teacher beliefs are often unexamined in reform efforts.

We tend to think that new belief systems will follow when teachers implement new practices, curricula, or policies, and tend not to address teacher beliefs a priori or even in tandem with such changes. When teachers become involved in data use, they bring with them pre-existing schemas about teaching and learning, assessment, data, and data use. (p. 24).

They found a range of teacher beliefs about data use in the literature, including that they do not have the ability to understand data and translate them into practice (Athanases et al., 2012; DeLuca & Bellara, 2013; Marsh, 2012; Means et al., 2009; Wayman & Jimerson, 2014), or that it was not valuable to them since it indicated what they already knew (Pierce & Chick, 2001; Schildkamp & Kuiper, 2010).

Bertrand and Marsh (2015) examined how teachers make sense of student learning data by conducting interviews, focus groups, observations, and surveys at six low performing middle schools. They developed the sensemaking model referenced above in Figure 4, and found four mental models of sensemaking when attributing student outcome data: either teachers attribute results to their own instructional practices, to how well the students understood their instruction, to the nature of the test, or to inherent student abilities and attributes. Special education students often face low expectations (Cook et al., 2000), and teachers’ sensemaking of their achievement data may be complicated by these beliefs (Bertrand & Marsh, 2015).

Farrell and Marsh (2016b) used this same sensemaking model to explore how perceptions of data shape teachers’ instructional responses in their qualitative comparative case study. They
conducted interviews, observations, and document review in three districts to elicit the information, finding that different forms of data lead to a variety of instructional responses. For example, teachers associated district benchmark data with reteaching and retesting content, with no change in instructional approach. On the other hand, classroom assessments were seen as more valid and were most often linked to changes in instructional approach.

Coburn and colleagues (2009) used a sensemaking theory framework to examine instructional decision making by district administrators. Their longitudinal case study spanned 2002-2005 in one school district, where they conducted interviews, observations, and document analysis. They found that educators often interpreted data in contradictory ways. For example, when looking at low math scores, some administrators interpreted that as the curriculum being poor quality, where others thought it was an indicator that there had not been sufficient professional development around the new curriculum for it to be implemented with fidelity.

Finally, in her dissertation, Garner (2018) explored the topic of teacher team epistemologies for data use. She claimed “data use is an inherently epistemic endeavor, as teachers negotiate what they can know, what is worth knowing, and what is possible to know about student learning” (p. 3). As part of a larger multi-year study, she conducted observations of team meetings, and focused her analysis on two teacher work groups that used different epistemic logics in their data use. She found that both groups used the same terminology to describe their processes (i.e. “using data to drive instruction”), but their approaches to using data differed based on their epistemic stances. One group viewed data as a direct measurement of what students know, while the other viewed data as an indicator that something might be wrong, but requires further investigation. This led the measurement group to focusing on reteaching
content and not changing instructional practice, where the indicator group was more reflective of their practice.

The current study expands on the work of researchers like Bertrand and Marsh (2015) and Garner (2018) on educators’ sensemaking of data by extending these theories to an MTSS context. Exploring sensemaking and attribution of data within this specific context deepens the literature on educators’ beliefs and data use practices, exploring data conceptualization for interventional data use. The present study also allows for the more straightforward data use models in data literacy and MTSS research to be examined and problematized.

**Beliefs about Data Within the Context of MTSS**

The present study is concerned with how educators working within a multi-tiered system of supports framework conceptualize and use data. Schools around the nation are undergoing data-driven reform (Data Quality Campaign, 2018a; Mandinach & Gummer, 2013c), but “data” cannot drive anything because they are not actionable agents (Mandinach, 2012; Spillane, 2012). Educators must interpret data to create meanings (Farrell & Marsh, 2016b, Garner, 2018; Horn et al., 2015). Removing them as the subject of this process and instead placing data in that role belies the interpretive nature of data use, leaving epistemic stances unexamined. Beliefs about data are important, and do impact instructional practices (Bertrand & Marsh, 2015; Coburn et al., 2009; Farrell & Marsh, 2016b; Garner, 2018; Jimerson, 2014), warranting a larger focus in research on data use.

This study informs the literature on data use within an MTSS by focusing on educators’ understanding, interpretation, and use of data for instructional decision-making (Espin et al., 2017). By focusing on the understudied connection between sensemaking, data, and teaching
practices (Coburn & Turner, 2011; Datnow & Hubbard, 2015; Gelderblom et al., 2016; Poortman, Schildkamp et al., 2016; Spillane, 2012), this research addresses the human element of interpreting data, suggesting that the straightforward model of data use in an MTSS framework may not be capturing the full extent of the process (Garner, 2018; Horn et al., 2015). This research helps to provide a multifaceted view of educator data use (Hammer & Elby, 2002; Schraw et al., 2017; Spillane & Miele, 2007), allowing for researchers and practitioners to better understand and support educator data use efforts.
CHAPTER THREE: METHODOLOGY

The purpose of this study is to explore how educators working within a multi-tiered system of supports framework come to understand what data are, what they mean, and how they can be used to support changes in instructional practices. The data use cultures framework (Firestone & Gonzalez, 2007), sensemaking about student outcomes model (Bertrand & Marsh, 2015), and data literacy for teaching framework (Mandianch & Gummer, 2016c) guided the development of this study to answer the following questions:

1. How do educators working within a multi-tiered system of supports framework make sense of data?
2. How do these educators use data for instructional decision-making?
3. How do data use cultures at the district and school levels shape how data are understood and used?

Case Study Design

Qualitative research “records the messiness of real life, puts an organizing framework around it, and interprets it in some way” (Braun & Clarke, 2013, p. 20). It allows researchers to focus on how people frame their own experiences and can provide a richer, more multi-faceted understanding of a phenomenon in ways that quantitative methods cannot because qualitative research retains the complexity and mess (Braun & Clarke, 2013; Lichtman, 2013). These
methods can also account for responsiveness to participants by being organic and flexible, changing to suit the needs of the project (Braun & Clarke, 2013). A qualitative approach is needed to get at the intricacy and participant-driven scope of a study on how educators make sense of and use data.

There are many approaches to qualitative research, but I selected case study as the methodology for this study. In a case study design, a researcher explores a bounded system, or sometimes various bounded systems, through multiple modes of in-depth data collection (Creswell, 2013; Gerring, 2006). Including more than one data source strengthens a case study by including a broader range of context and experiences, and results for case studies involve thick, rich, contextualized descriptions of the case to allow for greater understanding (Yin, 2009). The case in the present study was meant to be an exemplar or model case (Lichtman, 2013), specifically a single elementary school that was identified as having a well-functioning data use team in place and was implementing MTSS with fidelity. In reflecting the reality that MTSS implementation in the state of Florida is still a struggle for most schools, the school under study here is a work in progress and does not necessarily reflect a fully functioning MTSS.

For this study, a case study design positioned within an interpretivist perspective was appropriate as I aimed to explore educators’ sensemaking of data within an MTSS framework. As discussed in the literature review, both MTSS implementation and data use are situated phenomena that require a systems-thinking approach. A case study that allows for a narrow focus on one exemplar school within one district can provide the depth, complexity, and context that is necessary to answer my research questions. Case studies are also naturally suited to exploratory work such as this, providing in-depth knowledge of an information rich example that can provide
deeper insights and understanding of a phenomenon than larger examples with more surface-level generalizations (Creswell, 2013; Gerring, 2006; Patton, 2002; Stake, 1995).

**Other Methodological Considerations**

A researcher’s choice of study design and methods are not made in a vacuum, and my beliefs about the nature of knowledge undergird these decisions (Crotty, 1998; Guba & Lincoln, 1994; Hofer & Pintrich, 2002; Paul, 2005; Shand, 1993). Crotty (1998) suggested that the main questions researchers are faced with when designing a research study are what methodologies and methods will we use, and how do we justify these choices. Answering these questions requires an examination of my own views about the nature of knowledge, as well as ensuring an alignment between those views and my choice of methodology and methods.

I chose an interpretive theoretical perspective to guide the design of this study. All research is interpretive as it is guided by the researcher’s beliefs (Denzin & Lincoln, 2005), but interpretivism as a theoretical perspective acknowledges that our minds play an active role in the construction of knowledge and that there is subjectivity in the production of knowledge (Paul, 2005). This approach to research focuses on how people make sense of their lives (Paul, 2005), and seeks an understanding of the systems of meaning that influence the actions of individuals, looking for “culturally derived and historically situated interpretations of the social world” (Crotty, 1998, p. 67).

This interpretive theoretical perspective informed the nature of the study itself. Sensemaking theory is grounded within an interpretive framework, acknowledging that the meaning of information is not a given, but must be constructed by each individual (Coburn et al., 2009; Weick, 1995). Sensemaking is a fundamentally social process, with meaning being
constructed and shaped through social, organizational, and political contexts (Coburn et al., 2009), as well as our own personal perspectives and values (Spillane & Miele, 2007; Weick, 1995). Data use is also inherently an interpretive act that is influenced by our beliefs, experiences, and cultures (Datnow & Hubbard, 205; Farrell & Marsh, 2016b; Garner, 2018; Mandinach, 2012; Marton, 1981). Acknowledging the situated nature of data use and implementing an MTSS framework is in line with the interpretivist goal of understanding interpretations in their context. After all, “schools are comprised of students, educators, and other personnel who each possess beliefs, values, knowledge, skills, experiences, and economic advantages or disadvantages, among other variables, that contribute to the unique context in which practices are implemented” (Castillo et al., 2015, p. 3).

Additionally, my philosophical beliefs have informed my approach to methods, as will be detailed later in this chapter. For example, my belief that educators construct knowledge through their interactions and experiences has shaped my decision to conduct a series of in-depth interviews, observations, and a document analysis. These methods gave space for the participants to share the accounts of their realities and their socially mediated experiences, and reflect on the observations and documents, in order to help me understand not only their conceptualization of data, but also their social, historical, and institutional contexts (Crotty, 1998).

**Setting and Participants**

The present case study is bounded by a single school district in Florida, and I used a combination of snowball sampling, purposive sampling, and internal sampling techniques to identify the district and participants (Bogdan & Biklen, 1992; Patton, 2002). Selection criteria included the district utilizing an MTSS framework for their supports with fidelity, and for at least
one of their schools to have a team structure in place for reviewing data. The district-level
criterion enabled me to examine the district MTSS context and the data use culture found within
a district that is actively utilizing an MTSS framework as described in the literature, where the
school-level criterion ensured that the process for using data to make instructional decisions
within an MTSS framework is happening, allowing for the selection of information rich cases
(Gall, Gall, & Borg, 2007; Patton, 2002).

All school districts in the state are required to implement an MTSS to address the
academic and behavioral performance of their students, but the fidelity of implementation is
varied. Given this, the initial selection of a case district was informed through my professional
network of contacts that support MTSS implementation throughout the state. I sought out their
recommendations for districts that are implementing MTSS with fidelity, based on their
professional judgements, and used this information to narrow the number of districts that were
under consideration. By reaching out to these identified districts to gauge interest, a final district
was selected for the study. All district, school, and individual names throughout the study are
pseudonyms.

Sago district was one of the most populous in the state, and was actively involved in
MTSS initiatives, including participating in an annual self-assessment of their MTSS
implementation. They were one of only five districts in the state to complete this process in the
2018-2019 school year, and one of only six districts to complete it in the 2019-2020 school year.
This district was also part of the state of Florida’s original pilot program for MTSS, and has also
been involved in more recent MTSS professional learning opportunities.

To determine the specific school to study, I talked with my MTSS contact at the district
level to get her recommendations from the MTSS team of schools that had a strong MTSS in
place and were using a team structure to review data. This contact later became one of my
district-level participants under the pseudonym Marie. Marie used her professional judgement as
an MTSS specialist for the district, as well as the schools’ self-assessment of MTSS
implementation data, to guide their judgements. She had a few schools in mind, but suggested I
reach out to Sunshine Elementary as she felt their principal James had really bought into the
concept of MTSS, and she knew they were using grade-level teams to review data. Marie helped
connect me with James, and he was immediately on board for the study once I sent him the
principal-level recruitment email, as approved by the district IRB. We met in person so I could
explain the study, including recruitment information, time commitments, and other details more
in-depth.

At the school level, I was looking to recruit a team of educators that were using data to
improve their instruction. At Sunshine, this came in the form of grade-level Professional
Learning Communities (PLCs). These PLCs consisted of all the teachers for a certain grade
level, guided by Sunshine’s MTSS coach. He suggested his third-grade team, and facilitated the
process for me to contact them and provide them with recruitment emails as well. These emails
included all pertinent details about participation, including time requirements and how potential
risks would be minimized. All members of the team had to agree for me to be able to observe
their meetings, and did so by contacting me back via email. This did not mean they had to agree
to participate in the interview portion of the study, and only half of the team did agree to do
interviews after the first observation. The final school level team included four third-grade
teachers and their MTSS coach for the observations, with two of the teachers (Sofia and Zoe),
the MTSS coach (Melissa), and the principal (James) participating in interviews.
The district level participants were recruited via my connection with Marie. I shared my study information with her, and let her know that I was looking for participants at the district level that could speak to the district data culture and MTSS. She volunteered to be part of my study, and recommended that I reach out to the three other MTSS specialists as well as the person that oversees the school psychologists for the district. In the district, the school psychologists help implement MTSS and facilitate the use of the MTSS implementation self-assessment, so she thought he would have valuable input. I asked Marie about anyone that supports schools with data use, and she recommended the senior assessment coordinator from the district’s Assessment, Accountability, and Research department. Later, this same person was recommended from Sunshine’s MTSS coach as well.

I reached out to all five identified people via email with my recruitment information, and asked them to email me back if they had questions or wanted to participate. The final district level participants included one MTSS specialist (Marie), and the representative from the district’s Assessment, Accountability, and Research department (pseudonym Annie). Other participants initially included a second MTSS specialist and the supervisor of school psychologists, though both decided to discontinue with the study before any data could be collected. Marie and Annie were provided with informed consent documents prior to our first meetings, and we reviewed this information again before we started our initial interviews. A breakdown of the final participants, along with their position and their type of participation, is found in Table 2.
### Table 2

**Participant Summary**

<table>
<thead>
<tr>
<th>Pseudonym</th>
<th>Level</th>
<th>Role</th>
<th>Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annie</td>
<td>District</td>
<td>Assessment Coordinator</td>
<td>2 interviews</td>
</tr>
<tr>
<td>Marie</td>
<td>District</td>
<td>MTSS Specialist</td>
<td>2 interviews</td>
</tr>
<tr>
<td>James</td>
<td>School</td>
<td>Principal</td>
<td>1 interview</td>
</tr>
<tr>
<td>Melissa</td>
<td>School</td>
<td>MTSS Coach</td>
<td>2 interviews, 3 observations</td>
</tr>
<tr>
<td>Sofia</td>
<td>School</td>
<td>Teacher</td>
<td>2 interviews, 2 observations</td>
</tr>
<tr>
<td>Zoe</td>
<td>School</td>
<td>Teacher</td>
<td>1 interview, 1 observation</td>
</tr>
</tbody>
</table>

### Data Collection Methods

In order to collect the depth of information necessitated by my research questions and case study design, I used interviews, observations, document review, and my research journal as my methods (Creswell, 2013; Stake, 1995; Yin, 2009). My goal was to complete two semi-structured interviews with each of my participants discussed above, though two participants declined to do a second interview. Using semi-structured interviews allowed for flexibility in the discussions, providing the participants more control over the direction of our conversation (Glesne, 2011; Lichtman, 2013; Merriam & Tisdell, 2016). This interview style better reflects both the researcher and participant interests, and was in line with my interpretivist approach in wanting to prioritize the participants’ voices about their realities and what is important to them. Interviews lasted between twenty to eighty minutes, and were conducted in a setting of the participants’ choice. This meant James’s office, Sofia and Zoe’s classrooms, Melissa’s shared office space, Annie’s office, and then virtual interviews from Annie and Marie’s homes via Zoom. Audio recordings were created of the interviews using either a recording app on my phone or using the record audio only function in Zoom, which were later transcribed for analysis using the Rev.com verbatim service.
As have been used in other interpretive studies on data use (e.g., Farrell & Marsh, 2016a, 2016b), the second interviews included object probes (De Leon & Cohen, 2005). Unlike in Farrell and Marsh’s studies though, I did not provide the objects, but instead asked the participants to bring in an object that reflects what they mean when they talk about data. I have used this method before to elicit participants’ representations of assessment as a concept (Agosto et al., 2019; Green et al., 2015), and I believe leaving the selection of the object wholly up to the participant frees them to bring in a wider variety of materials to most accurately get at their meaning of data. Semi-structured interview protocols for the first two interviews are included in Appendices A, B, C, and D.

Because data use is a situated phenomenon (Coburn & Turner, 2012), I also conducted observations at the school level. This meant attending three data chats where Melissa, Sunshine’s MTSS coach, guided her team of teachers in reviewing and using data. The first observation happened before any of the interviews, and the second two occurred between the first and second interviews for Melissa and Sofia, allowing the observations to inform these follow-up interviews. These observations focused on what data were being used, how the data were interpreted and attributed, and how they were used to transform instructional practices. Observational field notes were recorded following the key concepts in the school observation guide, included in Appendix E. This guide prompts for attention to the problem-solving process that is used, as well as to any power dynamics that surface. These observations lasted 45 to 60 minutes each. My intention was to also conduct observations of data use meetings at the district office, which were set to include a meeting of all district MTSS coaches with their district-level MTSS specialists, as well as a meeting of the district MTSS specialists reviewing school MTSS self-assessment data with the school psychologist supervisor. Both of these meetings fell through, and I was not able to
secure any other observations at the district level due to the shutdown of the schools and district office in mid-March of 2020.

Documents on MTSS and data use were also reviewed to assist in building a thick, rich description of the case and add to the information on the district data use culture and MTSS context. These included the following documents at the school level: the 2019-2020 Sunshine School Improvement Plan (SIP), a brochure about Sunshine Elementary from the district’s website, and their school-created Falcon’s S.O.A.R. behavioral matrix. All schools in the state are required to have a SIP, and this document included details on which data the principal used as indicators of success, and how the data were used and attributed. Behavioral matrix was provided by Sunshine’s MTSS coach as an example product of their use of behavioral data within their MTSS. The brochure did not provide useful information for this study.

At the district level, reviewed documents included the 2017-2018 Sago District MTSS Implementation Guide, their School-based Leadership Team (SBLT) Equity-Centered Problem-Solving worksheet, a companion document called School-Level Practices that Promote Equity, the 2019-2020 Sago District Strategic Plan, and a district-created Data Review Guidance Calendar for their interim assessments. Though the implementation guide provided idealized information on how the district wanted schools to implement MTSS, both school and district level participants stated it was never used, so the data were not as relevant to this study. The documents around Equity-Centered Problem-Solving provided insights into how the district was actively guiding schools in using data, specifically focused on attributions. The data guidance calendar provided similar information about how the assessment department helped schools use data. The strategic plan was vague and did not discuss data or MTSS in any detail, so it was not useful for this study.
Additionally, as is best practice in qualitative research, I kept a research journal to collect my reflections and thinking processes during the study (Braun & Clarke, 2013). This reflexive practice assisted me in refining my understanding of my own role in this process (Janesick, 2011), and provided insights into my reactions to the study (Lichtman, 2015). Doing so is also keeping in line with my interpretivist perspective that grounds the research in subjectivity (Braun & Clarke, 2013). By being reflexive in my journaling, I considered both the ways that my study structure influences participants’ responses, and that my own assumptions and reactions shape the knowledge produced through this study (Wilkinson, 1988). This journal was kept in a hybrid format, consisting of audio recordings I would make immediately after data collection—usually as I was driving home or back to work. These were later transcribed for analysis. When I had the ability to type, I would input notes into my running Dissertation section of my OneNote app on my computer. The data from this journal was mainly used to support my narrative case description in Chapter Four, as well as any of my reflexive thoughts that are embedded in the results and discussion sections.

**Data Analysis**

In qualitative research, data collection and data analysis are not always distinct steps, procedural and linear in form (Braun & Clarke, 2013; Creswell, 2013). Analysis can begin as soon as I start journaling my thoughts during or right after an interview or observation, flowing recursively from the first memo to the final themes. Case study methodology does not have a rigid data analysis process (Yin, 2009), allowing for case study researchers to follow a variety of analytical methods (Merriam, 1998). In this study, I followed Braun and Clarke’s (2006) reflexive thematic analysis process as it closely aligns with my interpretivist theoretical
perspective by centering the researcher’s subjectivity in the coding and theme development process. Braun and Clark assert that there is not a correct or incorrect way to code data, but that instead, there can be “weaker (superficial) or stronger (complex, nuanced, insightful)” codes (2019, p. 20). Stronger codes are developed through a deep and iterative process of reviewing the data, which is embedded in each of the six steps of their reflexive thematic analysis process: (1) Familiarizing yourself with the data, (2) Generating initial codes, (3) Searching for themes, (4) Reviewing themes, (5) Defining and naming themes, and (6) Producing the report.

The first step goes beyond reviewing the data on a surface level, instead asking questions such as, “How does this participant make sense of their experiences? What assumptions do they make in interpreting their experiences? What kind of world is revealed through their accounts?” (Braun & Clarke, 2012, p. 60-61). The move to coding in the second step requires going through all of the data in large or small chunks to identify aspects that might be relevant to the research question. The code itself can be “a word or brief phrase that captures the essence of why you think a particular bit of data may be useful.” (Braun & Clarke, 2013, p. 207). Once all of the data are coded and collated, the data are reread to see if the codes make sense.

I followed this process by first reading, and then rereading through my data, trying to get a sense of what the participants were saying about their experiences and beliefs. I started coding directly into the individual Word documents for the interviews, observations, and research journal, using the comment function to write codes and other analytic memos to myself. Once I had done that for all of the Word documents, I started adding the codes and other pertinent information (e.g., participant name, connected quotes) to a main Excel file for my analysis, with a different sheet for each participant. For documents, I added codes and other thoughts to a page in this same Excel file, organized by document name.
A similar process is done in the third and fourth steps of Braun and Clarke’s process, where the researcher actively constructs themes and then reviews them in relation to the codes and the entire set of data. I reviewed all of my themes, and started grouping them in a separate Excel file to create my initial set of themes. Braun and Clarke are clear that themes do not emerge and are not simply discovered by the researcher. Creating themes is an active process on the part of the researcher, which Braun and Clarke describe as “sculptors, making choices about how to shape and craft their piece of stone (the “raw data”) into a work of art (the analysis)” (2012, p. 63). Much like stating that data drive instruction, indicating that themes emerge takes the researcher subjectivity out of the equation, when really any analytic choice a researcher makes is imbued with their beliefs. Instead, I acknowledged my role in the creation of the themes, noting in the results chapter why I decided to make certain analytic choices. In this step of the process, Braun and Clarke suggest creating a thematic map of the analysis. They first started with a broad map of everything they had constructed into themes in step four of their process. Then in step five, they refined the specifics of their themes and produced a second map to demonstrate their final themes. This final map should clarify the overall story that a researcher is trying to tell with their data.

Once I had my initial themes and had written a brief description of each, I created a map of them using PowerPoint (see Figure 11 in Chapter 5). As I was writing the descriptions and creating the map, I knew that some of them overlapped or were very similar in overall meaning. I added thick lines between the themes to help conceptualize their relatedness, and began reworking my descriptions to make them more concise and distinct from each other. I wanted the themes themselves to be take-home messages about the findings from the study, and included sub-themes to build the case for the findings. The final themes include three main topics,
supported by several sub-themes each (see Figure 12 in Chapter 5). The exact breakdown of the themes in each step of this process is found in Chapter 4.

In the final step of Braun and Clarke’s process, the researcher selects the vivid, compelling extracts that help to situate their themes and tell their story. In representing the findings of a reflexive thematic analysis, a researcher does not need to claim to be telling a singular truth about the data. A researcher using reflexive thematic analysis would acknowledge that there are many stories that can be told from the data, and that they are telling a compelling story that is “plausible, coherent, and grounded in the data.” (Braun & Clarke, 2019, p. 20). After I had my final themes with coordinating descriptions, I went back to my file of codes and organized the codes to each theme and sub-theme. I then gathered the quotes into different sheets for each theme, and decided if they helped illustrate the main points of the theme. Those that were selected were copied into a different sheet of the file and put in an order and color-coding scheme to allow for ease of use when I was writing up my findings.

In addition to the model of analysis described above from Braun and Clarke (2006), I also relied on more artistic approaches to research as I was writing up case narratives on my participants and our data collection experiences. Through that process, I found myself trying to express the essence of how they described themselves in relation to data use for MTSS. One participant in particular was the impetus for this, as I remarked during our interview that I could picture her as a cartoon character after she called herself a “data slayer.” I started by doodling on a scrap piece of paper when I was working on her narrative. She also said she felt like an octopus and a ring leader because of her many roles, so I created an octopus with a top hat carrying many different weapons. From there, I thought doing a similar process for my other participants might help me solidify how they pictured their role in the data use for MTSS process. Once I had
finalized the ideas, I created images using icons in PowerPoint and embedded them into each participant’s narrative in Chapter Four. Though arts-based methods were not the focus of this study, arts-based methods can be used in various stages of qualitative research, including in the analysis process as a way to understand a complex issue (Bhattacharya, 2017; Greenwood, 2012).

**Research Quality**

There are different views on what constitutes quality in qualitative research. In non-postpositivistic paradigms, researchers either eschew terms like validity and reliability for their positivistic overtones, or purposefully challenge and change the meaning as Lather does with her postmodern transgressive validities (2001). Tracy (2010), who is self-defined as an interpretive, critical, and post-structural researcher, developed eight criteria for quality in qualitative research that provide an “expansive or ‘big tent’ structure for qualitative quality while still celebrating the complex differences amongst various paradigms.” (p. 839). These criteria are worthy topic, rich rigor, sincerity, credibility, resonance, significant contribution, ethical, and meaningful coherence.

Having a worthy topic means that the research is relevant, timely, significant, and interesting (Tracy, 2010). In Chapter Two, I reviewed the context and literature surrounding instructional data use, multi-tiered systems of supports, and educator’s epistemological beliefs to make the case that studying how educators make sense of data is worthwhile and significant. Data use is a critical strategy for instructional improvement (Duncan, 2009b; Easton, 2009; Fullan, 2000; Haycock, 2001; Johnson, 1996; Love, 2004; Schmoker, 1999; Zalles, 2005), but in practice often does not result in changes to instructional practice (e.g., Farrell & Marsh, 2016a;
Firestone, Fitz, & Broadfoot, 1999; Horn et al., 2015; Supovitz, 2012). Within an MTSS, data are used to make decisions about the appropriateness of instruction within the tiers, and about the effectiveness of individual interventions (Fuchs & Vaughn, 2012). But using data is an inherently interpretive act (e.g., Farrell & Marsh, 2016b, Garner, 2018; Horn et al., 2015), where educators’ beliefs shape what they perceive, what they know, and how they teach (e.g., Brownwell, Adams, Sindelar, Waldron, & Vanhover, 2006; Coburn & Turner, 2011; Jordan & Stanovich, 2003; Lewis, 1990; White, 2000). This study explores how educators interpret and use data, focusing on their beliefs and sensemaking to make the connection between these often-unexamined beliefs about data and how data is used in practice.

Being transparent about my methods, subjectivity, assumptions, and challenges allowed me to be sincere in my work. Credibility is achieved through the thick descriptions that are provided in Chapter Four, as well as through my use of multiple data sources to reflect the multifaceted nature of this phenomenon and my participants. I also checked in with my participants throughout the process, asking them to reflect on my own reflections so far in our second interviews. I also asked them to review the main take-aways from each of their individual interviews and observations. Two participants did not want to complete this step, and the other four provided minimal feedback in the form of broad agreement.

Tracy (2010) describes four types of ethics in qualitative research—procedural, situational, relational, and exiting. Procedural ethics refers to actions that are mandated by organizations, such as universities, institutional review boards (IRBs), and governments. These types of ethical practices include informed consent, minimizing risk, and confidentiality. Individual participants, the school, and the district have been given pseudonyms to help protect their confidentiality. A risk in qualitative research though is that the need for rich, thick
descriptions and detailed context can lead to a breach of privacy where, despite pseudonyms, others can figure out who you are describing. To mitigate this, I deferred to my participants about how much potentially identifying information I was able share in my findings. None of the four participants that provided feedback had concerns about privacy.

Situational ethics goes beyond “do no harm,” recognizing that each situation is different, but that a researcher must constantly reflect on their methods and the data to determine if the ends justify the means. Relational ethics involve the researcher being mindful of their positionality and the consequences their actions have on others. I relied on my process of reflexively journaling and consulting with my participants to address these issues. The last form of ethics outlined by Tracy (2010) is exiting ethics, which deals with how research may be interpreted or misinterpreted. For this study, I had to be careful in how I portrayed findings around my participants and their instructional decision making. Education is political, and for my teacher participants in particular, their school administrators, district-level staff, or others may read the research and misinterpret any less-than-stellar findings as a condemnation.

In addition to Tracy’s (2010) overarching qualitative criteria, Braun and Clarke (2013) have outlined fifteen different criteria for good thematic analysis, starting with transcribing the data in detail, and checking transcripts against the audio recordings for accuracy. For coding, a quality study should give equal attention to all pieces of data and ensure coding is thorough. Extracts that are identified for themes should be gathered together and checked against each other and the original data set, providing themes that are consistent and distinctive. The themes and analysis should be focused on making sense of the topic, not just paraphrasing or describing it. Included extracts should illustrate these claims and tell a convincing story, which balances the analytic narrative with the extracts. Adequate time should be given for this type of deep analysis.
The final report needs to be clear and consistent about the researcher’s assumptions and epistemological positions, demonstrate an alignment between claimed analysis and the actual analytic process, and should position the researcher as active in the process.

Following Braun and Clarke’s (2006) reflexive thematic analysis process described earlier in this chapter allowed me to meet the transcription, coding, and analytic criteria. Throughout this study, I am attempting to be as clear, consistent, and transparent about how and why I am taking the approaches that I am, and how these choices align with my stated theoretical orientations. I am also grounding myself and my assumptions in my work, and have continued to do so throughout the entire study.

On Being Reflexive

Though I keep speaking to the importance of being reflexive, including the use of reflexive thematic analysis and ascribing to an interpretive theoretical perspective where subjectivity is instrumental throughout the research process, I have not yet detailed how I am situated in this study. According to Braun and Clarke (2013)

research is understood as a subjective process; we, as researchers bring our own histories, values, assumptions, perspectives, politics, and mannerisms into the research- and we cannot leave those at the door. The topics we find interesting to research, and ways we ask questions about them, the aspects of our data that excite us- these (and many other factors) reflect who we are; our subjectivity. Therefore, any knowledge produced is going to reflect that, even if only in some very minor way. The same has to be said for participants in our research; they bring their own experiences, perspectives and values to
the research. They’re not robots; we’re not robots- we’re all living, breathing, subjective human beings, partial in our knowledge, and flawed (p. 36).

Citing Wilkinson (1988), they continue by delineating between functional and personal reflexivity. Functional reflexivity is an attempt to understand how my study design might have influenced the findings. As an example, they discuss how the selection of focus groups versus journaling might differently impact the results of a study on dieting. On the other hand, personal reflexivity is about making myself visible in the research process and acknowledging who I am as a researcher.

The methods I used include interviews, observations, document review, and keeping a research journal. It is possible that, with some outside observer coming in to watch their team meetings, the participants acted differently than they would normally. They did seem nervous during the first interview, but I tried my best to let them know this was in no way punitive or coming from a place of judgement. Also, being a fairly introverted person who tends to be quiet in social situations myself, I can understand how interviews might be a source of anxiety for some people, limiting how much they might be willing to share. I did not feel like this was the case for any of my participants, but I also know that it could have been an issue for some that I just did not see. Participating in qualitative research is often beneficial for participants (Wolgemuth et al., 2015). Though I did not specifically ask them to reflect on their experiences with this study, it did seem like most of my participants appreciated the opportunity to self-reflect and talk to someone else about their work.

My personal journey to this study has been a long one. I have always known that I wanted to work in education, though as a young child through my early years of college, I had always assumed this would be as a teacher of some sort. But the combination of my low self-
esteem, social anxiety, and belief that teachers—especially early childhood educators, the area I was majoring in—have such a huge impact on children’s futures led to doubts about my ability to be good enough. I ended up dropping my education major and eventually landing on a psychology degree, assuming I would come up with a way to make the connection to education later.

Before I started my last semester of my undergraduate career, I had no idea what I wanted to do. I just knew it would involve graduate school because I figured, what else can you do with a B.A. in psychology? That semester, I took two courses that introduced me to my future area of study—Psychological Statistics, and Tests and Measures. Everyone I knew in those classes hated them, but I actually enjoyed the content and found that I was pretty good at it as well. At the time, I had a very negative attitude about high-stakes testing, and somehow thought that by working and researching in that area, that I could help make tests more equitable and change the high-stakes accountability culture in Florida. Lofty goals, I know.

While perusing different graduate education degree options for what felt like the hundredth time, Measurement and Evaluation finally stuck out to me, and though I was not at all sure I was qualified for such a program, I was relieved when I got my acceptance letter. “Finally, this is my way into education! I can help make a difference in the background as a researcher, without needing to be in front of a classroom,” I thought. Looking back, it feels like I flew through the master’s program after that acceptance. My first year was devoted to classes in evaluation and statistics, and I loved it. It was not until the end of my second year, in my last semester before graduation, again, when my worldview was shaken.

That semester, I took my first qualitative research class and began the process of rethinking everything I had previously thought to be true about research. I had never questioned
my beliefs about reality or knowledge. I had never thought that I could interject myself into a study, because I had always believed it was of utmost importance to remain objective. When I realized that in qualitative research, I am the instrument and my subjectivity is embedded in the choices I make throughout the research process, it made me start to question my other measurement and evaluation work. I felt like a different person, a different researcher, depending on which class I was in at the time.

This dual-identity feeling was not alleviated when I was in my doctoral program, entrenched in qualitative courses, while also starting a job responsible for teacher evaluation for a local school district. It went against many of my core beliefs about how tests should be used and about the value of a teacher. At the same time, I understood the state and district’s perspective on why they needed teacher evaluation in general, and why student data was included. It was tough to reconcile both positions in my mind. I had many conversations with coworkers where they reassured me that I was not the bad guy, but it often felt like I was, especially when fielding teacher complaints about the evaluation system. Other times, I was taken aback at how easily I agreed with and was defending district actions.

My interest in data literacy was born from my attempt to reconcile my very postpositivist job with my personal values and more interpretive leanings. It was also my attempt to “fix” what I saw as a major issue in the misuse of data in my district. Throughout the district, people had different ideas about what constituted data, how data should be used, and how they can interpret and use data. Professional development focused on how to use access data tools instead of how to appropriately interpret the information provided. In my role in a research and testing office, this most often was referring to student testing data used for high-stakes, evaluative decisions. I knew that we could not change the basics of our evaluation system as it was state mandated, but I
believed that we could make smarter decisions about how to collect data and how else to use our
data if we became more data literate. And maybe, eventually, this could lead to changes in how
we used data for these high-stakes decisions.

Before I had gotten involved with any data literacy initiatives, I left my job in the school
district for my current position as an evaluator for a large grant-funded project to support
districts in their MTSS implementation throughout the state. As I mentioned in Chapter Two, I
did not know much about MTSS before taking this job. As I quickly learned on the job, data use
is critically important within a well-functioning MTSS. Having been afforded the opportunity to
attend MTSS trainings across the state for my job, I was able to see that other districts were
struggling with data use as well, not out of lack of care or trying, but because it is complex and
something often not taught in educator preparation programs or covered in professional
development. More than ever, I feel strongly that data literacy is an important skill for all
educators, and something that is going to be embedded in professional learning in the future. But
in my experience, I have found that data use is looked at unidimensionally, instead of
considering our own active role and the context of the use in the process.

As I conclude this methodology chapter by taking time to make clear my history, who I
am as a researcher, and how I relate to the topic at hand, it is my intention that this personal
reflection will not stand alone as the required “reflexivity statement” in this study. Reflexivity
was not something I checked off my list and moved on from, but has been integrated into the
remaining chapters of this study as well. In the next chapter, I describe each participant and data
collection experience through a narrative lens, providing transparency in data collection and a
deeper description of the case as I got to know it through the data collection process. Chapter
Five presents the findings of the study along with a discussion of my role in the formation of the
final themes. Chapter Six wraps up the study by reflecting on the implications of the findings for my research questions and future research, as well as a discussion around the limitations and significance of the study.
CHAPTER FOUR:
REFELCTIONS ON THE CASE

The purpose of this study was to explore how educators come to make sense of and use data within the context of an MTSS. Before sharing the thematic findings in Chapter Five, I pause in this chapter to provide a deeper description of my case as I got to know it through my data collection process. In addition to deepening the case description, this process also provides transparency in my data collection, detailing each step in the research. I begin with a description of Sago School District, how I collected district-level data, and share stories for the two district participants, Annie and Maire. I then describe Sunshine Elementary School, the school-level data collection process, and stories for school-level participants, James, Melissa, Sofia, and Zoe. The descriptions and narratives in this chapter weave together demographic information, major points of discussion from our interviews and observations, and my own reflections on the data collection process with each person. These personal reflections served as a way for me to demonstrate my own data sensemaking process and connect this process to the findings of the study. Each narrative also includes an artistic representation of each individual and their self-described role in the data use for MTSS process. These images helped me to solidify my understanding of each person in the analysis process, and are integrated into each narrative. An overview of the timeline for the various data collection activities is found in Table 3 below.
Table 3
Timeline of Data Collection Activities

<table>
<thead>
<tr>
<th>Date</th>
<th>Participant(s)</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/22/2020</td>
<td>James</td>
<td>Initial meeting at Sunshine Elementary</td>
</tr>
<tr>
<td>1/24/2020</td>
<td>Marie</td>
<td>Phone call check-in</td>
</tr>
<tr>
<td>1/30/2020</td>
<td>Melissa, Sofia, Zoe</td>
<td>Observation #1</td>
</tr>
<tr>
<td>2/6/2020</td>
<td>Melissa</td>
<td>Interview #1</td>
</tr>
<tr>
<td>2/6/2020</td>
<td>Marie</td>
<td>Supports Conversation</td>
</tr>
<tr>
<td>2/12/2020</td>
<td>James</td>
<td>Interview #1</td>
</tr>
<tr>
<td>2/28/2020</td>
<td>Zoe &amp; Sofia</td>
<td>Interview #1</td>
</tr>
<tr>
<td>3/2/2020</td>
<td>Annie</td>
<td>Interview #1</td>
</tr>
<tr>
<td>3/11/2020</td>
<td>Melissa &amp; Sofia</td>
<td>Interview #2</td>
</tr>
<tr>
<td>3/16/2020</td>
<td>All</td>
<td>School districts in Florida go remote due to Covid-19</td>
</tr>
<tr>
<td>3/24/2020</td>
<td>Marie</td>
<td>Interview #1 (virtual)</td>
</tr>
<tr>
<td>4/1/2020</td>
<td>Annie</td>
<td>Interview #2 (virtual)</td>
</tr>
<tr>
<td>4/2/2020</td>
<td>Marie</td>
<td>Interview #2 (virtual)</td>
</tr>
</tbody>
</table>

Sago District

Sago was one of the most populated districts in Florida, with 79 elementary schools, 21 middle schools, 16 high schools, 1 virtual school, and a combination of 41 other schools, such as charter schools, career centers, and adult education schools. Their total enrollment for the 2019-2020 year was 99,798, with 60.1% of those students identified as economically disadvantaged in the state reporting system. Around half of those students were white (53.65%), with near equal representation of Black (18.82%) and Hispanic (18.11%) students. As was brought up in my interview with Zoe, this district had been overidentifying their Black students for disabilities, with 25.10% of their students with disabilities being identified as Black, despite Black students only making up 18.82% of the district enrollment overall. Black students were the only racial category in this district to be overrepresented as compared to the district enrollment overall. Additionally, Marie explained that a major focus for Sago in the 2019-2020 school year was
equity, specifically in discipline data. In our first interview, she explained “this is a national issue, but especially in Sago, there’s a large gap in our discipline data for our Black and non-Black students.”

The district was divided into four areas, each with their own area superintendent that set the expectations for the schools in that area. At the district office, there were four MTSS specialists that were assigned to each of these areas and reported to their area superintendent. This left their roles varied based on the different initiatives for each area, though a central focus throughout the district in 2019-2020 was on equity and culturally responsive leadership. According to Marie, one of the MTSS specialists, she and her peers focused on reviewing equity data with principals and strengthening their PBIS systems. In her interviews, she argued that doing MTSS well would lead to the equitable outcomes the district is seeking, but the MTSS component was not a cohesive part of the trainings on equity.

Marie also explained that the schools in Sago vary in terms of their MTSS implementation and data use. She suggested that factors such as principal buy-in and area expectations influence these practices. “The level of functioning for MTSS in any given school is directly correlated with the principal's belief in it, or buy into it.” In general, she felt that elementary schools were doing a better job of implementing MTSS than middle or high schools, which she attributed to the smaller groups of students and the background of RtI and PBIS as originating in elementary schools. She also felt that the district itself did not “walk the walk” when it came to MTSS, and it was her wish that the district would unify behind MTSS as a way to better help schools do the same.

When I asked about documents around MTSS or data use at the district, I was first referred to the district MTSS handbook. This document went through the basics of MTSS, with
guidance around setting up a school-based leadership team (SBLT) and ensuring a common understanding of each of the six core components of MTSS. The document described the MTSS model as aligning “resources in schools for providing high quality instruction and intervention matched to student needs.” All of the information aligned with what was provided by the state, but Marie did not think it was actually used in the schools often. Beyond this document, I was given a Tier 3 problem-solving worksheet, a data guidance calendar, and two handouts on equity-centered problem solving. Given the focus on equity data for the 2019-2020 year, it made sense that Sago’s main MTSS products would integrate equity. I was surprised that the problem-solving worksheet was just for Tier 3 though, and found myself wondering what happens when the district wants to examine their Tier 2. The data guidance calendar was not directly aligned with MTSS, but did provide prompts for teachers to consider as they worked through each cycle of their MAP data. These prompts would sometimes include things like flexible grouping and differentiated instruction, which could be seen as a movement towards small group supports in a Tier 2 setting. I also independently pulled the district’s strategic plan for the 2019-2020 year. The document only mentioned MTSS once within an equity goal, where it is listed along with PBIS, restorative practices, and equitable practices as increasing learning for all students. Some action goals mentioned using specific types of data, but broadly teacher data use was not part of the strategic plan.

**Annie - Sago District Senior Assessment Coordinator**

Annie’s official role at Sago was the Senior Coordinator of District Assessments. She worked in the district’s Assessment, Accountability, and Research department, where her time was split between developing district assessments, analyzing assessment data, managing the
assessment platform system, and consulting with schools on an as-invited basis around using data. She was a teacher for 15 years, working in special education in Pennsylvania, and then secondary science in Florida. She has been in her current role at the district office for five years.

Melissa, Sunshine’s MTSS coach, mentioned that Annie was a critical support for her being able to use data with her teacher teams, so I reached out to Annie after my first interview with Melissa, hoping she would be willing to talk with me. She agreed to be part of the study and we set a time in early March to meet in her office for the first interview. I was really excited to talk with Annie because I worked in the equivalent department for my old school district, so I thought it would be really interesting to hear how she was able to use her role to help schools with data use.

When I arrived at the district office for the interview, Annie walked me through a series of hallways and open-air passages to get to her department and office. Annie’s office was large enough for her L-shaped wooden desk and a guest chair opposite it. She had a wall-width dry erase board behind her with all of the testing windows for the year mapped out, and notes to herself near the bottom under each window. As an interior room, there were no windows and it felt very secluded and private as we started talking.

She started by telling me that when in the classroom, she was not always a proponent of data, saying “I was not a data person when I was there. I was against data.” In the middle of her second year teaching in Florida, she quit because she could not get her Biology End-of-Course exam (EOC) pass rates up. At that time, she told me she only had a 30% pass rate for her students, and did not understand what she was doing wrong. She started selling cars and learned how to use data while on the job. When she returned to the classroom, she put her newfound data strategies in place and moved her pass rate up to 60% her first year, and 80% her second year.
She said that data saved her, and in her district office role, she wanted to “help teachers become more efficient and see that data doesn’t have to be punitive. Data can be a powerful tool for you.”

To help teachers use data more effectively, she started a Data Champions program. In this program, she tried to get at least one person from a school to work more intensively with her so they can be the go-to data person for their peers. When we talked, she was working with biology teachers on creating their own tests in the assessment system so the system could crunch the data, leaving them more time to make sense of and use the data. I conceptualized Annie as Data Champion herself, almost like a superhero, trying to save the world with better use of data.

Figure 1. The Data Champion

She cautioned though that data savviness alone, is nothing. Using data for instructional improvement requires a deep understanding of the standards. “You can be the master of your data all you want, but if you are not the master of your curriculum, then there’s nothing.” She gave me an example from her own work in the classroom teaching the properties of water. Her students would excel on her own tests when she reviewed data from that unit, but they across the board failed when it came to that section on the practice EOC test. She understood her data, but
those data were not helping her ease her frustration. So she started reviewing her standard in more depth, and realized she was not fully capturing the structure of water, and without that, her students did not understand how to apply their knowledge on the properties of water. Once she tweaked her instruction, she saw the increases in her students’ scores for that section on the practice test. In our second interview, she described data as a map, helping you know where you are going. “Without a map, you have a hard time knowing where you're going, and you're just kind of roaming, and that's sort of how data is.” But the map alone does not tell you if the best path forward is by walking, driving, a bus, a train, or a plane. The context, the standards, fill in that missing information and help inform your travel plans.

Marie- Sago District MTSS Specialist

Marie was one of four district-level MTSS Specialists at Sago. She had a Ph.D. in special education, and had been a special education teacher in emotional-behavioral disabilities (EBD) classrooms, as well as the PBIS coordinator for one of her schools prior to her position at Sago. She had taught in many different states, moving around due to her husband’s air force job. Marie moved to Florida and started the position at Sago in the summer of 2018.

Her official role was called an instructional staff developer, so she spent part of her time training principals at monthly meetings, but she considered herself and her peers to be Jacks of All Trades—balancing different responsibilities as determined by the needs of the schools they support and the expectations of their different area superintendents. Marie served twenty-two schools in Sago, where she liked to focus on helping the school leadership teams become more productive by utilizing “a real systems approach for everything that they do, to not be reactive
and responsive.”. I pictured a juggler when I thought of Marie, as her role was tasked with such a wide range of responsibilities that vary even between the four specialists.

Figure 2. The Juggler

I initially connected with Marie in early January 2020 via one of my co-workers. This co-worker was responsible for providing supports to Sago around MTSS, and she recommended I start my dissertation journey by talking with Marie. She connected us through an email, which led to a quick phone call to discuss my research. Marie was on board and very supportive towards me completing this dissertation as she had been in this position before herself. She recommended Sunshine Elementary as my school since they met all of the inclusion criteria and she believed they had a strong MTSS in place.

After my initial meeting with the principal at Sunshine in late January, Marie and I connected again over the phone as she wanted to make sure I was on track to get what I needed for my study. She invited me to potentially attend two different district meetings as my observations—a principal meeting where they spend a full day once a month reviewing data led by the Teaching and Learning department, and a different monthly meeting where the MTSS Specialists led the principals through different MTSS topics. The latter was going to focus on reviewing equity data with the principals as Marie’s department was trying to support culturally
responsive leadership at the school level. As mentioned earlier, Sago’s over-punishing of Black students was a major cause of concern for district leadership, leading to a district-wide focus on equity in behavioral outcomes. As a back-up, we discussed the possibility of observing a new type meeting at Sago where the MTSS specialists were planning to review MTSS data—results from the Self-Assessment of MTSS Implementation (SAM) tool—to ensure they were on the same page with how they use this with their schools. Unfortunately, none of these occurred due to a confluence of circumstances, including school and district changes due to Covid-19.

My first interview with Marie was set for early February. A few days before this, a co-worker had received a request from Sago to support them at a meeting in less than two weeks, specifically around the SAM tool mentioned above. I facilitate the data collection and reporting for the SAM as part of my professional role, so I was included in the conversation. My co-worker was unable to meet with Marie to get the details on what supports they needed, so I offered to ask about it at our interview, thinking this would take maybe 5-10 minutes of our interview time.

I quickly found myself in a conundrum when the interview was postponed and I ended up meeting at a Panera with Marie and two of her fellow MTSS specialists, Alyssa and Karl. It was at once enlightening and uncomfortable as the three of them vented to me about their frustrations with the MTSS functioning of their schools and the constraints of the district, all of which provided me with important contextual information on Sago’s MTSS and data use, though not in the research settings I had designed. For example, they felt that there was no accountability for implementing MTSS because the school MTSS coaches do not report to them. They also felt like the district set up, with varying expectations and priorities by area, as well as only twice-a-year meetings with MTSS coaches, made it difficult for consistency. The MTSS data they were using
was suspect as well, with the specialists saying that they think the scores are inflated so that the team completing the SAM looks better to their principal. And in regards to reviewing data, they all agreed that there is a lot more data admiration than data use going on in their schools, leading to data reviews without the next step of action planning and making instructional changes.

Reflecting on this meeting, I felt ethically unsure how to use what I learned from the meeting as I had my “professional, PS/RtI Project Evaluator” hat on, and not my “doctoral candidate doing her dissertation” hat on. All of this information on MTSS and data use in Sago would add rich context to my study, but could I use it if I learned it while I was not conducting data collection for my dissertation? I wrestled with this, talking to two of my committee members about the situation. We landed with my inclusion of this information in my research journal, and coming back to some of the points in my later interviews. My findings about the district culture were indirectly shaped by these conversations since I was able to raise them in my second interview with Marie, though I still struggled in my own sensemaking process around these reflections due to my discomfort with this situation. As discussed in Chapter Five, discomfort with data can lead to data not being used. I tried my best to work through this to still use the data, but only rely on what I learned through my formal data collection process.

I also felt very uneasy about my relationship to Marie as I was now the go-between for the Project and her team. Ultimately, our project was not able to provide the type of support that Sago wanted with such a quick turnaround, leaving Marie and her team a bit blindsided. Talking with my co-worker and our project director, I think it stemmed from a similar project having ready-to-go trainings, whereas ours are custom and take longer to produce. Regardless, communication seemed more strained after I broke that news to Marie, and I was no longer invited to that meeting with the MTSS coaches. As is discussed in my findings, relationships
matter when it comes to makings sense of and using data. In my own data collection and sensemaking process, my relationship with my participants was critical, and when it was strained, I was left unsure of how to move forward with collecting data.

I let tensions fall for a week, and was planning to reach out about rescheduling our interview and finalizing the district observations for after spring break. Then Covid-19 happened. As the schools shut down, district staff were in turmoil. Two of my other district participants—another MTSS specialist and the supervisor of school psychologists—both canceled planned interviews and dropped out of the study. The district meetings I intended to observe were put off, leaving me without any district observation data. Fortunately, Marie was still willing to let me interview her via Zoom at the end of March, and again in early April.

My first interview with Marie was the first interview I had done via Zoom, so it was a whole new experience for both of us as we navigated this new virtual meeting world. The first part of our conversation was just chatting about how stressful and scary everything was with the school systems shutting down and the virus spreading. She was in a brightly lit room in her house, where she was trying to keep focused on the interview as her young children were in and out of the field of view behind her. At one of my favorite points, one of her kids joined the interview and said that I should talk to their friend and their teacher for my study, before changing their mind, saying “oh, you probably don’t even know them!” The virtual format made it so much more conversational, and I think helped me feel less awkward in the interview.

A lot of the points from the meeting at Panera came up again in our interviews—how things vary so much from school to school, and that it can be hard to enforce the changes that she would like to see regarding MTSS implementation and data use in her schools. Ultimately, she wanted her schools to not be so reactive on a student-by-student basis, but to look at the bigger
picture of their systems. When she gave some examples, she walked through supporting schools in reviewing whole group, Tier 1 data to strengthen their core before drilling into specific student Tier 2 and Tier 3 data. For these schools, they specifically received her supports because their state-assigned school grades had dropped and it became, as she described a “DEFCON,” sounding of the alarm situation.

Otherwise, she described supports as varying on a school-by-school basis, saying “I think it’s inconsistent. And there are, like you said in River, pockets of excellence. But we’ve got a long way to go.”. The district provided some general guidance, but she said they do not provide very specific details like other departments might since there is so much variability of knowledge, skills, and implementation in each school. She thought there were also differences in the vision for MTSS at the district, which she described as playing whack-a-mole. She explained how the district had focused on equity, which she thought could be accomplished through a well-functioning MTSS, but MTSS was often not explicitly included in these plans.

In our second interview, she showed me her bright teal measuring cups on the screen as she talked about how data are like measuring cups. She explained that first, “they’re forms of measurement. So like literally you can measure with a correct unit of that”, but continued that data are not one size fits all—sometimes you need a whole cup (seeing the bigger picture), and other times you might just need a teaspoon (focusing on one student). You also use measuring cups for different ingredients, or in this case, to review different pieces of data as part of a larger process.

When talking about data, she reiterated that she felt there was more data admiration than data utilization going on in her schools, with teams often not getting to the action planning step of the problem-solving process. She explained “they talk about it a lot mostly. We’re
encouraging them to get, to drill down and do a better job, but there’s just a lot of admiring.” She also pushed back on how she says schools commonly attribute data—to the students or parents—instead wanting them to consider other factors such as instruction, curriculum, and the environment. Marie explained that she thinks there is also a problem in the first step of the problem-solving process with most schools—problem identification—so they are focusing on the learner when they should be identifying something else as the problem.

Sunshine Elementary School

Sunshine Elementary School was in the southwest part of Sago county. It was part of a residential area, sitting across the street from a large park, with a mall to the north and a larger city area to the south. The principal of Sunshine said it also served as a pre-k hub for the south part of the county. The total enrollment at Sunshine for the 2019-2020 year was 591, with 83.6% of those students identified as economically disadvantaged. As shown in Table 4, almost a quarter of the students had a disability on record. Both of these percentages were higher for Sunshine than the district overall.

Table 4
School & District Enrollment, 2019-2020

<table>
<thead>
<tr>
<th>Location</th>
<th>Enrollment</th>
<th>Economically Disadvantaged</th>
<th>English Language Learners</th>
<th>Students with Disabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sago District</td>
<td>99,798</td>
<td>60.1%</td>
<td>6.6%</td>
<td>14.1%</td>
</tr>
<tr>
<td>Sunshine</td>
<td>591</td>
<td>83.6%</td>
<td>9.3%</td>
<td>22.2%</td>
</tr>
</tbody>
</table>
Table 5
School & District Enrollment by Race Category and Disability Status, 2019-2020

<table>
<thead>
<tr>
<th>Status</th>
<th>White</th>
<th>Hispanic</th>
<th>Black</th>
<th>Two or More Races</th>
<th>Asian</th>
<th>American Indian</th>
<th>Pacific Islander</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sago District Overall</td>
<td>53.65%</td>
<td>18.11%</td>
<td>18.82%</td>
<td>4.82%</td>
<td>4.13%</td>
<td>0.16%</td>
<td>0.31%</td>
</tr>
<tr>
<td>SWD</td>
<td>52.52%</td>
<td>16.83%</td>
<td>25.10%</td>
<td>3.38%</td>
<td>1.90%</td>
<td>0.15%</td>
<td>0.12%</td>
</tr>
<tr>
<td>Sunshine Elementary Overall</td>
<td>61.08%</td>
<td>17.94%</td>
<td>10.66%</td>
<td>5.92%</td>
<td>4.23%</td>
<td>0.17%</td>
<td></td>
</tr>
<tr>
<td>SWD</td>
<td>68.70%</td>
<td>6.87%</td>
<td>17.56%</td>
<td>2.29%</td>
<td>4.58%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6
School, District, & State ELA Proficiency, 2018-2019

<table>
<thead>
<tr>
<th>Location</th>
<th>All Students</th>
<th>Economically Disadvantaged</th>
<th>English Language Learners</th>
<th>Students with Disabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunshine</td>
<td>55.8%</td>
<td>49.1%</td>
<td>35.0%</td>
<td>32.7%</td>
</tr>
<tr>
<td>Sago District</td>
<td>54.6%</td>
<td>41.3%</td>
<td>32.7%</td>
<td>25.0%</td>
</tr>
<tr>
<td>Florida</td>
<td>57.0%</td>
<td>46.8%</td>
<td>39.0%</td>
<td>26.2%</td>
</tr>
</tbody>
</table>

Table 7
School, District, & State ELA Proficiency by Race Category, 2018-2019

<table>
<thead>
<tr>
<th>Location</th>
<th>White</th>
<th>Hispanic</th>
<th>Black</th>
<th>Two or More Races</th>
<th>Asian</th>
<th>American Indian</th>
<th>Pacific Islander</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunshine</td>
<td>60.6%</td>
<td>54.5%</td>
<td>32.6%</td>
<td>61.5%</td>
<td>80.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sago</td>
<td>64.3%</td>
<td>47.4%</td>
<td>28.3%</td>
<td>57.6%</td>
<td>71.4%</td>
<td>52.5%</td>
<td>44.2%</td>
</tr>
<tr>
<td>Florida</td>
<td>67.1%</td>
<td>54.5%</td>
<td>39.4%</td>
<td>61.3%</td>
<td>80.3%</td>
<td>53.4%</td>
<td>59.9%</td>
</tr>
</tbody>
</table>

Table 5 shows that Sunshine was overidentifying their Black and white students when it comes to disabilities. Black students made up 10.66% of the overall enrollment, but accounted for 17.56% of the students with disabilities, and the numbers were 61.08% and 68.70% respectively for white students. Tables 6 and 7 display English Language Arts (ELA) proficiency on the statewide standardized assessment. These data were from the 2018-2019 school year as
the state did not complete this assessment in the 2019-2020 year due to Covid-19. Sunshine had higher rates of ELA proficiency than the district in every category in Tables 6 and 7, except for white students. They had higher proficiency rates than the state as well for students that were economically disadvantaged and students with disabilities.

Through talking with two teachers, the principal, and the MTSS coach at Sunshine, it was clear that they felt there was something special about Sunshine Elementary. The two teachers only wanted jobs at Sunshine, and the MTSS coach had spent her entire career there. The school had also come highly recommended from Marie as having a strong MTSS structure and data review process in place, and was then again recommended to me by Annie when I asked her about schools that are using data well.

The principal, James, said that three years ago, the teachers were not using data how they are now. Starting with the 2018-2019 year, Sunshine started implementing grade level data chats where their MTSS coach, Melissa, would guide the teams through MAP data after each testing cycle. The goal was to get teachers to understand how to use data for instructional improvement, but both James and Melissa said there were some mindset shifts that still need to happen. Melissa reported that it was far better now than in the first year, but that there was still a way to go to get everyone on board that data use can be beneficial and not punitive. She explained this, saying,

At the end of the day it’s about mindsets, and it's about getting people to understand that when you look at your data you have choices on where you're going to focus your attention. So, is it you're going to focus your attention on beating yourself up, or are you going to focus your attention on putting things in place to make it better?

In these data chats, MTSS was not explicitly integrated, though the data chats I was able to observe did include discussions around grouping students that need extra supports. When I
talked with Melissa about MTSS, our conversation was mainly around behavioral supports, which aligns with Marie saying her role was mostly focused on the behavioral side of the MTSS house. The one document I was given around MTSS at Sunshine was their S.O.A.R. matrix, which showed behavioral expectations for students in the areas of Safety, Ownership, Achievement, and Respect throughout different parts of the school. Melissa confirmed they do use other tools for MTSS, such as my project’s Self-Assessment of MTSS Implementation (SAM), and current efforts on MTSS at the school were around the behavioral matrix.

I also reviewed Sunshine’s School Improvement Plan (SIP). Melissa said that MTSS is their way of work at Sunshine and it is embedded in their SIP, but I had a hard time finding it in the 2019-2020 document. For example, it stated that the school leadership team was just the principal, though that ran contrary to district and state guidance on school leadership teams for a well-functioning MTSS. MTSS was also not explicitly mentioned in the document, though some reflection points did mention a lack of interventions, as well as a lack of implementation fidelity for some interventions that did exist. Data use was integrated though, with reflection prompts that asked about specific data points, and goals that used data as justification.

James- Sunshine Elementary Principal

James was the principal at Sunshine Elementary School. He had a master’s degree in Counseling and Human Services, and was a school counselor for four years at the elementary level before moving into school administration. He spent five years as an assistant principal at a different elementary school with what he referred to as a different demographic population than Sunshine. James then moved to Sunshine as the assistant principal for two years before becoming the principal. He was in his fourth year as principal when he participated in this study.
I first connected with James via email when the district MTSS contact Marie reached out to him about my dissertation study in early January 2020. He agreed to participate and we set up a time for me to visit Sunshine so we could discuss the study in more detail. He offered a call instead as he was afraid of wasting my time in driving out since it would be about an hour trip each way for me, but I was excited to get to see the school and learn more about them in person.

When I arrived at Sunshine, the front desk assistant took my ID and said “Oh, you’re Stephanie. Mr. Whitman will be back in soon.” He walked into the front office from a back entrance, wearing a large, thick coat. He had just finished morning bus duty, and it was fairly chilly outside for a January day in Florida. He showed me into his office, which was a large room on the left side of the front office building, with a small round table when you walk in and a larger desk for him and two guests to the right. The room was decorated with pictures of him and his family, along with school memorabilia and photos.

Our conversation was short, consisting of me giving details about my study, and then James telling me about what Sunshine has in place around data discussions and his ideas for how we could make this work for my study. I explained that the main purpose of my study was to explore the concept of data—what it means, what we consider to be data, and how they are used. He asked if I could give him some more concrete details in an email when I got home, including the study name and what specifically I would need from him for this. When I talked about data being in the context of their MTSS, he mentioned them using data to make sure students were in the right grade levels, but also around if they need to be in an MTSS. I made a note of this in my research journal since MTSS is a framework for how a school functions to support all students, and only having some students in an MTSS seemed like a common misunderstanding.
As James was describing the type of data meetings they had and that I could participate in, I started to get the sense that I would not be seeing individual student problem-solving meetings as I had in mind when designing this study. I reassured myself later that this was fine as my committee did not want me to be as prescriptive to limit myself to just problem-solving team meetings. And while James mentioned whole staff professional development meetings that incorporate data, such as a recent one around how to close the achievement gap for Sunshine’s Black students, he said there would not be any more of those this year. Instead, he suggested I attend grade level data chats that happen after each MAP testing cycle, so three times a year, though he followed up by saying he does not require the spring data chat since the statewide Florida Standards Assessment (FSA) testing would be starting then as well.

Because I was meeting with him in late January, he said most of his grade level teams already had their data chats, but he said he would ask them to redo it—an idea which made me instantly uncomfortable. The plan was for two of his teams to do this so I could do two observations. Once I was home and had time to think about it more deeply, I let him know via email that I did not want to have teachers waste time redoing something they have already done just so I can observe it. We settled on me observing his third-grade team that had not met yet, even if that meant I was only able to do one observation. When I asked for a list of teachers to contact, he did not want to share that with me, and instead said he preferred to contact them himself. I worried about the teachers feeling coerced to participate, but made a note to myself to really emphasize the voluntary nature of the study when I was able to meet them.

My contact with James was minimal between our first meeting and our interview. The interview took place in mid-February, several weeks after we first met and after I had already been able to talk with Sunshine’s MTSS coach and observe the third-grade data chat. When we
coordinated on the interview time, I was already worried it would feel rushed as he could only have 45 minutes set aside, but I knew how busy principals are and was just glad he was willing to talk with me for any length of time. When I arrived for the interview that afternoon, James rushed into the front office a few minutes after our scheduled interview time. He had been caught up with a parent, which was completely understandable. As we walked to his office, he also let me know he would need to wrap up about 5 minutes earlier than we had planning, so all in all, we had around 20 minutes for the interview after we went through informed consent. This ended up being a non-issue since we finished the interview in just under 15 minutes, leaving the last 5 minutes to talk about what a second interview might look like. I felt rushed and was afraid I was missing something, but his answers were very succinct, so I found it challenging to know how to follow up. I recorded in my research journal that afternoon that I need to do a better job with my prompting and following up, and made several notes on other areas to explore in our second interview.

As I reflected more after the interview, I felt like there were some things he was unwilling to share with me, whether because he was trying something new and did not want it to be observed and judged, or because he did not want the teachers to feel like it was high-stakes because an outsider was there. For example, he brought up a meeting where he was going to have all second, third, fourth, and fifth grade teachers come together to look at data and action plan. I asked if that is something I could attend, and he politely said no because it was a new way of work. I planned to follow up with him in our second interview to see how that session had gone, and to try to get more information on the school data use culture from his perspective. Unfortunately, we were not able to meet a second time. For my own sensemaking process, this lack of data from James left me less than confident in my understandings of the school data use
culture, as is discussed in my limitations. For this reason, the discussion around data use cultures is focused on the district culture instead.

In his interview, James spoke very highly of his MTSS Coach, Melissa. He referred me back to her when I asked for details on Sunshine’s MTSS, keeping his answers more general in regards to MTSS being about multiple tiers of support for students. He spent more time talking about how he applies the MTSS lens to supporting the growth and professional development of his staff. “I think of it even in a context when I'm working with adults and staff, because in my role I'm developing more adults than I am the kids. I keep the tiered levels in my mind when I'm working in any of those situations." He also acknowledged that there are cultural shifts and buy-in that need to happen for things like MTSS and data use to be done well. In the end, he said it comes down to having the right people in the right positions to get this type of work done.

It's really having the right people in the right jobs because they have to care about their data, and they have to be driven to want to analyze it, and pull reports together, and put it all in one place, and make it easier to look at. Because I couldn't do it all on my own.

I conceptualized James as a watering can, providing the essential ingredients like time, resources, and professional development to support his staff in growing their own capacity for data use and MTSS implementation.

*Figure 3. The Watering Can*
Melissa- Sunshine Elementary MTSS Coach

I first met Melissa at the third-grade team data chat, where we got to get to know each other before the teachers joined us. We also met for two interviews and two additional data chats, and have kept in touch via email and social media since ending data collection. Melissa has worked at Sunshine Elementary for her entire career, starting there as support staff in 1998. She then became a special education teacher and a behavior analyst before starting her current role as the MTSS coach at the start of the 2018-2019 school year. She was asked to interview for the MTSS coach position because of her background in using data as a behavior analyst.

The MTSS coach role is multifaceted, including some responsibilities that would normally fall to a guidance counselor. Due to position allocation restrictions, Sunshine had the option to choose a guidance counselor or an MTSS coach, not both. Melissa listed her responsibilities as completing 504 plans and problem-solving worksheets, doing special education compliance work, running the data chats, supervising intervention teachers, and serving on the school-based leadership team (SBLT). She mentioned she also gets pulled into doing private school evaluations for special education eligibility, though she was unsure why. In various times during our conversations, she described her role as a ring leader, a data slayer, and an octopus with the eight arms going all different directions. Because of this, I imagined Melissa as an octopus with a ring-leader top hat and weapons, ready to spring into action with her data and manage all of her different responsibilities.
For Melissa, data use should be about identifying what you as an educator can do to improve outcomes for your students, which she explained by saying “Where does the deficit lie? Where is the problem? What is the one thing that I can do tomorrow to make this kid's life better as far as achievement?” She said often teachers were attributing outcomes to things like parents or the students themselves instead of considering their role in the results. In the context of an MTSS, she triangulates data to ensure that each student is getting the types of supports that they need to be successful, with specific data differing by the tier. She believes MTSS is about “really making sure that we look at students through data, not just assumptions,” which she exemplified in a story about her son. She told me how she has some biological and some adoptive children, and one of her son’s schools wanted to label him with a behavioral disability due to some outbursts in class. She fought it and says he is fine now, that “he was just a trauma kid that needed to be worked through.” Melissa says she keeps that experience in mind in her MTSS work, as a reminder to not just assume that all students have ESE conditions and to look at supports first.
As we talked more about her position as MTSS coach, she told me that she almost quit after her first year in that role, describing it as “just horrible.” She painted a picture of a situation where the district-required data chats were not in sync with the school culture, and were seen as punitive instead of useful. She felt that teachers took data personally and were afraid to share their weak spots with others, making the process hostile and unproductive. She told me “I will not sacrifice relationships for data.” Starting with the 2019-2020 year, she reimagined the data chats to focus on building relationships and changing mindsets. She ran them as she would her classroom, from a place of kindness. She thinks they are still a work in progress, but she can see improvements in beliefs, and has even had some teachers voluntarily come to her after school from data assistance.

Despite this progress, she still felt like she was struggling in the role of MTSS coach, and said if she is, others must be too. For supports, she has relied on Annie to help her learn how to analyze and use testing data, and leans on one of her Assistant Principal friends when she becomes overwhelmed. Her data object was another support—her giant MTSS binder that she called her data bible, containing school profile information and all kinds of data in one spot. She mentioned she does not get to see her area MTSS specialist very much, but feels like Marie already has too much on her plate with larger problems, so Melissa understands the disconnect. The district provided the MTSS coaches with trainings on PBIS and restorative practices this school year, but Melissa wished that she would have received a more comprehensive training around MTSS before starting her role. When I brought up some online modules available from the project I work for, she was not aware of them and asked me to please email her with any other supports and resources I might have.
In the three data chats I observed, Melissa made sure they were casual and kept a friendly atmosphere with the teachers, which makes sense given how uncomfortable she felt in the more formal ones in the previous year. In the first data chat, she worked with the third-grade team of teachers to review their latest MAP assessment. She started by prompting them to notice the kids near proficiency that they can move up with a little more effort. Though some of the teachers started talking about ESE supports, Melissa reiterated that it is not enough to leave it at ESE services. She said,

It’s easy to sit back and say that, but we need to know who they are and what they need. Some have disabilities and aren’t getting the services. Or, is this an accurate reflection of the services? How do I know this is an accurate score? Or, I know that they are moving, but that they bombed this one test.

From there, Melissa continued to move through the data with her teachers, helping them to find patterns in the data even when some teachers became frustrated. Throughout this chat, teachers talked about how they wished Melissa could just do the data analysis for them.

In the second and third data chats, Melissa worked with smaller groups of teachers (one teacher in Data Chat #2, and two teachers in Data Chat #3). These were even more informal than the first chat, really just consisting of brainstorming conversations between her and the teachers. The second chat focused on the tensions between the district-prescribed curriculum and what Morgan’s students were able to accomplish. Though the district says teachers do not have to use this curriculum, Morgan became frustrated, saying that if she did not, the students would not understand some of the prompts on the test. She left the chat without a lot of concrete steps forward, but she was able to share her feelings safely with someone. This chat exemplified the type of relationship-focused work that Melissa was wanting to do.
The third chat had two of the third-grade teachers back to review their data more deeply. Here, Melissa was able to show them again how they can use the computer assessment system to sort their students to make grouping easier. Sofia remarked “We don’t need running records. We just need Melissa!” Melissa also provided them with a paper resource she created called the Data to Instruction Framework, which helps them plan their instruction for the whole group, as well as identify students that might need to be groups for additional supports.

**Sofia- Sunshine Elementary 3rd Grade Teacher**

Sofia is a new teacher at Sunshine Elementary school, starting her first semester in January 2020. She was born in Spain and studied there to become a teacher. She then moved to London and started her teaching career before moving to America with her new husband. She began teaching at Sunshine first as a long-term substitute in the 2018-2019 school year, and said she loved working at Sunshine so much that she waited for a full-time position to open there instead of applying to other schools.

My first time meeting any of the teachers at Sunshine came during the first observation of the third-grade data chat. During the chat, Sophia was highly engaged and constantly taking notes and asking clarifying questions. She had some technical issues and was unsure how to access some things, which I found out later was because she was just finishing her first month at Sunshine Elementary and was still learning their assessment systems. She was the first person to respond to my recruitment email about follow-up interviews, though she prefaced her interest with a statement about being new and not sure how much help she can provide.

That same sentiment came through in both of our interviews as well, with her saying “I really feel like I don’t really know that much.” She seemed to think that she had no value to
provide to a research study because she was new to the school, and I had to keep reassuring her that I valued her voice and experiences. Sometimes, this led to questions about how other participants had answered questions or how they had learned to use data, such as, “The other people that you have interviewed, what would they answer to how did they learn about data?” This sparked me to add the latter to my follow-up interview protocol with the other participants.

My first interview with Sophia was at the end of a long day at Sunshine. The day started with an interview with Zoe, followed by two data chats before the after-school interview with Sophia. I felt awful that Sophia was giving up her after school time to talk with me, knowing this meant she would end up staying later to finish her tasks she would normally do at this time. But although she seemed unsure if she would be helpful at all, she was still excited to talk with me.

Her classroom was at the end of a long, brightly decorated hallway at the back of the school. I was able to meet her at her room since I had been in the same hallway earlier that day with Zoe. When I arrived, she jumped up and apologized for her room being messy—I would not have noticed anything of the sort. It looked like a normal elementary classroom with several group desks spread throughout the main part of the room, colorful posters on the walls, and a smaller semicircular teacher’s desk toward the back of the room next to some filing cabinets. She insisted I sit in the larger teacher’s chair at the desk, and she pulled up a student’s chair so we could talk.

Throughout our conversation, she talked about the uncertainty she felt in her role in regards to MTSS. She was not sure what MTSS was, beyond labeling kids as being below level and something that is automatically done through the assessment systems they use. I asked her if there had been any training or other supports for her around MTSS or data use, and she pulled out her planned professional development schedule to check since she had not attended any yet
as part of her new teacher onboarding. Her plan did not include any future trainings on those topics either. She indicated that there are so many training opportunities, but often not on what she actually needs. She explained, “It's funny because we have these trainings that we don't need. Why am I not receiving a training on actually something that I really need to? So it's just crazy, but it is what it is.”

Though she has had no formal training on data, Sophia said she likes using data and views it as an important skill that teachers should learn. She said, “As a teacher, if I analyze and student data, I can see what I can do for my students.” When using data, Sophia said she focuses on the standards and what instructional changes need to happen, reviewing multiple sources of data and conferring with Melissa before making larger decisions. For example, she walked me through some reading data for one of her students. She explained that he can read just fine, but he has issues comprehending what he has read. So, she pulled out additional diagnostic and formative assessments she had used with him to try and pin-point the issue he is facing. She believes the issue is that he had been identified as ESOL at the beginning of the year, so his additional supports are focusing on reading English when the language part is not the problem. She was planning to meet with Melissa after spring break to review the data she has collected and ask if he can start receiving comprehension supports. She invited me to attend this meeting as well, but things were thrown into chaos after spring break due to Covid-19, so I was not able to attend.

During our second interview, I started by asking Sophia if she was able to come up with an object that she thought represented data. She had me hold on for a minute as she ran to one of her filing cabinets. She came back excitedly with a bottle of ibuprofen, making sure to tell me she was not meaning for it to be specifically ibuprofen but just any kind of medicine. She
explained that data are like medicine in that they can help you when you take them appropriately, but at the same time, too much medicine or inappropriate medicine can be harmful. So, data help her identify how to help her students, but they are not always useful if they are not targeted to what she needs or she believes they are not accurate.

We spent a lot of our remaining conversation talking about data accuracy and choosing data. To Sophia, data are not representing all of who her students are, but she must use them as if they do capture the full picture. She provided an example, saying, “I have a student who is an amazing artist. She's an amazing painter. Her data doesn't show any of that.” She also does not always agree with the groupings provided by the assessment systems, so she finds herself going back through the data to rework the groups herself. When I asked about how she decided which data to use, she responded that she does not have the freedom to choose which data to look at, beyond her choice to do her own observations and classroom notes. She thinks those informal types of data are important to consider as well.

We concluded our second interview as the first had started, with Sophia saying she was not sure how much of our talks I could actually use since she is guessing at a lot of what she is doing. I conceptualized Sophia as a growing plant, at the beginning of her career as a teacher, but already starting to grow on her own and ready to flourish with the right supports.

Figure 5. The Growing Plant
**Zoe- Sunshine Elementary 3rd Grade Teacher**

Zoe is a third-grade teacher at Sunshine Elementary. Before coming to Sunshine, she taught at a private school in an autism spectrum disorder unit. In her six years at Sunshine, she had spent five of those in third grade, with the other year in fourth grade. I first met Zoe at the third-grade data chat. She did not say much in that data chat, but was engaged in reviewing her data and helping Sofia navigate the unfamiliar data system.

I was relieved when Zoe volunteered to be interviewed for my study after the data chat. At that point, only Sofia had expressed interest, and I was worried I would only have one teacher represented in my interview data. We were able to set a time to meet on the same day I was already meeting with Sofia in the afternoon, and with Melissa for two data chats midday.

She met me in the front lobby once she dropped off her students for lunch, and led me to the back of the school to the third-grade hallway. We talked in her classroom, down towards the end of the hallway, on the right side. The walls were painted an off-white color and made of concrete brick. But what really caught my attention were the ceiling tiles all along the hall that had been decorated by the students. The array of colors livened up the space, and I found myself just staring up as we walked to her room. Her room was much like Sofia’s, full of primary-colored bins, posters on the walls, and many small, round group desks with tiny chairs. We sat at her desk, a semi-circular table in the back-right corner with her chair on the inside side, and two student chairs on the outside.

I did not realize that I would be taking up her lunch break for our interview until she told me she just dropped off her students at the cafeteria. I felt awful, but she assured me that she preferred this to staying after school like Sofia was doing for our interview later that day. Given it was only a 30-minute lunch break, and she had to leave a few minutes early to get her students
from the cafeteria, we ended up with about 20 minutes to talk after informed consent. We used every bit of that time to dig into the interview questions.

When we talked about MTSS, she said she did not feel like she was a part of it, beyond observing students and filling out the paperwork for their referrals. “I’m just the beginning observation part. And then I have to submit paperwork, and then after that, it’s kind of out of my hands. I don’t feel like I have a big role in it actually.” I conceptualized Zoe as a set of eyes, observing her students to determine if they need additional supports, but not taking a more active role in providing the supports.

More of our talk around MTSS seemed to indicate that it was not something for all students or all teachers, but was instead a way to get students exceptional student education (ESE) supports. She explained, “We see it as the process to get kids intervention who might need it...kids that don’t fit your typical population.” She was frustrated when I asked about district and school supports for MTSS and data use, saying that it takes the district too long to find a student eligible, if at all. She said that sometimes if a student has too many absences or is from a minority group, the district will say they cannot find them eligible. In regards to the minority students, she said this is because the district is overidentifying students from those groups. “They make it very hard. If it's a minority, they'll say, ‘oh, you know, we're over-identifying.’ And the
thing is, if the student needs it, the student needs it. Doesn't matter where they come from, what color they are."

My first thought was back to my work where our project has been training district and school leaders to examine rule-outs when determining eligibility. This means that things like attendance and subgroup performance should be taken into consideration before finding a student eligible for ESE services. For example, if all of the Black students at a school have low scores, maybe there is something systemic going on that needs to be addressed in the core instruction instead of saying all of their Black students need ESE services. Similar with attendance, if a student has not been present in the classroom, it would be difficult to determine if their low performance is because they have some type of learning disability or if they have missed too much instruction.

When I later reflected on this interview in my research journal, I found it difficult to know where the line was—how much to insert myself and my own background knowledge into the interview in a situation like this, or even how much to probe on the why of it. I think I should have asked more probing questions to get at why she thought those were not valid things to consider in eligibility decisions, but in the moment, that did not happen. I wrote it down as an area to explore in our second interview, but unfortunately, we were not able to have a second interview. We had one scheduled for after Sago’s spring break, but that is right when all of the schools in Florida started shutting down due to Covid-19, and rightly so, a second interview with me was not her top priority. This lack of follow-up left me uncertain in my interpretations when I was trying to make sense of my data, and my professional position influenced these interpretations instead. This led me to coding this type of talk as data use for ESE compliance, as opposed to data use for equity, which then became a sub-theme in my findings.
In the rest of the interview, we talked about how she likes to use data to focus on students that are on the borderline—students that with a little bit of a push, can move into a level where they are predicted to pass the FSA. Zoe said that she thinks it is a misconception that we only focus on lower achieving students, arguing that they are already getting additional ESE services, and that higher achieving students are getting enrichment. She felt like the students in the middle go without additional supports and then can fall further behind as they are ignored.

They're okay, but they could fall behind. So, that's where a lot of my time goes. My kids who are ESE, they already get an hour a day at least. And then my kids who are 504 get services. My gifted kids get services, but what about the in between? I feel like as a classroom teacher, that's our focus at this school. And then specialty teachers help with the other stuff.

She uses the data that the district provides through the data chats to determine groupings for students and identify areas that need to be retaught, though she said time restrictions in the school year limit how much can really be gone back over.
CHAPTER FIVE:

FINDINGS

The purpose of this study was to explore how educators working within a multi-tiered system of supports framework make sense of data, how data are used to support changes in instruction, and how the data use cultures at the school and district level influence how data are used. The previous chapter provided context on Sago District, Sunshine Elementary School, and the district and school level educators that participated in the study. In this chapter, I move from that narrative exploration of the case to the findings of the study, presented in the form of themes.

As discussed in Chapter 3 and shown in Chapter 4, these themes are inextricably linked to me—my worldviews, my experiences, my interpretations (Braun & Clarke, 2006) and to how, when, and where I collected the data. Other researchers may have selected different guiding questions, followed-up in other ways, and even given the same data, may have created themes distinct from those I have presented here. Given this, the purpose of this chapter is to not only present the themes I created, but to also be transparent about how they were created. This is done by reflecting on the process of finalizing the themes, as well as showing data, in the form of participant quotes and analytic notes from observations, and document reviews, that support each of the developed themes.
In the analysis process, I relied on Braun and Clarke’s (2006) framework for moving through my thematic analysis. In Phase 3, I created my initial thematic map, shown below in Figure 11. In doing this, I put each initial theme in an oval, with supporting or explanatory details and potential sub-themes as boxes beneath them. The thicker lines were added after to show connections between the themes. Immediately, concepts like people mattering, variability, beliefs, and lack of time stood out to me.

Figure 7. Initial Thematic Map

I read back through my data in light of these initial themes, and worked to refine the themes following Braun and Clarke’s guidance that final themes should be coherent and work to tell a story about the data without a lot of overlap between the themes. When looking at the thematic map, an initial theme that I thought was an important topic for multiple participants, like “There’s Only So Much Time,” seemed like it was represented in other existing themes and
might be better as a point of discussion within a broader theme. This joined with “Teachers are Professionals?” and another area missed in the first round of themes—Professional development and other supports—to create a new theme, “Teachers are Limited in Making Data-Informed Decisions.” Similarly, “It’s the Standards, Stupid!” “Data Use is Complicated,” and parts of “Understandings of MTSS Vary Between and Within Levels” and “Things Get Messy at the School Level” were combined to create the new theme “MTSS & Data Use are Complicated.” “MTSS & Data Use Require Mindset Shifts” remained as my third theme, reconceptualized to include the others parts of “Understandings of MTSS Vary Between and Within Levels” and “Things Get Messy at the School Level,” along with the “People Matter” theme. The final thematic map is shown below in Figure 12.

![Final Thematic Map](image)

**Figure 8. Final Thematic Map**
The rest of this chapter explores each of these final themes in-depth, where I discuss the meaning I took from each of them and provide supporting data from interviews, observations, and documents. It is organized around the flow shown in Figure 12, starting with MTSS and Data Use are Complicated, then MTSS and Data Use Require Mindset Shifts, and ending with Educators are Limited in Making Data-Informed Decisions.

MTSS and Data Use are Complicated

Coming into this study, I already felt that data use was not as straightforward as we might like it to be, and this belief is in part what guided my choice to study this topic. And given my professional role working for a state project that supports our districts in implementing MTSS—especially since my position is responsible for trying to evaluate our impact on districts’ MTSS implementation efforts—I knew MTSS was complicated. But there was still a part of me that thought using data within an MTSS would follow some kind of formula, like what is found in the four-step problem solving process (Stockslager et al., 2016). I imagined school-level teams would first identify a problem using data, then make educated guesses at why the problem might be occurring based on data as well. This would then lead to enacting some kind of change, whether based in instruction, intervention, or policy, and a plan would be made to review data again to see if it worked. Instead, I found that data use within an MTSS was more complex than even I imagined -- including multiple understandings of data, different understandings of the purpose of MTSS and data use within an MTSS, and different contextual factors. Each of these areas are explored below.
Multiple Meanings of Data

Previous studies have shown that what we consider as “data” can vary widely among and between groups of educators (Coburn, 2010; Farrell & Marsh, 2016b; Honig & Ikemoto, 2008; Jimerson, 2014; Mandinach, 2012; Spillane & Miele, 2007). This was also true for the educators that I was able to talk with at Sunshine Elementary and the Sago district office.

Data are objective. Some felt that data represent objective truth and should be without subjectivity. Sunshine’s principal James touched on the topic of subjectivity when we were discussing the types of data he uses within the MTSS at his school.

We have our academics, reading and math. We use it in behavior, but it's an area that we're continuing to develop, to find more consistent procedures that removes some of the subjectivity from them. That we can find more precision in the way we're tiering those supports. We have tiered level of supports, like consequence or support across the board, but I want to be a little bit more strategic and precise with data.

To him, academic data around reading and math are already objective, but he wants Sunshine to figure out how to do that same thing with behavioral data. Later in our conversation, he brought
up the idea of standardizing positive behaviors into an app called Class Dojo so that teachers can award students points for good behavior. James mentioned he wanted to use the Class Dojo data to decide which students would be selected for school-wide monthly behavioral recognition.

Marie, one of the Sago district MTSS specialists, focused more on data being objectively true when we talked. When we were discussing how schools she has supported with MTSS have used data for improvement, she stated “Both schools have seen improvement because they, they let the data speak for itself. Also...yes. Yes, I mean it's changed instructions in the classroom, just from examining the right data at the right time." She expressed the same kind of sentiment when she explained an object that represented data to her.

I have measuring cups and measuring spoons. Because A), they're forms of measurement. Literally you can measure with a correct unit of that. I have an assortment of them, a collection of them, because I don't think one size fits all and sometimes you need a little more of one thing and a little less of something else. Sometimes you need the whole cup, like the big picture, and sometimes you only need, like, a teaspoon should be maybe just one kid or a classroom kind of thing. And you also measure different ingredients, or pieces of data.

In both statements, she is acknowledging that some data are more appropriate for certain uses than others, and sometimes the data you need depends on the level that you are examining (e.g., individual student, classroom, school, district). But, a teaspoon of vanilla extract is going to be the same, regardless of what recipe you are using it in, just as to her, the data are expressing the same thing and are “correct.”

When I was talking with Sunshine’s MTSS coach Melissa about how she uses data within Sunshine’s MTSS, she said “You know, really, numbers don't lie. So it's really looking at those
numbers, and aggregating it, and honing in on what kids need." This type of thinking was continued in our second interview when I asked her what object represented data to her. She told me her MTSS binder, explaining

because everything that I need to know is in that binder. For me it's like, the data you've got so many points and measures. That to me is like a bible. It's a reference. So anything data-wise, for any grade level, for any content area, for anything. That right there represents everything that we're trying to achieve out in the end. Like you know the bible for church? Well I have a bible for data. That's where all the answers are housed.

In comparing her MTSS binder to a bible, Melissa is indicating that data are true and that they provide answers on what to do next. Melissa continued on that second thought when she compared data to a roadmap, saying

Data to me means results of the work that you put forth. Data also means being flexible, as far as these results. Data also means construction, so looking at what you've done before and refining it. Data means pulse points. Data can mean despair, and also can be excitement. Data is a way of knowing where you've been, and where you're going. It's a roadmap.

Annie, Sago's senior district assessment coordinator, also thought data can lead you down a path when she said the object that represented data to her was a map.

So I said a map. Without a map, you have a hard time knowing where you're going, and you're just kind of roaming. That's sort of how data is. Without data, you are just kind of rolling around trying to figure out how to help your students, or how to help whatever your question you're trying to answer. Data can provide you that roadmap of where you
need to go, and help direct you, just like a map can help direct you on where you're going in your trip, or to where your destination you're trying to reach.

This metaphor of data is a map that Melissa and Annie both discussed goes along with the thought that data are objective—a map is fairly consistent, barring new pathways being constructed. But, maps do not necessarily tell the map holder the best route, just what routes are available. Similarly, the data here require the user to figure out the best supports based on the available information.

For new third grade teacher Sofia, this meant that she needed to examine multiple pieces of data to conclude the best path forward for her student. When I asked about an example of her using data to inform her instruction, she gave this example:

I am doing a lot of different tests to see how can we help him. He can read very well, but he doesn't really comprehend. So I've been doing different types of tests and I have data now. I did a running record. They have different levels, and at the beginning of third grade they should be at the M level. He took a running record L, so below level. This is second grade level, and he failed it. The reason why he failed it is mainly because of the comprehension. His fluency was good, so that made me think, "Hmm, let me keep on making tests," and I gave him a reading comprehension test, which clearly he failed. He only passed one question. I did another one, which he also failed. But then he did this, and he passed it. So, this is telling me that his grammar in general is pretty good. He's also ESOL, but he was born in here. So it's more like his parents don't really speak English at home. This is telling me that English is not really the problem. This is to me useful data.
In her example, Sofia is still treating data like a roadmap that can tell you how to move forward, but she uses multiple maps to narrow down the path for her student to the one that best meets his needs. Despite her student being labeled as ESOL (English to Speakers of Other Languages), she wanted to be thorough in using data to pinpoint supports and was able to learn that the English supports he was receiving might not be benefiting him much. After we talked about this, she said she was going to approach Melissa about seeing if this student could start receiving comprehension supports instead of just English language fluency and grammar supports.

Data are incomplete. In other conversations with Sofia and her grade level peer Zoe, a last understanding of data arose that seemed to complicate Sofia’s reliance on data above. Here, both teachers discussed the feeling that data are incomplete, inaccurate, or not necessary. For Sofia, this sentiment came up at the start of our second interview when she was telling me about what object represented data to her. She pulled out a bottle of medicine from the cabinet behind her, saying

Now, this doesn't necessarily represent ibuprofen. I was thinking of any type of drug or medicine. Now, my reason is because when you're sick and you take meds it's helping you, right? It's gonna help you heal. However, you're still putting something in your body. It's kind of like that thing of, good and bad at the same time. Why do I think of data that way? As a teacher, I can see if I analyze and study data, I can see what I can do for my students. What specific standard that he's struggling with. But at the same time, data is not representing what my students really are. So, for example, I have a student who is an amazing artist. She's an amazing painter. Her data doesn't show any of that. So, to me, it's like a good thing, but at the same time, it's not accurate or... I don't know. It's not necessarily... It's, like, a good thing, but also a bad thing.
Later in our conversation, Sofia talked about her insecurities as a new teacher and feeling that others have a better grasp on things than she does. For data specifically, she said

When it comes to data though, I think, some people are definitely much better than others. Like...I don't know. I feel like some people love and enjoy, or it's more useful for them to keep track of data. And they can use it more than others. I still don't know, this is completely new to me, but I just, I see those teachers. Some teachers are really good and they follow data and they actually use it a lot. Some teachers don't. At the end, we all know our students. You just, you know your students. It's not like, if somebody's providing me with the data, it doesn't mean that I'm not knowing what my students need or... Like, I already know my students.

Zoe echoed those sentiments in our interview, explaining that sometimes the data are incomplete, missing key elements that can influence a student’s score.

I think it's useful, but I think that they don't really consider, like, social...outside of, like, is this kid sick or, do they miss a lot of school? Or did they hate the computer when they tested? There's a lot of other factors, but I think at this point in the year, we know our kids well enough to know if that's an accurate score or not.

She also questioned some of the data that she was given in the data chat, explaining

At the beginning of the year, you're kind of like, I don't know if that's right or not. Like, I had a girl who scored very high. And I'm like, I don't think so. She got kicked out of the test three times for going too fast. She got a 54% and she had 1% the year before, so we're like, sometimes the data is not accurate. And she guessed really well somehow.

The meaning of data is complicated in several ways. At the teacher level, there are questions around if data show complete pictures of their students, and feelings that they know
their students without data. Teachers often rely on their own informal data to shape their understandings (Brunner et al., 2006; Honey et al., 2002; Light et al., 2004; Mandinach et al., 2005; Mandinach et al., 2006), and though things like teachers’ observations are data (Marsh et al., 2006), often “data” is equated with student achievement results (Mandinach, 2012). So, it makes sense that Sofia and Zoe would say that they do not need data to understand their students. Schildkamp and Kuiper (2010) found that the meaning of data varies by role, which is also what was found here. Other staff at both the school and district level did not question data the same way that the teachers did. At these levels, they believed that data represent objective truth and show the path for getting students the supports that they need.

**Different Understandings of Purpose**

In addition to different understandings of data, there were differences in how the participants talked about the purpose of MTSS and the role data play in an MTSS.

**MTSS is for equity.** To start, there were discussions around how MTSS is for getting all students the supports they need or for addressing equity. Though Annie described her role as the senior district assessment coordinator as being somewhat disconnected from MTSS, she described MTSS as “a support system put into place to help students be able to, if they have any particular needs, to get those addressed in different levels of support.” Marie agreed, saying it should be the way of work in school. I think it's a systems approach to education, all access of education, academic, behavior, I would argue social emotional, which if done correctly and how it is done, should be done, it provides equitable practices to students. I guess my big, broad answer is it's the system approach that gets kids what they need.
Melissa phrased her answer as a question, asking “where does the deficit lie? Where is the problem, what is the one thing that I can do tomorrow to make this kid's life better as far as achievement?"

Beyond getting students the supports they need, Marie also argued that MTSS can and should deal with equity as well. Melissa described supports she has received so far in reviewing equity data, saying

We've done a lot of work as far restorative practices, because that's one of the initiatives. We've had people from the AAR department, Dr. Neill in particular kind of going through the data, showing us how to pull it. What does it mean and how to look at it—that type of thing. And then we've done some work where we look at PBIS, and kind of looking at where we are in regards to that, and what do we need to do. And then we're given some collaboration time, as far as our colleagues at the table. And kind of talking, and getting ideas, and planning.

Marie described how equity was one of the main focus areas across the district that year, though it is not necessarily connected to MTSS currently.

The current focus for any training moving forward across all departments, the emphasis is really just on equity overall. Which I mean, we argue, "Well if you do it in an MTSS, you'll get at that.” But as a district we're not bonded to that. Kind of like it's whack-a-mole.

She went on to explain why equity was such a big focus for Sago.

We do a lot of, especially with administrators, looking at discipline data because there is a, and this is a national issue, but especially in Sago, there's a large gap in our discipline data for our Black and non-Black students. So we will look at things like suspension
rates, risk ratios related to suspension rates, comparing groups of students, drilling down into what are suspensions for, where are they occurring, and then problem solving the why behind and then the how... what can we do, how can we improve practices that may or may not lead to suspension. So in terms of behavior, we focus on a system of PBIS and using restorative practices and driving relationships, setting up environments that increase the likelihood of quote "good" behavior rather than that punitive reactive approach, which is what gets us our suspension numbers. Or discipline, you know, just with office referrals, any of that.

Equity, though in academic achievement and not behavior, was also a focus area in Sunshine Elementary’s School Improvement Plan (SIP). Goal #4 discussed reducing the achievement gap for their Black students by implementing restorative practices, providing culturally relevant professional development, and providing mentoring for Black fourth and fifth grade students.

**MTSS is a separate thing.** Though both of Sago’s district leader participants focused on MTSS being about getting students the supports they need, Sunshine’s school level staff had a more complicated view of MTSS. Though Melissa described MTSS as being about getting students the supports they need, she also talked about MTSS as if it was a process to find students eligible for ESE supports.

MTSS referral, first thing you do, vision and hearing. Third thing you do is 90% attendance. If you're not 90%, you don't move forward. Then I look at the data. So, I pull the classroom measures. Is this, an outlier? Typically, with the data chats, we already have those kids identified, they're not a surprise to us. Because as a team, at fall, these are our kids, this is what they scored in spring, this is where they're in fall. Let's look at
where they fall and who are we going to give these MTSS forms out to. So they have an MTSS, then I do an SLA, so I'm seeing if they have a gap with AIMS. And they have to have a gap with expectation and also their peer group. And then I submit it to Molly [Sunshine’s school psychologist]. She digs into MAP, I'll pull them for our running record, I'll do a phonemic awareness. I do that as well, all the pre-screen stuff. And then I'll get with her, and we'll move forward. And then there's got to be an initial meeting, and a couple of reviews that are eight weeks, with data points, and fidelity checks. She does the Tier 1, I do Tier 2 and Tier 3. And then once we get that, we look at the trajectory, if we need to change it. That's a very long process, which is okay. I'm fine with that.

Here, Melissa is describing MTSS itself as a referral process to see if students are eligible for ESE services, starting with ruling out other factors like vision, hearing, attendance, and peer group comparisons, before moving into deeper data collection and analysis. She also makes a point to note that she does not see a need to rush this process, with which her principal James agrees.

Having someone like Melissa, who is our MTSS specialist behind the wheel, that she is just a true advocate for kids, and has a strong understanding of ESE compliance. So, there is a strong bridge between the two when you get deeper into the work. She understands how to get from A to B... But there is no rush to get to A to B when it's really getting the right interventions in place, and then meet the kids where they need to be met, and doing things with true fidelity every time to ensure the system is legit.

While Melissa and James see one purpose of MTSS as finding students eligible for ESE supports, they both acknowledge that the broader rationale is to support students in general. At
the teacher level though, new teacher Sofia was not sure what MTSS was about at all. Zoe specifically thought it was a separate thing for students to get ESE supports, saying “We see it as the process to get kids intervention who might need it or, uh, related services, like ESE or 504 or...kids that don't fit your typical population.” She continued describing the ESE services process by saying,

The district I don't feel does a great job, but at my school, well, Melissa wasn't always MTSS. She started that, like, two, three years ago. Since she's been in there, the process can take two years to get a kid into ESE services. And that's a lot of wasted time. So now I feel like since she's been in there, the process moves a lot faster.

She also gave an example of how she would determine which students to refer to what she is calling the MTSS process.

This is a good example. I have a couple threes that go back and forth between a two, a three, a four. And they're not ESE, so those are the ones I'm keeping an eye on. I don't put the paperwork in right away, but, one's ESOL, so she's already getting services and making improvements, but one's not. So, when I think about it, who could be benefiting from services they're not getting, that's where I try to look at to fill out the form for.

The numbers Zoe is referring to here are FSA scores, where a score of three, four, or five is considered proficient. Because she views these students as being near proficient, but not quite there, they are the type of students she would consider referring for these additional supports.

Much of the second observation was also focused on getting students ESE supports. Here, Melissa helped a first-grade teacher Morgan review data for one of her students they described as being on the border of proficiency. Their focus was on finding out if the student could be eligible for ESE services.
**Data use is for grouping.** Whether the purpose of MTSS is to identify supports for all students, or a way to get students eligible for ESE supports, educators at the school level use data to group students in order to inform these supports. Melissa described her process to me, saying:

We meet as grade level teams. And we sort those students out and decide on where are our bands, where is our Tier 1, where is our Tier 2, where is our Tier 3. Out of the kids that we identify as a grade level team, because I'm not gonna be the end all be all.

This aligned with how she guided teachers through data in each of the observations. In the first observation, she showed the teachers a document called Data to Instruction Framework that helped teachers focus on groups of students and drill down to a focus area for each group. In the second observation, Melissa showed Morgan how to sort the students from lowest to highest scores and create groups that way.

In their own classrooms, Zoe and Sofia discussed how they implemented what they learned in the data chats with Melissa. Zoe used the assessment platform to group her students, saying:

My kids are really low in math this year. It's the first time it's ever happened to me. So my focus is math. And in MAP, they show you what standards they're struggling in and they group the kids together. So I'm like, these are the kids that are really far off. These are the kids not too far off. These are the kids that are, like, right there.

Sofia described a similar process twice, though she manually sorted her students into groups. “This year, for example, I know based on these how to group my students or where they're at. So that's what I will ... I've been using.”

I know it's a lot, and it's just time consuming. It really is. I did it over the weekend. So, you go over the standards and pick up the reading score. If a student has in-between 160
and 180, put them in a group. Students that are between 180 and 200 in this group.

Students in between 200 and above in this other group. So, it is a lot. We don't always do it, obviously, but right now we're kind of like doing it more because we have FSA coming, so it's all about being strategic.

During the observations, some teachers were frustrated by looking at the data, and said that they wish someone would just tell them the groups so they would not have to review data at all, indicating grouping students as the primary use of reviewing data. In her interview, Sofia agreed, saying

If it was ideal, everything I need, I would actually have someone to do all the data work for me and just tell me, "Okay, this group of students need these specific activities. This group..." so I would know how to, like, go through the data, I guess.

**Data use is for passing the FSA.** As Sofia alluded to in her statement about grouping students, another purpose of data use within an MTSS is to either predict which students will pass the FSA, or better support students to pass the FSA. This was on display at each of the data chats. In the first one, a core focus was on the students on the cusp of reaching proficiency for the FSA. Melissa showed how to determine this when she walked me through some of her data.

Let's say I wanted to look one teacher up. Here it will give us...this is the RIT score..

That's for fall, that's for winter, this is the percentile, for fall. This is winter. So that's a trend line for that. This gives us the projected proficiency on FSA. This is whether they met it or not. These kids right here with the growth percentiles, so these are probably going to be kids that will be a gain for us. So then, what I've done here is I go, “okay, well, I want to look at all the kids that went down. All right, this is our target group for this area.” What are we going to do?
At other points in the observations, teachers focused on their concerns around the FSA. During the first data chat, Christine was worried about letting a student have too much time to take his tests because of the time limits on the FSA. Similarly, Melissa and her teacher discussed concerns around a student’s ability to perform the skills that he could do manually with paper and glue when he has to do it on a computer screen for the FSA. Sofia was also confused about how the next cycle of MAP data occurring after FSA would be helpful since the test would be already done.

In Zoe’s interview, she went into more detail about how she uses data to help her students prepare for the FSA. As she is describing all of the different data sources she has, she focuses on what matters as a third-grade teacher.

We have so much data in third grade because there's so many kids. There's 10 tests that we've taken already for the county. Then there's other tests in-between. And so you can look at those, or you can look at informal assessments, like a little exit ticket or... I look at the year before and I'm like, where were they at this point? Are they making improvements or not? And I look at their MAP scores. And are they going to pass FSA? Because that's what matters in third grade.

In Florida, third grade is the first year students take the FSA, and passing is generally a requirement for moving on to fourth grade, though parents can choose for a portfolio of student work to be used instead. Because she feels that passing the FSA is so critical in third grade, Zoe focuses on her students that are near proficiency.

Most of the time I use it [data] for lower students or kids who are borderline, like, the next score, so they have a projection of what they're going to get on FSA. So, this girl is expected to get a a 2, but she's right at the edge of possibly being a 3. So, I highlighted
her, like, that's somebody I can push up with just a little bit of extra help and... So all of these ones are just close to the next level.

I know when I first started, you think, always help the lowest kids, but that's not always the best practice. A lot of the times your kids that are in the middle get ignored and then they get ignored for kindergarten and first and second and it keeps happening. By the time they're in fifth grade, now they're the lowest, too. So, our focus, I felt like when Melissa came in was, a lot of these kids already get services. What can you do for those kids who are borderline? But, at this point, you know that is an accurate score, and it's helpful when they break it down to standards. Because, I have this girl who's expected to get a 4 on FSA. But there's one standard she's struggling with, and I'm like, that's easy to go back and help with. But when they're struggling with everything, then it's like, well, I'll just pick one and go with it, I guess.

**Data use is for monitoring teachers.** At the school leader level, James and Melissa described how they use data to check for functioning of their MTSS, as well as determining teacher capacity and supports. When asked about data for MTSS, James said

> It may be about the students, but then sometimes it's about grade levels, sometimes it's about individual teachers, and then, of course, it's about the school. So, there's varying tiered levels of data of how we look at it and how we use it.

He continued, providing details of how he uses data to monitor teachers and have them create action plans to work on their instructional practice.

> And then, of course, there are certain individuals too that, based on the data, they come up with a corrective action plan. So, they'll look at their assessment, they'll analyze the data, come up with a core instructional plan. And by looking at those data, and breaking
it down to standards, then they can determine whole group, small group, and individual work that they can do with the kids in their room to differentiate their instruction at all those different levels based on standards.

He also uses data to ensure that teachers are implementing their interventions with fidelity and catching all of the students that need additional supports.

I mean FSA is a big one, and looking at those results. I look at iStation and DreamBox which is a reading intervention program and math intervention program. I look at those bi-weekly to see how are the proper average lessons being completed. Are the teachers getting on and using it? Are they getting the proper amount of minutes in? So I'll look at that. And then, of course, we look at MAP and we'll analyze that the same way I just described to determine how to build classes. Do I need to move any teachers around to different grade levels to maximize their strengths? So that's a lot of the data I'll use. And then three times a year we do running records and word inventories on all of our kids to see how they're growing. Are we missing any gaps, any students that may need MTSS support? Because sometimes we might miss somebody that the teacher didn't think needed to be recommended, but then we can find a trend in the data that we might have been missing.

Similarly, Melissa discussed how she uses data to support teachers by honing in on their instructional strengths.

It's looking at where kids are dropping, it's looking at whole teams. So, if I have somebody with a strength, and maybe that's who I need to tap in. Like, I notice whatever teacher has a real strength of vocabulary in that domain. So, it's like okay, what are you doing? What are you doing that's making the difference?
She also uses the MTSS data at the program level to see if the interventions teachers are using are actually showing the results they want.

I look at it like you all call it the four steps of problem solving. I call it PDSA. Plan Do Study Act. So we're gonna launch the Do. Then we're gonna study it. And then we're gonna make adjustments of what we're going to do. We've already identified the measures that we're gonna use ‘cause we've got the pre. Now we're gonna put it into place and then we'll have the post. We have probes in between that will tell us whether it's doing what it needs to do, 'cause there's nothing worse than using eight weeks of time and then not knowing if what you're doing is making a difference or if you're making gains.

**Data use is for challenging assumptions.** Both Melissa and James also discussed using data within their MTSS to ensure that the decisions they make are not based on assumptions. James describes reviewing multiple sources of data, saying

> We'll triangulate data. It's looking for consistency in data. We may look at our MAP data, or our measures of academic progress. But then we'll also look at running records, and then we'll also look at iStation and we'll triangulate the results for kids to see how they correlate, so then we know how to best monitor the data.

Melissa grounded this as a key aspect of her definition of MTSS, defining MTSS as “really looking at the multi-tiers of support. And really making sure that we look at students through data, not just assumptions.”

At the district level, Annie also spoke about triangulating data to best get at the root problem without assumptions.

So that's where you have to do a bunch of different things where we really kind of go into root cause analysis, to try to figure out what is the big issue that's happening. That's
where we really dig deep into the data and break it up into various different types of views to try to get an idea of what is the root cause of all that we see going on right now, and not just look at it from a surface view.

She gave some specific examples of data a teacher might look at, including some behavioral data as well, explaining that she thinks teachers already pay attention to these kinds of things.

Then you get into the actual classroom data, which is to me the most important data that I tell teachers because that's where you're really going to move your needle—what you're actually tracking inside of your classroom. And that's data of small formative checks, unit tests, everything from behavior type data, absentee data, those are all things that are going to also inform your case of what's going on with this student. So, they've got failing grades, is this motivational? Is it absenteeism? Or is this really not getting the curriculum and they need other support structures for helping them engage in the material? I realize too that there's kind of a multi-level different types of data from, not just assessment data but also your behavioral and absentee type data that really help you paint a big picture, so I feel like the teachers that do really well...

**Data use is for instructional improvement.** Though there have been a lot of different understandings of the purpose of data use within an MTSS, varying by level and job position, all of the participants described using data for instructional improvement. Starting at the teacher level, Zoe described using data to focus on specific content that she needed to work on with her students.

I feel like this is my math, and I have a lot of kids who are close to the next level. And a lot more 1s and a lot more 2s. So, I take it and I use it for small group. We had a test recently for the county and all of them missed subtraction except for three out of 21. So,
I'm like, that's something we need to work on. Subtractions regrouping, and then we just do it until they get it and then move on.

She said she and her third-grade teammates get help on this from Melissa in the data chats when they examine the continuum of standards.

But, with my team, I like to show them, like she showed us the continuum. Now let's actually look at the continuum and try to put one thing in practice, like all these kids need this skill. Let's focus on just that skill.

Sofia also gave an example of how she uses data to hone in on a specific skill to reinforce with her students.

Next week they're gonna be taking this mid-unit math test. We just started fractions. This is gonna test them on what we know about fractions so far, which is only, number lines and equivalent fractions. So, based on the results of the test, I will definitely know what they need to reinforce. For example, this specific question is about equivalent fractions. Whoever fails this, I know I need to work on equivalent fractions. Once they finish this mid-unit test, it's really gonna be helping me to figure out what else do I need to reinforce before the big final test.

Melissa gave an example of using data for instructional improvement in impromptu data chats with a fifth-grade teacher.

I pulled up the data to show her the results and to highlight what she's doing well. And then highlight some areas that we need to improve or work on. It was kind of like, you see people who are in advertising while they're batting around ideas. That's what we were doing—batting around ideas, and talking about ways that we could incorporate some new way of work for her within her lessons to kind of hit these areas.
So in fifth grade, this is the teacher I was talking about. I’d say, “wow, in vocabulary man, you're killing it. Your kids are maintaining, and then what are you doing? What are you doing over here? And, oh my gosh, what are you doing in literary text and key ideas? How are you nailing that?” And then looking at informational practice and structure, “you only have four standards, how does that look within your domain area? Well, maybe we need to be piling on some more standards, or more practices to get better results.” So just like dealing with that.

Though she works at the district office, Annie said she likes being able to go out into the schools and help teachers understand how data can work for them. She will support them through “conversations around that type thing to be able to start reflecting about what we can do now to disrupt that data set and be able to drive our instruction a little bit better.” As an example, she walked me through how she would support teachers in reading data to inform instruction.

This is where they can see, are they going up or down in their specific goal areas to identify where they might have specific pockets developing, and so this is where we'll have some discussions about what could you do next step from all of these. Then, I've also created additional documents that help with the efficiency of that. So, if they were looking at like reading, they can look at the learning continuum and see, hey, if I was dealing with this goal area, what are all the standards that were being assessed?

Having a clear purpose for initiatives like data use and MTSS is critical in them actually resulting in the desired outcomes (Datnow & Park, 2015)—in this case, using data to best support all students in their academic and behavioral achievement. The educators at the district and school level had different understandings of the purpose of MTSS, with most at the district level and school leadership level believing MTSS is for all students to get the supports they need,
where the teachers mostly focused on using MTSS to get ESE supports for students. And while all participants could discuss using data for instructional improvement, those at the school level focused on using data to group students and pass the FSA, while school leadership was more interested in ensuring the fidelity of interventions, monitoring and supporting teachers, and ensuring decisions are not made based on assumptions.

These differing purposes of both MTSS in general, and of data use within the MTSS, have implications for how the data are ultimately used. While the district and school leaders are showing a desire for data to be used to ensure equity, the overriding accountability culture seems to be influencing the teachers to primarily focus on the FSA instead. According to Lai and Schildkamp (2016), teachers often find themselves in situations where they have to balance the tensions between an accountability culture that focuses on test scores and compliance, and a culture of organizational learning where the focus is on systemic change for improved instruction.

Datnow and Park (2015) researched high-functioning data use in various school throughout the US, and found that data use for the type of equity Sago leadership wants is rooted in purpose and principles, not just in the practice of reviewing data. They outlined five key principles of data use for equity, with the first one being that leaders must articulate the purpose of data use. Using data without this focus, they say, can even lead to inequity. They described such a situation as using data to narrowly focus on students near proficiency, a scenario that sounds similar to some of the data use observed at Sunshine. This practice is not unique to Sunshine Elementary or Sago district (e.g., Booher-Jennings, 2005; Diamond & Cooper, 2007), but demonstrates how a lack of a clearly articulated purpose at all levels of the initiative is critical for it to achieve the desired results.
Context Matters

The context surrounding the school implementing MTSS or the data being used to transform instruction was important for the district level leaders supporting this work. Though the school level educators touched on this area, it was mostly brought up in my conversations with Marie and Annie. When talking about MTSS implementation and data use, both felt that it was being done better at the elementary level. Marie explained,

I feel like generally, elementary in Sago does a better job of it because, I think it's a little less overwhelming for them because there are smaller groups of students with one teacher all day that you can really dig into that. It seems a little bit easier to chew up and swallow than middle school where the sheer numbers are larger and it feels overwhelming to then have to go back to a whole grade level to say, "Oooh." And high school, they'll just do their own thing. And I don't know if that is because of perception, because when I think of MTSS, I think of it as like we took what RtI is/was and what PBIS is/was and tried to merge them together, and both of the initiatives originate in elementary school. They haven't grown up the grade levels in the way that they probably need to.

Annie spoke about supporting schools with reviewing data for MTSS, indicating that it is more focused at the elementary level as well.

I don't know, I see elementary more than I see secondary. And I don't know what's really happening at the secondary level for MTSS. And I sometimes think those kids need it too. I feel like there's lots of support in that elementary, but yeah, you go to middle and high, that tier support, I feel is not as strong, but I could be wrong. But I don't feel that it is as strong as elementary level.
When talking about MTSS and data use supports for schools, both Marie and Annie talked about how the levels of implementation and capacity to do this work varies widely from school to school, even within the elementary level. Marie explained her role as an MTSS specialist by describing how she needs to meet schools where they are since implementation varies between schools.

It's [MTSS] what drives most of my work, I won't say all of my work, because I get tasked with some interesting things that are not really MTSS related. But it is the driver of my job, and part of my job responsibilities are to do just that and train schools on implementing and setting up their system in a localized way to do what works in their space. I do a lot of instructing, a lot of problem-solving process that has stuck in some places better than others. It sort of varies school to school what that looks like also. But we attempt, especially in schools that are struggling, to push into school-based leadership team meetings and how to facilitate them or give feedback, just make sure that they're operating in some fashion that’s productive. Some schools obviously do better than others, and from area to area it varies because we work for the area superintendent. What their expectations are drive a lot of what we do with schools.

Marie reinforced this point again toward the end of our second interview, saying “but in Sago, there are schools that are really rocking it and then there are places that they're just starting to grasp, which is crazy because this has been a thing for a long time in Florida.” She explained that she thinks a lack of follow through on district initiatives is part of why they are seeing such variability between schools. After I told her about my former district’s expression of “pockets of excellence” to describe our own differences in implementation of various initiatives, Marie said
I think it's inconsistent. And there are, like you said in River, pockets of excellence. But we’ve got a long way to go. And I don't know if that requires retraining or...I think we lack in the inspecting what we expect. We do not, district wide. And they're looking, they acknowledge, but we do a lot of, "Hey, here, go do this," but we don't follow up on... is it really being done? Is it being done appropriately? With all sorts of initiatives, not just MTSS or PBIS or RtI.

Speaking about data for MTSS, Annie expressed similar sentiments.

I think it just depends on the school. It depends on the group and I think MTSS can have a really big benefit if it's implemented effectively and monitored for whether success is happening. And I think some schools have it down really good. And I think other schools don't. And so I think that that's probably an area but there are some schools that are doing amazing jobs with it. But I think that's expected with a district of that size is you’re going to have exemplary, and then you're going to have some who are like, “okay”, because you work here.

Coming from a school level perspective, Melissa described the lack of a formal protocol for implementation of things like data use for MTSS as a good thing, saying it gives schools the flexibility to adapt to their own unique contexts.

I don't know if there's necessary a policy. I know that the district initiative is that they want us to have these data chats. They want us to look at it. But there hasn't been a cold hard hammered way down of work. I think that they have allowed us to have the flexibility of knowing our campus, and knowing our teachers, and trying to navigate our own way. And I'm not so sure that any amount of policies would be able to change the results. They basically gave us the information, showed us how does that help, but gave us
a freedom, and a flexibility to go into the room and do it the best way that we know how
with our audience. Because it's really about knowing your audience.

Beyond the level and individual school context influencing how these initiatives are
implemented, a larger point Annie focused on was the context that is required to know what to
do with your data once you have it, specifically an educator’s understanding of the curricular
standards to transform the data into instructional changes.

And that's one of the things I always state too when I do trainings is, you can be the
master of your data all you want but if you are not the master of your curriculum, then
there's nothing. So I try to stress as much, know your standards. Know what leads up to
your standards. Take that time over the summer to know your standards in and out. Know
what are the smaller learning targets that are so required. We all go through those courses
of breaking apart your standards and we're all, oh, [grumble]. But to me, that is the best
thing that happened to me because when I truly knew these biology standards, and I truly
knew the learning targets, then when I looked at my data, I knew what I needed to do. I
knew the assignment I needed to give them.

She walked me through an example for her own experiences as a teacher, using data along with
the context of the standards to focus on what her students really needed.

One example I always have is, I could never get my kids to get the properties of water.
They would take the test for me and things would look great. But then when they would
take a district test, or take any of the sample test questions from the state, all of a sudden,
they couldn't tell me what the properties of water was. I was so frustrated by it, and I
would drill and drill and drill, yet they couldn't apply the properties of water. And I
realized, they don't understand the structure of water. And if you don't understand that
water is polar and how water works, then you never understand the properties. And I found that that was my missing piece in the way I was teaching water, but I didn't realize that until I was really examining my data. As I got better with the standard and I knew the smaller learning part targets of the standard, then I was better able to decipher my data and come up with better activities to make sure they understood that. If I don't know my standards, I don't know what I'm looking for. So that to me is a big piece of really knowing your curriculum.

Because she so strongly believes that teachers need to be able to live and breathe their standards in order to use data properly to target learning needs, she expressed some frustration at teachers being moved around to different grade levels frequently at the elementary level.

I don't like when, especially at the elementary level, they switch teachers in grade levels a lot. Where it's like one year you're 3rd grade and then next year, you're 4th grade. Now you're back in 2nd grade. I feel like that does a disservice but, I get the reasons why they do it. But I'm a big proponent about knowing your standards inside and out and not just reading off a piece of paper. That is why you have a degree. Anyone can go in and read off of a textbook or a lesson plan guide, but what makes a professional teacher is their ability to adjust that to meet the needs of a classroom.

As we saw earlier, James talked about using data to do exactly that, targeting teachers that would work well together or had certain strengths that he thought a grade level needed. Though in Sunshine’s SIP, he acknowledged the need for teachers to deeply understand their standards as a way to improve academic achievement, writing "standards-based instruction and review is a key. A well-developed, standards driven review plan based on diagnostic data will drive individualized differentiated instruction in order to prepare students for success."
the three data chats I observed also focused on drilling down to the standards level to know what instructional skills to target. In the third data chat, Sophia and Melissa had a conversation about this, and Sofia reflected on it in our interview later that day, saying "It's weird, I would never group them like this. But it's based on one specific standard though."

Between educators coming to the table with different understandings of what data are, what the purpose of reviewing data for MTSS is, or with different school contexts and individual capabilities, the process of using data within an MTSS gets complicated really quickly. Those at the district level tended to remark more on the variability between schools and school levels, as well as focus on the context required to interpret data. They, along with school leaders, also saw the main purpose of MTSS as supporting all students based on their needs, and saw data as a way to hone in on instructional improvements. The teachers also talked about instructional improvement, but also discussed the use of data for grouping students and preparing for the FSA. They also felt that data are not always a complete picture of their students, and that they know their students without data as well.

**MTSS and Data Use Require Mindset Shifts**

Moving beyond the complications of using data within an MTSS, the educators at the Sago district office and at Sunshine Elementary brought up topics such as beliefs about data and buy-in, both of which they felt were necessary for MTSS and data use to be done well. In these, the role of the individual educator was highlighted as a critical factor in implementing change. Guided by Bertrand & Marsh’s theory of sensemaking about student outcomes (2015), I also looked at how the educators were attributing the cause of the data results, which was backed up by one of the district level participants as an area of focus in her own work. Each of these topics,
grouped under the broader topics of People Matter, and Beliefs & Attributions, are discussed below.

![Diagram showing MTSS & Data Use Initiatives Require Mindset Shifts]

**Figure 10. Map of Theme #2**

**People Matter**

The district level leaders and Sunshine’s principal discussed the vital role that the individual people play in making initiatives like MTSS and data use work in schools. When Annie was showing me an optional district dashboard for MTSS data that she built into their assessment platform system, I asked her how many people are using it. She said not many, but that it really depended on the person and that “they just have to have a strong MTSS person there that wants to be the forerunner for that. And there are some that really dived into it and they find great use out of it.” She gave another example, but about her support of the biology teachers in using district created assessment systems to get targeted data to support students.

I just started creating item banks for biology. That was a shared teacher item bank because my hope was that if I could provide the items to them, then they would start creating their own banks and then sharing it with other teachers, and actually start improving the data collection cycle. And that has started to actually take off. And then once they get through their first one or two assessments and like, “oh my god, look at all the stuff I can see and do,” and then the kids get instantaneous results and they get their
student portal and they're like, “I already know that I got a 70 percent, but not just 70 percent, I know by exact standards spelled out how I did,” like, that's big steps. And you can build into your website, “hey, if you are weak on this standard on your test, you do these activities on my website.” You could build in and do a lot of those things as like quick remediations and those type of things.

With this optional system, not everyone jumped right in and wanted to use it, but she worked on cultivating buy-in by showing the teachers how this can help them and their students, and once teachers started seeing the power of it, more joined in.

Marie also discussed buy-in for MTSS, and specifically the principals’ role in implementing MTSS, saying “I think for Sago, and I'm guessing that most very large districts encounter the same challenges that the level of functioning for MTSS in any given school is directly correlated with the principal's belief in it, or buy into it.” Sunshine Elementary, and James by association, was nominated for this study because of their buy-in to MTSS and data use. Though James believed in it, he acknowledged that it takes time to build the culture for using data and that he needed his staff on board for it to happen. When asked about what supports he would want from the district to help with data use for MTSS, he responded

Just time you know? I mean you have to have time, and there's a level of, "Hey we're doin' this," but you just get pieces at a time. And that's to help build momentum. Where they weren't really looking at data like that probably three years ago. And over time now they're more comfortable with it. It's not perfect, but they're more comfortable with it. This is also reflected in his schools SIP, where he wrote that their lowest identified areas are due, in part, to a developing data culture among their instructional staff.
James touched on a related topic when he spoke about needing the right people in the right places in order for his system to work. He said

It's really having the right people in the right jobs because they have to care about their data, and they have to be driven to want to analyze it, and pull reports together, and put it all in one place, and make it easier to look at. Because I couldn't do it all on my own. It's too much to do on top of everything else. So, it really boils down to having people that are just focused on their area of expertise and that's what is going to drive and push a school.

He continued when he spoke about getting buy-in from each of the different grade levels, explaining “By having different people in different grades helps drive excitement and momentum that is around data, but it's about moving students, and the data doesn't necessarily lie. So just really time and the right people in the right spots.”

**Beliefs and Attributions**

Even with staff buy-in and having the right people in the right positions, there are beliefs that the educators felt were necessary to using data for MTSS.

**Discomfort with data.** The first belief was that you need to be comfortable with data. Annie described it as “data savviness’ when she said

You have to have good data collection measures and you have to be comfortable with data. And if you're not comfortable with those things, then the accountability piece sometimes goes in the wayside because you don't know how to read it and really make it actionable.
She also explained that sometimes it is the discomfort with technology that can turn teachers off from using data.

   It's just the initial piece because some people are harder with the technology when it's like, “I feel overwhelmed.” I get that, we're in the school setting. I feel overwhelmed by it and then to learn a platform, that in itself can sometimes just be too much.

Melissa spoke about the discomfort with data that she is facing with her teachers, comparing it to being on a battlefield. Speaking about Sunshine’s data culture, she explained

   I would say it's in its infancy for sure. I would say it's ever changing. I think we're getting to the point where we're coming to terms with it, and we're more accepting. We're not at the nirvana by any means. But I think that what we should know is that we have teachers who are now starting to understand it and use it, but we're still in that infancy. And, I would say that again, it's time. I really wanted to do it one-on-one with every single teacher. I just think that that's more intimate and better. But I do understand that there was a need to pull everybody together to get them the baseline information. I think that we support it, and it's just a matter of conquering it. I think we just haven't conquered it yet. We're still on the battlefield. So, I'm the data slayer.

Like her principal James, she mentioned that it is a slow process that takes time, but that she is working on building that comfort with data with her teams.

   **Data should not be punitive.** A large part of why Melissa described using data as something to be overcome or something she has to fight is because of the next belief—Data shouldn’t be punitive. Annie stresses this belief when she supports schools with data use.

   The biggest thing is just having these schools designate a time, and putting value behind it, but not making it a punitive thing. Really changing the way you describe data as
something that helps, and is really used to help inform instruction, versus coming in as, "I
gotcha. Why aren't your kids doing this? Why aren't your kids doing that?" Then it
becomes punitive, and then the teachers aren't honest with the data at that point. They're
afraid of it, so they're not gonna wanna individually collect it. So I really would love for a
change in the way we approach data, and the way we use it with our teachers to really
change that mindset.

The type of fear of data that Annie described played out in the previous year at Sunshine.
Before Melissa and I had a chance to have our initial interview, I was able to talk with her at the
first data chat observation. She let me know that she was very nervous about how it would go,
and she even told the team of teachers to not be nervous when she started—some still seemed to
be, though I tried my best to let them know to please not be nervous because I was there
watching. Later, when we were able to talk in our interview, Melissa filled me in on the
perceptions about the data chats in the previous year. Though they were meant to be helpful for
teachers, the perception was that reviewing data would be punitive.

Last year was ... for a lack of a better word, horrible. It was really tough. Because it's
hard for teachers not to take this data personally. They make it as a self-reflection of them
instead of looking at it as a gauge of where I am, and how do I navigate this. And it's
more of a, just one more thing to do, instead of front ending. So, it's been difficult. I've
had teams where they weren't comfortable with me showing the domains and how well
the classes have done. They were not ready. We went through a long period of, “parents
don't read enough,” that “they don't do their homework.” All those types of issues,
instead of spending time on what's the deficit? And, what can I do? But, I would say that
it's much better this year. I only have really one team that's still gripping the table. The
other ones are getting used to the idea and understanding that this is kind of a pulse point
for where you are.

She described her work to shift her teachers’ focus from the negative to the positive aspects of
data so they will want to use it, though she admitted that it is still an uphill battle.

It's really about mindsets. At the end of the day it's about mindsets, and it's about getting
people to understand that when you look at your data you have choices on where you're
going to focus your attention. So, is it you're going to focus your attention on beating
yourself up, or are you going to focus your attention on putting things in place to make it
to better? Like, it's really about a poker game. It's about having your cards, and making that
full house. I just got to get them to grab their cards.

**Relationships are important.** To accomplish this, in the year that we spoke during the
study, she decided to take a different approach. This time, she focused on the third belief—
Relationships are important. Before the first data chat, she told me that it was a big cultural shift
for her this year, and that she tries to make the data chats very casual and as stress-free as
possible. She explained that last year, she followed district guidance around the data chats
instead of focusing on the relationships first, but as she mentioned above, that it did not go over
well.

The approach last year was following what the district wanted. And that was getting them
all in there, getting them to sort their kids, to look at their kids and evaluate it. And I just
felt like it put them on a defense. There wasn't a building of team, of relationships first. It
was, get in and fix it. They put the cart before the horse. We, not knowing any better, just
went along with it. I knew it was the wrong thing to do, but I didn't know enough not to
follow it. Like I was too scared to go rogue. So it just put everybody on the defense. It
didn't make people comfortable. If I had to do it all over again, I would do individual and then build team. Get them comfortable looking at their data within themselves. Because she had previously been a teacher and behavioral analyst at Sunshine, she felt that the process last year was actively messing up the relationships she had cultivated with her peers, so she knew she needed to do something different this year.

Last year after the school year, I was like, "I'm not doing this again. I will not do this again. I will not sacrifice relationships for data." Last year it was really all about scores, because you had to overcome their anger and hostility.

This year, she was determined to put the relationships at the forefront of her work on the data chats so that more honest conversations around data for instructional improvement could take place.

It just started to happen because it was so uncomfortable the first year that I just, to be totally honest, peace out, and be gone. Because it was just so challenging. And it was just so controversial and tense. So, I really started this year about... I'm going to be kinder, gentler. I'm going to run this like I would run a classroom. So, building those relationships, and really honing in on the positives in their data, and then the people. So it's happened, because it happened this week, it happened last week. We had the people coming in. I've been kind of just saying, "Hi, we're about to have a one-on-one data chat whenever." And so now whenever they have a free moment, they'll pop in and talk about it. I have been talking them off of the bridge and redirecting their thought process into what's positive. Because the first year it was like, “oh, we've got holes here, we've got holes here, we've got holes here, we've got holes there." And, now it's like, “wow, look at
all these great things we've got. Man, if we just fixed that one thing, I wonder where we could go next?"

She explained that she put a new protocol in place when discussing data that always starts with a strength before examining weaknesses, and then allows the teachers to talk about what they want to have happen. Melissa said that this new process has helped change the mindsets of the teachers so that they are now actively coming to her to review data.

**Deficit-focus.** Along with building buy-in and supporting comfort with data through focusing on relationships and making it a non-punitive process, there were also mindsets around attributions that need to change. The first is having a deficit focus when it comes to reviewing student data. Melissa gave a personal example of this when she talked about her family.

I'm an adoptive parent. I've had biological and adopted. My adopted kids had issues. You name it, disability, I've had it. Like with my son, they wanted him to be behavior disordered, and I fought that label his entire grade, and now he's fine. He's doing well. He was just a trauma kid that needed to be worked through. So, I always in the back of my head want to go, “is this an MTSS support kid with tier levels, or is it the handicapping condition with specially designed instruction?”

In the Equity Centered Problem-Solving (ECPS) document that Marie shared with me, Sago district specifically focuses on eliminating deficit-focused attributions, saying that

ECPS will operationalize the target problem by identifying elements of the learning ecology that contribute most to student learning outcomes, factors that are clearly observable and measurable. Descriptors for students/student groups such as defiant, disruptive, low-performing, off-task, etc. are not operationalized because they are subjective, and interpretations may vary among team members and stakeholders. When
teams focus their consideration solely on students’ skills/behaviors, bias may influence the identification of the target problem. By operationalizing the problem with an equity lens, teams are required to explore the learning ecology and base decisions on objective information. ECPS will require that hypotheses can be measured and observed to determine if data can be linked to the problem. It is important to understand that teams may generate hypotheses that may not be directly linked to the problem, are unalterable, and could be susceptible to biases.

As an example, the ECPS guide said that a deficit-based attribution around an FSA ELA pass rate of 23% for Black students would be “Black students lack the foundational skills required to engage with rigorous content.” Instead, the guide suggests that it be reframed as “Instructional practices focused on grade level remediation fails to provide opportunities for students to engage in rigorous instruction with appropriate scaffolding.” But despite this, Goal #4 in Sunshine’s SIP, regarding FSA achievement for Black students, contained some deficit-based attributions, saying

We expect our black student performance level to increase from 41% to 62% for Level 3 and above by May 2019. The problem/gap is occurring because students lack the fundamental reading skills, teachers need targeted professional development in culturally relevant strategies, restorative practice, and advanced coursework for high achieving black students.

Though it is only part of the attribution, with others being the need for teacher professional development and for advance coursework, it still seemed misaligned with the district initiative to reduce deficit-based attributions.
**Lack of personal attribution.** In addition to the deficit focus, Marie and Melissa discussed times when educators do not consider their own role in the data results. Marie spoke about Sago’s equity focus for that school year, explaining

> We've done a lot of work in the last year related to looking at data for equity. Which is mindset related, not just the cold numbers. And we've had data walks where it's been eye opening for teachers and staff, the attitudes towards different sub-groups of kids. Which explains why they go straight to that blame piece and not the preventative or what can we, as the grownups of the school, adjust, to encourage students to be more successful.

> That's mostly related to behavior, but it's true for academics also.

She went on to talk about how they are trying to change this mindset by using the MTSS concept of ICEL/RIOT where you examine different domains of learning (Instruction, Curriculum, Environment, Learner), along with different sources of information (Review of records, Interview stakeholders, Observe performance, Test the student) when making analysis data for MTSS. She discussed it, saying

> So we have Sago last summer and this summer before we dipped a toe in a little bit, to look at equity and we instruct school teams on all of those things, I think on some level. Picking and choosing based on whatever factors or making sure that they're really looking at sort of the ICEL/RIOT kind of framework, getting away from blaming the learner.

She indicated that she thinks it is starting to work in helping the school teams focus on the whole situation and attribute the cause of the results in a better way.

> I think it's shifting 'cause we've done a lot of work with school leadership. But I think some of it is the tendency to sort of place blame in the wrong place. In that, it's always a
learner problem and that they don't examine what environmentally can be controlled.

What is controlled in curriculum or instruction rather than... often you hear that one. It’s these kids or it’s a parent problem.

Melissa referred specifically to reviewing data on the classroom environment when she said “it's making sure that that it's, the child really needs help, that it's not the room that they're in.” She also previously mentioned that in her first year working with teachers in data chats, they would often say things like “parents don't read enough, that they don't do their homework.”

When talking with Sofia and Zoe, there were multiple times when they discussed attributing student data to different factors, but did not mention their instructional practices as a potential cause. Sofia described a situation where she did not trust the data on one of her students, and she thought the result was potentially because of her being distracted.

Looking at the data the other day, some of my students were grouped in a group that didn't make any sense. It's this specific student, according these specific tests taken back in December, she should be in this group. She is average high. She's a very good reader. Now, when you look at her scores in general, she is like, Tier 1. But when you look at specific standards, I might see that, oh, she failed this question. That specific standard. So, she should be placed for this specific standard in this group with the very, very low Tier 3. Now, I don't think that's accurate, because she could have missed that question, maybe, because she was distracted. Maybe because she needed to go to the bathroom, maybe because... Any other factor, any other reason.

Zoe talked about a similar situation with one of her students.
You kind of have to judge, like, what am I going to base it off of? I have a girl in here that says she needs this standard, but she's high in pretty much everything we do. So I'm like, that might have been just a bad test day or a weird question. Something like that.

Regarding getting students ESE supports, Zoe also thought that sometimes other factors, such as attendance and sub-group status, should not be taken into consideration since it stops students from getting the supports they need.

They do staff, eventually, the ESE student. But they make it very hard. If it's a minority, they'll say, “oh, you know, we're over-identifying.” And the thing is, if the student needs it, the student needs it. Doesn't matter where they come from, what color they are. And then also the absences—they won't staff them if they're absent too much. And that is a big problem sometimes, because a lot of those kids are absent a lot, but... they also don't like school, usually.

This type of mindset goes against the process Melissa previously identified, where you first go through a series of rule outs for things like vision, hearing, and attendance, and then also check peer group and sub-group performance to ensure that the student outcomes cannot be attributed to a systemic issue facing a whole class of students or a whole sub-group of students.

Individuals’ mindsets about data influence how data are used (Bertrand & Marsh, 2015; Coburn & Turner, 2011; Farrell & Marsh, 2016b; Heritage et al., 2009; Oláh et al., 2010). From talking with all of the educators at Sago and Sunshine Elementary, it became clear that there were a number of mindset shifts that they thought were required to effectively implement MTSS and use data well. First, they focused on the importance of having the buy-in of the school level staff, including having the right people in the right places. Teachers that believe data are not
useful are less likely to change their instruction (Hoogland et al., 2016), hindering the efforts for
data-informed reform

They also thought that using data well requires a comfort with it (Mandinach, 2012),
supported by a non-punitive approach to data use that focuses on building trusting relationships.
A fear of “gotchas” and other punitive uses of data actively dissuade teachers from engaging
with data (Mandinach et al., 2015). Data used like this for compliance purposes is more
commonly found in accountability data use cultures (Firestone & Gonzales, 2007), and though
James did discuss using data for monitoring teachers, it was unclear if that was communicated to
the staff at Sunshine. The fear associated with the data reviews was in the previous year and
there were no school or district level data protocols, so I am missing a key piece of information
about how the data chats were initially presented to the teams. But as discussed in the last theme,
providing a clear purpose for the data use—specifying that it is not being done as a punishment
or as a way to single-out “lower performing” teachers—could help alleviate these pressures.
Additionally, Gannon-Slater and colleagues (2017) found that trusting relationships were
necessary when reviewing data for equity. In their study, through both case schools had systems
set up for reviewing data, they did not have a solid relationship build on trust where teachers felt
comfortable grappling with questions around equity.

District and school leadership also discussed how they want school staff to move away
from deficit attributions and focusing on what students and parents are doing wrong, instead
focusing on what changes they can make to empower their students to learn. Bertrand and Marsh
(2015) include how teachers attribute data as part of their sensemaking for student outcomes
model, acknowledging that a teacher’s thoughts about the causes of results influences their
possible future instructional practices. Deficit attributions limit teachers’ ability to consider what
they can change to improve student outcomes, and can reinforce negative stereotypes about students (Bertrand & Marsh, 2015; Datnow & Park, 2015). This is an equity issue, with the broader accountability culture influencing the way teachers talk is narrowed on labeling students in groups as “low,” “high,” or “just below” (Datnow et al., 2018; Halverson et al., 2007)

**Educators are Limited in Making Data-Informed Decisions**

Given the complications and mindset shifts required to implement MTSS and use data well, it is not surprising that educators are limited in their ability to make decisions based on data. When talking with the district and school staff, additional barriers to making data-informed decisions were discussed, including limitations to teachers’ ability to enact changes in their classrooms, shortages of time, and a lack of professional development and other supports. These concepts are discussed below.

![Figure 11. Map of Theme #3](image)

**Teacher Agency**

Key components of the Data Literacy for Teachers Inquiry Cycle (Mandinach & Gummer, 2016c) include teachers being able to identify problems, formulate questions, then
select the most appropriate data to answer their question. When I spoke with Sofia and Zoe about how they decide what data to collect, they explained that they do not go through that process. Instead, they are given data that align with district priorities, like passing the FSA as we discussed previously. So, the problems, questions, and data choices are made for them. When asked about why she selected the MAP data to make decisions with, Zoe replied “Um, that's what we did in the data chat. So I try to use what they ask us to.” Sofia agreed, saying “So, there's those tests called MAP, and those are the ones that we have to look at. And then find the strategies based on those, on that data." In our follow-up interview, I asked Sofia if there were other data sources that she selected herself, and she explained

   Honestly, I don't pick and choose what data I want to use. I guess I don't really have that freedom. I mean, I do have the freedom of choosing, like, my observations in a classroom, notes that I take. In that sense, I guess my answer could be, how much a student is trying is gonna be part of my data. I am observing that because I think it's important to consider that.

Though Sofia does get to add her own reflections informally as part of her data, she and Zoe both thought that they did not play an active role in choosing the data that they use. Given both of their earlier statements about wishing they did not have to review data and instead were given their student groupings, I do not think these statements were meant in a negative way, but more in a neutral, matter-of-fact way.

   When I talked with Annie about the teachers’ role in using data, she indicated that she would like for teachers to get to the point where they can be more active in the process by knowing what questions to ask when reviewing data, but that for now, the coaches are really supporting this effort.
A lot of our coaches are then trying to direct the teachers on what they should be thinking of, after certain required data sets are done. Eventually we would love at some point, teachers can become more savvy enough that they can start asking those questions themselves, without having to be probed by the coaches.

She also tries to support teachers in building this skill when she is able to visit schools to provide more direct trainings.

I get them to the point of, hey, this is where you need to focus on. These are kind of the standards that I would be pinpointing. If a teacher invites me out personally, then I’ve got more time like after school for us to kind of plan activities that you want to do. And I can give them ideas around that.

The observations also provided examples of how the teachers are essentially told how to enact a lot of the changes in their classrooms. When showing Sofia and Christine the Data to Instruction Framework sheet in the third data chat, Melissa said “I don't really expect you all to fill this out. Your module pretty much tells you what to do. This is your whole group lesson. But highlight what you are going to focus on and write down any accommodations.” In a different data chat, Melissa and first-grade teacher Morgan were discussing the limitations of the district-created modules for hitting the needs of Morgan’s students. When Melissa asked her “So what can we do about it?” Morgan frustratingly replied “don’t teach the modules!” She continued,

Well the district says you don't have to teach the modules as long as you are teaching the standards, but then if you didn't teach the module, the kids won't do well on the district exam when they don't know US symbols. They won't get the writing prompt.

In the earlier themes, both Zoe and Sofia spoke about using data to inform their instruction, and for other reasons like getting students ESE supports and passing the FSA, but they do not seem
to be given the agency to really make a lot of the decisions around which data to select, which questions to ask, and how to use it on their own. Other studies have found similar results, where teachers have struggled to know which questions to ask (Means et al., 2011; Wayman & Jimerson, 2014), and knowing what data to collect to answer their questions (Avramides et al., 2014). Human capacity to use data is a limiting issue in data literacy (e.g. Choppin, 2002; Datnow, Park, & Wohlstetter, 2007; Feldman & Tung, 2001; Herman & Gribbons, 2001; Kerr et al., 2006; Mandinach, 2009a; Miller, 2009; Young, 2006), though it seems like the district and school leaders in this study want to scaffold support for these types of skills so teachers can use data effectively on their own. It did not seem clear to me if the teachers wanted that responsibility though, and as we will see in the next sections, things like a lack of time and professional development limit the ability of Sago and Sunshine Elementary leaders to provide the type of supports needed to build their teachers’ capacity for data use.

**Limited by Time**

Another factor that was discussed as limiting the ability to use data was time. In general terms, Sofia and Zoe pointed to time as a reason that there are not more data chats. After the third data chat during Sofia and Christine’s lunch break, Sofia did not want it to end, saying “It’s always the same. We never have enough time.” This happened earlier during the second data chat with Morgan, who spent both her planning period and lunch break having the chat with Melissa. Zoe mentioned that they do not get to have many data chats, saying they happen “not too often, just probably after every MAP, which is three times a year. And sometimes they'll touch base with other things, but there's only so much time.”
Zoe and Melissa also discussed how the lack of time impacts actually being able to use data. Melissa reflected her teachers’ frustrations when she said “They are frustrated because they wish there was like more time, and that's the issue. That is the main issue with getting them to be able to look and facilitate change within their classroom using this data.” Zoe discussed how she does not feel there is time for other supports for data beyond the data chats, and expressed that it is hard for her to actually integrate the changes that have been identified for her because there is not enough time. "I's hard sometimes to go back to skills they missed, because they want you to keep moving forward. And you don't always have the time to.” When talking about how her focus area based on the data is math, she said

And then, like I said with math, that's where they're struggling, and with the lower projections, that's where I'm like, we need to hit harder. And unfortunately, there's not enough time to do both reading and math usually, so it's like pick a subject and go with it. Annie also expressed her thoughts that there is a lack of time for data chats, especially given that most educators have not received training to review data. She thought it had to do with time set aside for data reviews being used for other things.

I think the biggest thing that's always needed is just designated time to do it. Where the teachers or coaches actually having designated time that they meet, and have to meet certain discussions on what needs to happen. A lot of times, they'll say they put the time in like a PLC, or something like that, but they'll fill it with other things like, "What's going on at the school?” Or... “did you get our field trip stuff done?” And, the data doesn't actually get discussed. And a lot of times, when you're dealing with data, if you're working with a group that is not familiar with it and has not gone through some extensive
PD on it, trying to look at data in a 30-minute time frame and pull it and know it, it's just not enough time.

Annie also differed from those at the school level by stating that there are ways educators could be more efficient with their data collection and analysis to make more time for actually using it. She gave two examples from when she was a teacher to illustrate this point. Speaking about ensuring class activities are meaningful and provide good data, she explained:

Often there's not enough time, and this is one of the things I was guilty of was there was not enough time because I didn't use my time effectively. I wasted time on activities that didn't give me good data. They were filler activities, or activities I thought were fun, but then the information that came back to me had no meaning. It didn't really measure the standard that I was expecting to measure and so it became, to me every activity that I do for my students should have a purpose behind it. It should be giving me important information back to tell me, “hey, what I just spent 20 minutes teaching you, are you able to apply this into various real situations?” And what I'm looking for is that data coming back in various formats to tell me, “hey, I, I learned it or I didn't learn it.” Whereas, if I'm filling up my time, which is very precious, with activities that are fun but don't tell me anything about whether you've mastered the content I'm expected to teach you, then that's time I've lost and then I feel like, “I don't have enough time for my curriculum.”

She gave another example about how she used technology to make her data collection and analysis more efficient so she had more time to focus on using the results.

That was the thing I've noticed is when I improved my data collection at the classroom level, it trickled up to the state level. And that's the thing, no one teaches you that piece. Like, how do you collect different types of data, and then how do you effectively do that
so you're not spending eight hours doing it? And then quickly being able to adjust based off of that data. That's something I didn't walk out of college having a really good grasp of, which was really powerful once I kind of had that under my belt. Then I was like, “oh, well, if I can automate my data collection where I'm not spending three hours grading 150 tests and I can put it into something like Performance Matters or Zipgrade, or one of those type of things for, not everything but for a good portion of things, I can save three hours which then I can use this three hours to actually reflect and adjust my lessons in a more timely fashion” because I wouldn't get to grading those until the weekend. That's where I really realized the importance of efficiency in my data collection methods that really helped with that problem that teachers always say, there's not enough time.

Though Annie is using her own experiences as a data savvy teacher to push back on the concept that there is not enough time, the reality is that Sunshine is still creating their data culture and building the capacity of their teachers to become more efficient data users like Annie. But they are facing time constraints in their ability to do the work that it takes to get to their desired end point.

Building a culture of data use takes time (Mandinach, 2012), and as we saw with the teachers at Sunshine Elementary, many teachers get frustrated that their current realities in their schools do not allow for them to use data well (Huffman & Kalnin, 2003; Kerr et al., 2006; Supovitz, 2006). The lack of time to fully explore data is also an issue of equity. As Datnow and Park explained in their 2014 study, a key principle of data use for equity is to not rush the process. Doing so limits data use to superficial reviews of broad strengths and weaknesses, without having the time to consider the root cause of problems. One of their participants described this beautifully, saying
I can give you an aspirin if you have a headache. But if your head hurts because you’ve had an aneurysm, then giving you an aspirin isn’t going to help. It’s the same thing with education and data. If you don’t examine the data and look deeply at the root causes, you might just be solving the wrong problem or addressing the problem in the wrong way. (Datnow & Park, 2015, p. 51)

These are the types of reviews that we saw in the data chats at Sunshine Elementary—identifying students who did poorly on a standard and placing them in a group to get retaught that standard. But if the cause of that score is something else, such as the instructional method used not making sense to them, then like the aspirin for an aneurysm above, reteaching the same way is not going to help. Going deeply through data to find the root cause takes time (Datnow & Park, 2014), but at Sunshine Elementary, the lack of time limited their ability to do this.

**Lack of Professional Development & Other Supports**

One of the ideas underlying the lack of time and the ability for the teachers to effectively use data on their own is the lack of professional development and others supports. These are needed for the teachers to have the capacity to use data themselves, and as Annie mentioned above, with data training, the 30-minute data chat time could be used more efficiently. Sago’s District MTSS Implementation Guide states that the school-based leadership team “facilitates professional development (PD) and coaching for all staff members (relative to their job roles and responsibilities) on: assessments and data sources used to inform decisions, data literacy and data-based problem-solving, multi-tiered instruction and intervention.” But there still seemed to be a lack of professional development opportunities when I spoke with Annie, Melissa, and Sofia.
When Annie was telling me about how important it is to fully understand your standards to use data, I asked her if there were any trainings for teachers on how to make that connection. She said

I think that there's stuff out there, I just don't know how well it's connected to the data piece. There are coaches that will go out, but not all the schools receive the same level of coach support. And there's only so many coaches and there's only so much curriculum time, and I don't know if there is as much emphasis on using data with curriculum, married as well. Because I still see the curriculum as a weakness for teachers, especially when things are scripted.

So though there are trainings on understanding your standards the connection between the standards and data were missing. Annie also discussed the trainings that she does on data, but mentioned that it is hard to get the people that really need the training to attend since her work is optional.

You get that same group of teachers that are like, the rock stars coming to the training, and you never get the teachers who are the ones dragging down the PLCs because they don't know it, and they don't know it because they don't go to the PD. So, it then just ends up dragging the whole thing down, and it slows everything down. It would really be nice if there was set of really good training, it's gotta be done by a good trainer that's not gonna just waste that time, that really goes over the different ways of pulling data, the different ways of examining the data, the timelines of when you look at it.

At the school level, I asked Melissa about the trainings that she has gotten as an MTSS coach. Her response was
Um this is the book. But it's so hard when you have a data coach guide book. For my position, the best thing that you could do for us is to have one pathway and say for this year, I'm gonna take MTSS coaches under my wings and I'm gonna teach them about the PBIS website, where to get stuff, how to take the coursing. I'm gonna follow up with maybe web coaching or phone call coaching. And walk us through the first year of what are the processes, where are you heading, where can I get you.

I followed up by asking her what supports she wished she had gotten, and she replied “PBIS training. Structured training.” I asked if she just wanted training on behavior, and she said And academics. Both sides of the house. Because we have all these PBIS forms, and part of the indicators is “has your team been classically trained?” or something like that. Guess what? No. So I felt like for me, I was kind of thrown into that website and that learning. It's like I'm trying to hold up the school, hold up the teachers, hold up the PSWs. It would have been so much easier if somebody would have pulled me in and I got the proper, maybe a three-day training, on what that should look like and get some ideas prior to school starting. Prior to pre-school. I would even put some time in-between there so those people that were training could think about the training and prepare for that beginning school year.

Melissa continued talking about how she felt ill prepared when she took on this role, wishing she had been given a training to feel more confident before school started. Because of my professional role, I asked her as an aside if she knew about our project’s professional learning platform that had different training modules around MTSS concepts like problem solving and intervention fidelity. She responded
No, nobody's told me anything about a course. I would love to take a course. You give me a web course, I'm your girl. But that's what I'm saying, that right there would have made my life so much easier. And better prepared to help these guys.

When I got to the teacher level, Sofia remarked that she had never been trained to use data, aside from the data chats with Melissa.

We don't really have, or based on my experience, we haven't really had any trainings when it comes to data. Just what we do with Melissa. The county does a lot of different training especially for brand-new teachers that are newly-hired teachers. I haven't gone to anything related to data. And it's not in my plans. So, they don't even offer that that I know of.

I asked her about any other trainings for either MTSS or data use, and she replied

No, and it's funny because we have these trainings that we don't need. Like, it's just funny. There's this thing called deliberate practice plan. Well, I had to do mine within 30 days of being hired. So, I went to my principal and I said, "James, I have no idea how to ..." So he sat down with me and showed me what I needed to do, and then I went home that day and I did it at home. Done. Well, a couple of months later, I found out that at any time from my first year of teaching, I can go to a three-hour training about how to make my deliberate practice plan. I'm like, "Are you kidding me?" I already did it. I don’t need you to teach me now how to do it because I've already done it. So, it's kind of like these kind of things like, why am I not receiving a training on actually something that I really need to? It's just, it's crazy, but it is what it is.

In addition to professional development trainings specifically, Annie and Melissa talked about how they do not have enough support in general for MTSS and data use. Annie suggested
that the MTSS coaches are not able to support these efforts enough because they are pulled into several different directions.

I think the hardest part at our school levels and this is my own personal view of things. From what I see as an outsider looking in at MTSS, is I often find that the MTSS get pulled to do so many other things. So, like the MTSS that are positioned at the school site that are, their title is MTSS staff coach. I tend to find that because they don't have students that are directly connected to them, they become an accessory for the schools, an extra body to fill in lunch things or behavior issues or discipline things, and their time is taken up from being able to do the true MTSS data collection and interventions that need to be done. And then they get pulled in too many different avenues and then that's where you start to see a breakdown of some of the MTSS and then, I do feel like sometimes that the method of data collection since it is not uniform, it gets messy.

I asked Annie if she is able to support teachers with following her tips for collecting and analyzing data efficiently, but she said it is hard since she is the only staff in the district doing that. "I try to do some of that, yeah. So, the time that I'm giving is very minimal. There is just one of me. Just myself."

At the school level, in our first interview, Melissa suggested that she gets all of the supports that she needs from her schools.

Anything I've ever wanted. Whatever I've needed, I've gotten. I can't name one thing that I have asked for that I haven't received. If it's time, I get time. If it's resources, I get the resources. If it's an idea, I get encouragement.
Despite this support from her school leaders, being the only MTSS coach at the school left her feeling spread thin. When I asked her about a specific student she was using data with, she replied

We are problem solving him, I guess. I don't know, maybe I should be making it a little bit more formal. But again, it's a new way of work. I'm going down this road of trying to find out what's the best way to make that happen, because right now it's hard for me to problem solve that process for 500 kids.

When I asked Melissa specifically about district supports, she named Annie.

I typically go to Annie for everything I need. AAR-wise, that's the person. There's another person I know that's an assistant principal that I go to because I value her input. She's very, very thorough when it comes to data and processes and things like that. And she's showed me time and she's got good judgment and makes good calls. So those are the two people that I'm going back and forth. It may not be perfect but that's what I got.

That's it.

Regarding MTSS support, she explained that they only see their district MTSS specialist twice a year, and that her specialist, Marie, is stretched too thin as well.

Marie’s lovely. But she's so busy because she's got 3,000 million schools and a million responsibilities. And she's out there fighting the good fight, see how you can change the world and the district. So it's hard. Sometimes, she would answer me in a heartbeat about the issue. It's me going, “girl, just go change the world and I'll just hold it down until we can get this straight.”

When our last conversation wrapped up, Melissa reiterated that because of my professional role, and given this study on her school, she would love any input or support that I could pass along.
Any like support, help, or ideas would be good for us across the lines. Because I'm a loner. That's why Annie comes down here, because she's like-"I know you'll appreciate and run with it." And I'm like, "Yeah, pretty much." So, any of that type of good stuff. Because this is a lofty job that we have to do, and there's a lot to it. And so...I've told Bailey, if I'm struggling, there's a problem. Because, I'll do the work. 24/7 I'll do the work. And so I'm telling you, I'm struggling in there. I'm just being honest. So I know that if I'm struggling, there's other people struggling. 'Cause this is not just a 9:00 to 5:00 to me, this is a 24/7, seven day a week.

At the district level, Annie and Marie talked specifically about a lack of follow-through supports for MTSS and data use. Annie discussed how she does not feel data gets used well to determine the effectiveness of interventions, explaining

And that's kind of the one thing I've seen with MTSS is there is the initial push of, “hey, here is this particular research-based strategy that we're going to put in place for these kids and we're just going to apply it to any kid at that tier level and we're just going to go through the motions with it,” but we don't really have a way of tracking and making sure is this actually an effective strategy to be with this particular student and is it working to the best ability and if it's not, moving them off of it and moving to something else. Because she feels like the interventions are not being based in specific data for the individual students and there are not follow-up supports to monitor and evaluation the progress, she thinks Sago’s MTSS is not functioning as it should. She continued

And that to me, I think is probably the hardest part that I see of MTSS, that I always think could be better in that aspect is making sure that it's actually working. Like the follow-up because I see them a lot of times just get bogged down by, “okay, we're just going
through the motions. I meet with you. We do this probe. I record, you know, some of them,” I don't even know how they record some of it. Everybody did it on a piece of paper. And then, nobody really looks inside and says, “hey, that's not working. The kid's going down.”

Marie agrees, attributing this to a lack of a well-functioning MTSS at the district level.

I think the biggest change that we would get the most bang for our buck for would be to have true MTSS functioning at the district level. I don't think that the district walks the walk. We expect schools to sit down and problem solve, but to the district, we are not using those big processes that we expect schools to use. I think for a real change to occur, it needs to be bought into from up top, and it's not right now. We're very reactive…sort of flinging spaghetti at the wall hoping it will work to stick. And sometimes things work great and that's fine, but I don't think... it's not done in the systematic way.

There is a need for more professional development on data use broadly (Conrad & Eller, 2003; Datnow & Hubbard, 2015; Jacobs et al., 2009; Honig & Venkateswaran, 2012; Wayman et al., 2012), as well as specifically connecting instructional strategies to data use (Goertz et al., 2009; Jimerson & Wayman, 2015; Mandinach & Gummer, 2013c). At Sago and Sunshine, there is a lack of both, with the teachers reporting no professional development for data use, and Annie saying what is offered is not connected well enough to instructional practices. Outside of formal trainings, coaching is a type of professional development support for data literacy as well (Lockwood et al., 2010), but to be effective, it would need to include support for making instructional changes through expert feedback (Carlisle & Berebitsky, 2011; Coburn & Woulfin, 2012; Lachat & Smith, 2005; Kruse & Zimmerman, 2012; Means et al., 2009).
Sunshine has an MTSS coach, but it was unclear if they were following a coaching model of supports. Melissa herself thought she needed more training to feel like she knew what to do, leaving her without the ability to give the expert feedback needed for coaching to help. She did say she is trying to get to the point where they can discuss instructional strategies, but they are not there yet as a school. These lack of supports, including the need for professional development and for staff to not be spread so thin, combine with the time limitations and barriers against teachers having an active role in the data use process to limit teachers’ ability to make data-informed decisions. They still manage to do some surface level work based on data, such as grouping students and focusing on supporting students near the cusp of FSA proficiency, but they are not yet at the full capacity that their school and district leaders would like to eventually achieve.

Summary of the Themes

In this chapter, I aimed to be transparent about my analytic process to create the final three themes of MTSS and Data Use are Complicated, MTSS and Data Use Require Mindset Shifts, and Educators are Limited in Making Data-Informed Decisions. In exploring each theme, I provided thoughts on my interpretation of the theme in addition to supporting statements from the participants. Using data and implementing a multi-tiered system of supports are not straightforward processes, but are instead complicated by different understandings of data, the purpose of MTSS and data use for MTSS, and by varying contexts surrounding schools and data. Both initiatives also require certain personal factors, such as having school staff buy-in to the importance of using data to support all students, as well as using data in a non-punitive way and moving the focus to what is within teacher’s control. Lastly, educators are limited in actually
using data to transform their instruction in several way, including a lack of teacher agency to make decisions, time limitations, and a lack of professional development and other supports for data use within an MTSS. In the next chapter, I will conclude this study with a discussion of how these themes inform my research questions, as well as explore the limitations and potential implications of the study.
CHAPTER SIX:
DISCUSSION

Through this study, I sought to explore how educators working within a multi-tiered system of supports framework make sense of data, and how data are used to support changes in instructional practices. The sensemaking about student outcomes model (Bertrand & Marsh, 2015), data literacy for teaching framework (Mandianch & Gummer, 2016c), and the data use cultures framework (Firestone & Gonzalez, 2007) guided the development of this case study. I relied on interviews, observations, document review, and my own research journal to inform my analysis. As discussed in the last chapter, I created three main themes to represent my findings—MTSS and Data Use is Complicated, MTSS and Data Use Requires Mindset Shifts, and Educators are Limited in Making Data-Informed Decisions. In this chapter, I connect these findings to my theoretical framework and the existing body of literature on educator data use to answer my research questions. I also explore limitations and implications of this study, as well as areas for future research.

**How do educators working within a multi-tiered system of supports framework make sense of data?**

Data use is complex and inherently interpretive (Coburn & Turner, 2012; Farrell & Marsh, 2016b, Garner, 2018; Horn et al., 2015), relying on people with their own sets of preconceived notions and influenced by a variety of outside forces to determine what data mean,
and then figure out how to use this new knowledge. Previous studies have discussed how data can mean different things to different people (Coburn, 2010; Farrell & Marsh, 2016b; Honig & Ikemoto, 2008; Jimerson, 2014; Mandinach, 2012; Spillane & Miele, 2007), sometimes varying by role as well (Schildkamp & Kuiper, 2010). To examine how educators come to these understandings of data, Bertrand and Marsh (2015) theorized that educators use their past experiences and beliefs, along with the data, other information, and their attributions about the cause of the results, to make sense of student outcomes. For this study, I specifically focused on the beliefs and attributions to understand how educators were coming to make meaning from their data. At Sunshine Elementary School, educators relied upon their personal beliefs and attributions, as well as their school and district guidance and the context of the data to make sense of their data.

Bertrand and Marsh (2015) described four mental models for how educators make sense of student learning data, focused on the attribution part of their sensemaking model. These include them attributing the results to their own instructional practices, to how well the students understood their instruction, to the nature of the assessments, or to inherent student abilities and attributes. As discussed in the second theme, MTSS and Data Use Require Mindset Shifts, the district was encouraging their school level educators to move away from the last model, where they thought schools were blaming students and parents (e.g., parents do not participate, students do not do homework). School level leadership at Sunshine Elementary seemed to agree with this shift, and expressed that they wanted to use multiple sources of data to ensure that their decisions were not based on assumptions about the students. Melissa specifically spoke about how she wanted to ensure that they were not jumping the gun on referring students for ESE services when
it could just be the classroom they are in, making the connection to the instructional practices of individual teachers.

The school context for teachers reviewing and understanding data was in the form of grade-level Professional Learning Communities (PLCs), where all of the teachers from a grade would get together three times a year in a data chat to review interim assessment data with their MTSS coach. As shared in Chapter Four, this process shaped how the teachers thought they should understand data, with both Sofia and Zoe saying the only supports they were given around using data came from these data chats, and that they used the data identified in the chat because it is what the school and district want them to use. The data chats focused on which standards students missed on their interim assessments, and then using this to determine which students needed to be put in a smaller group to be retaught the material. This more closely aligns with the second mental model, where the educators are attributing the low student scores to students not understanding their instruction.

When talking about their data in interviews, Sofía and Zoe also made remarks about how low results could be because of a bad test question, or because the student was possibly distracted. This connects to the third and fourth mental models where either the test is poorly designed, or there is something about the student that caused the low results. So at the teacher level, they relied on three of the four mental models outlined by Bertrand and Marsh (2015), but did not get to the point of examining their own instructional practices as they were making sense of the data. The school leaders, along with the district support staff and guiding documents, indicated that they want to move toward using data for instructional improvement, but in practice, they are not quite there yet.
The four mental models developed by Bertrand and Marsh (2015) reflect the types of attributions that the educators at Sunshine used for coming to understand data, and their own beliefs and past experiences with data were important as well. But there are additional components, such as the context surrounding data use, that are not captured in their existing model. The context at the individual school, the level of the school, and the district influenced how teachers made sense of data.

At the individual school level, the principal’s beliefs about the purpose of MTSS and data use for MTSS influenced the structure of the data reviews themselves. Here, his thoughts that MTSS is for all students and that this is accomplished by identifying lower performing students for additional supports were enacted by having all teachers participate in the data chats with a focus on identifying learning gaps. Zoe and Sofia heavily relied on the structures provided in the data chats for coming to understand the data and the purpose of using data at Sunshine Elementary. Additionally, Marie and Annie indicated that in Sago, elementary schools did a better job of using data for MTSS due to beliefs around who MTSS is for, and the classroom logistics of an elementary classroom versus those in secondary schools. Teachers with the same types of attributions and beliefs about data, but situated in a middle or high school, would likely show very different types of understandings around data and how it should be used.

The context at the district level also shaped how teachers made sense of data. As discussed by Melissa in Chapter Five, the district set the expectation that all schools would start reviewing data regularly, putting the current model of data use at Sunshine in motion. They also determined the base type of data that was used in the reviews. The type of data—interim assessments aligned with FSA proficiency—led the teachers to make sense of data in terms of passing the FSA. The way teachers made sense of data influenced how it was ultimately used at
Sunshine Elementary, as is discussed in the next section. The prevailing data use cultures at the school and district also shaped instructional decisions, and is discussed with the third research question.

**How do these educators use data for instructional decision-making?**

Data use is a situated phenomenon (Coburn & Turner, 2012), and how educators make sense of data and their beliefs about data influence of data get used (Coburn & Turner, 2011; Hoogland et al., 2016; Mandinach et al., 2015). To capture the process that educators go through when using data, along with the knowledges that influence this use, Mandinach and Gummer created the data literacy for teachers framework (2016c). This framework suggests that educators first identify problems, gather and review data, make sense of the data by transforming data into information, use this information to make a decision, and then eventually evaluate their outcomes.

At Sunshine Elementary, the first step of identifying problems was not done at the teacher level, but at either the district or school leadership level. The district determined the problems (i.e., equity, passing the FSA), as well as what data needed to be reviewed and the structure for the reviews. This shaped how often the school level teams met—the district interim assessment was given three times a year, so the school level PLCs had data chats three times a year following the assessments. The MTSS coach decided how the teams would review data, from how she presented the data to guiding the conversation around how they should use the data. As mentioned in the first theme, for the data chats at Sunshine Elementary, this often meant filtering scores from low to high on specific standards, and then grouping students into groups for reteaching.
The teachers themselves made meaning of the data as discussed in the first research question. Making decisions based on the data was a combination of individual and collaborative for the teachers. In the data chats, Melissa’s suggestions for grouping students shaped how the teachers decided to use the data to form groups of students that were doing well on that standard, and those that needed extra supports. The materials she provided also led them to these decisions, and the teachers were grateful for her help. Because they were not attributing the data to their instruction, but instead of either the students’ lack of understanding, the test, or student attributes, they were less likely to use data to transform their instruction beyond reteaching (Hoogland et al., 2016). Attributions like this limit what teachers consider when determining their response to data, often reinforcing stereotypes and low expectations (Bertrand & Marsh, 2015; Datnow & Park, 2018). This then becomes an issue of equity as marginalized students, such as Black students and students with disabilities, are often faced with low expectations (Cook et al., 2000) due to deficit attributions (Elliot, 2013; Orosco & Klingner, 2010; Thorius et al., 2014).

As discussed in the second theme, Zoe used the data to reteach content to small groups of students when time permitted. She also would monitor student scores to determine who she thought needed ESE services. Sofia used data in similar ways, though she was more actively involved in identifying supports for students by using additional tests to identify the root cause of the issue. Through this process, she touched on the last step of the cycle, evaluating outcomes. She did this specifically when she explained how she was not seeing the results she expected for one of her students that was receiving English language supports, so she used additional tests to figure out that comprehension, not English, was not his issue. Mandinach and Gummer used their framework to create a list of nine knowledges, processes, and skills that they thought
teachers needed in order to be data literate. Though the educators at Sunshine followed a modified version of the data literacy for teaching framework, they only met some of these competencies. They did work in data teams to examine data, use multiple sources of data, look for causes of low performance that can be remediated, and differentiate instruction. The last two were done through their grouping to reteach strategies, and the first two were determined by the district and school guidance. But, other competencies, such as focusing on all children and not just the “bubble kids, or modifying instructional practice based on the data were less prevalent in the practices at Sunshine Elementary. Such a narrow focus on students near proficiency and in grouping students into “low” and “high” groups can actually lead to inequity (Booher-Jennings, 2005; Datnow & Park, 2015).

What educators believed data could tell them also influenced how the data were used. The first theme detailed how Zoe and Sofia both had concerns about data not being a complete picture of their students, and expressed that they knew their students and their needs with or without data. Zoe seemed to not want to use data beyond identifying students for ESE supports, though it was more complicated for Sofia who still relied on data to pinpoint the needs of her students. Additionally, they both thought the purpose of using data was to support students that were projected to not do well on the end-of-year summative state test, the FSA. This is not surprising as increasing the percentage of students proficient on the FSA is a main goal of the district. This influenced the data that were selected (i.e., interim assessments that provide a projected proficiency on the FSA), and how the data were used by the schools to group students and reteach standards that students might fail on the FSA. Zoe specifically discussed how she liked to focus on the students on the cusp of proficiency as she could more easily move them into proficiency, and that she felt students with lower projections were likely already receiving ESE
supports. As discussed in the first theme, this is the type of situation that Datnow and Park (2015) describe when talking about how data use can cause inequity. Here, Zoe is not focusing on her students with lower or higher scores because she assumes the former are getting supports already, and that the latter are fine.

Datnow and Park (2018) explain that data can be used to challenge these types of assumptions and for educators to connect student outcomes to their instructional practices, but that it requires more than instituting the practice of data reviews to make that happen. “We cannot simply promote data use and expect good things to happen.” (p. 135). Instead, they say those implementing data use for equity must focus on underlying beliefs and principles of data use. In their 2015 article, they list five key principles of data use for equity: 1) Articulate your purpose and commitment to equity, 2) Don’t rush, 3) Use caution, 4) Focus on student engagement, and 5) Use professional judgment.

The first three principles tie into major findings of this study. Even though the district and school leaders knew that equity as a focus area for the 2019-2020 school year, there was no discussion around data use for equity in the data chats or in the teacher interviews. It was unclear if there had been a clearly articulated purpose for the data reviews since the teachers had a different understanding of the purpose of data use from their school and district leaders. When equity has been communicated as a focus of data use, you would see conversations around “organizational conditions that support or hinder student performance” (Datnow & Park, 2015, p. 50), but these were absent from the data chats at Sunshine Elementary, with their conversations focusing on labeling student achievement and then grouping students.

The lack of time expressed by the educators at Sunshine also led them to rush through the data reviews. In this principle, Datnow and Park (2015) acknowledge that data need to be timely,
but that rushing through the review and only focusing on surface level strengths and weaknesses means that the root causes of student outcome patterns are left unexamined. Getting at root causes takes time since it requires looking at multiple sources of data or possibly collecting additional data, but it is critical for making sure that instructional decisions are aligned with the true needs of the students (Datnow & Park, 2015). This was seen at Sunshine where there was no engagement in the data chats with other sources of data, and the instructional responses were the same for all students not meeting proficiency on standards, regardless of which classroom they were in. They were pulled into a small group and retaught the standards, even though that may not best address their needs.

In their third principle of data use for equity, Datnow and Park (2015) say that caution is needed when using data. Here, they are talking about data use for tracking versus for flexible grouping in a classroom. They state that ability grouping has been on the rise since the early 2000s with the rise of high-stakes testing accountability, and that often schools fall into using benchmark data inappropriately to track students. Instead, they say caution should be used when grouping students based on data, with the understanding that the groups should be flexible and change frequently based on student needs. It appeared like Sunshine was somewhere in the middle of these two practices. They did not describe tracking students and Melissa did encourage frequent regrouping of students based on individual standards, but both Sofia and Zoe had concerns about changing groups often. Ultimately, the teachers were faced with the tension between instructional practices that maximize FSA scores, and those that would lead to improved instructional outcomes for all students. The overriding data use cultures created this tension, and are explored more below.
How do data use cultures at the district and school levels shape how data are understood and used?

As already discussed, data use is influenced by educators’ own beliefs and attributions, as well as the context surrounding the data use. To further examine the data use cultures, I looked to Firestone and Gonzalez’s (2007) data use cultures framework. Here, they outlined five different dimensions between two cultures—accountability and organizational learning. Accountability culture is primarily concerned with compliance and student test scores, where organizational learning is focused on improving instruction so that all students can learn. Under an accountability culture, they theorize that the focus on students would be around their test scores, and the focus on teachers is for compliance. Data would be used to identify problems and monitor compliance, with short-sighted timeframes to use data. The data use would exclude teacher and principals voice, with decisions coming from the district level. The ultimate goal in this situation is for students to pass a test, and then for the test data to be used to hold teachers, school leaders, and the district accountable on standardized indicators of success.

In their second culture around organizational learning, the focus on students is for their learning, and the focus on teachers is for helping them improve their instruction. Data is used to not just identify problems, but to also diagnose and correct them. The time frame for data is longer because it is focused on systemic changes, and this process includes teachers and principals. Often, data are reviewed in PLCs with administrator involvement to ensure a common understanding. The goal in this situation is to maximize student learning and allow for teachers to reflect on their own practices.

Often, educators are faced with the competing demands of accountability and instructional improvement (Datnow & Park, 2018; Gannon-Slater et al., 2017; Lai &
Schildkamp, 2016), though some studies indicate that the overarching data use culture of the district and school can influence if data are used for monitoring and compliance or for reflection on practice (Datnow et al., 2012; Diamond & Spillane, 2004; Nelson et al., 2012). Datnow and Park (2018) describe the overarching tensions between accountability and organizational learning cultures on educators trying to use data for equity. These include tensions between data meetings and data use for compliance or for continuous improvement, reviewing standardized assessment data only or including multiple types of data, focusing on narrow groups of students or on all students, using data to confirm or challenge assumptions, and using data for tracking or flexible grouping.

Given the state-mandated accountability measures facing all Florida districts, such as school grades based on the end-of-year assessment, it makes sense that Sago District and Sunshine Elementary faced this tension, meeting criteria within both cultures. Based on my conversations with both school and district leadership detailed in Chapter Four, it was clear that there was a desire to create a data use culture that is more in line with organizational learning. In this culture, they would be focused on identifying students’ needs and providing appropriate supports so that all students can meet their learning goals. The leaders at both levels acknowledged that these were longer term shifts that would take time to achieve. The district provided guidance to the schools to start reviewing data, and the leaders at Sunshine accomplished this through grade-level PLCs, allowing for teacher voice in the data review process. But, the selection of the data was determined by the district, not the school leaders or teachers. They did not have an active role in the first parts of the data use process—identifying the problems and selecting which data source(s) to use (Mandinach & Gummer, 2016c).
And though there was a desire for longer term goals, the ones that were actually focused on in practice were more short-sighted. These goals were around raising the test scores of their lower performing students for the FSA. The format of the data chats only happening after the interim assessment cycles to figure out how to raise expected scores highlighted this. For educator focus, James exemplified both cultures when he described using data to monitor his teachers. Here, he was using it for compliance with the initiatives of the school (e.g., length of time teachers used a school-adopted intervention program), but also for identifying the strengths of his teachers. He used the data to build upon their strengths and create teams of teachers that could help each other improve their instruction. This straddling of both cultures by James is indicative of how both Sunshine Elementary and Sago District were dealing with the competing demands to be accountable to the state using FSA data, but to also use data for instructional improvement and organization learning.

Gannon-Slater and colleagues (2017) saw similar struggles in their case schools. These schools functioned under a Response to Intervention framework and had mandated PLCs for data reviews, just like the schools in Sago. The district also had a goal of supporting equitable outcomes for their Black students. But, they found that the overarching accountability culture undermined their schools’ efforts to use data for equity. Instead of reflecting on their practices and gaps in learning opportunities, they focused on the technical aspects of what worked for raising test scores. Their schools also did not review subgroup data, and the only grouping of students was into “red, yellow, and green” levels. This is also similar to Sunshine Elementary where they grouped students into low and high groups, and did not review data around subgroups. As a district, Sago would need to consider how they are shaping the purpose of
reviewing data and the types of data considered if they want to allow for equitable outcomes to be considered more systematically in their schools.

Limitations and Reflections

This study was limited in several ways. In selecting a case study methodology, my intention was to examine the case fully and deeply in order to generate rich insights about data use in Sunshine Elementary and Sago District (Creswell, 2013; Gerring, 2006; Patton, 2002; Stake, 1995). Ideally, I would have liked to interview the other two teachers that were part of the third-grade data chats to deepen my understanding of how the data chats influenced their understanding of data. These extra voices could have provided a more multifaceted view, but this was limited by only two of the four teachers wanting to participate in interviews. Additionally, two of my participants (Zoe and James) did not want to do the follow-up interviews. I found myself frustrated as I was reviewing the transcripts from those two interviews. I would think of additional questions that I wanted to ask to get a better understanding, but was unable to since there was not a second interview, so I was left feeling less certain about my interpretations. James did participate in the member checking later which helped mitigate some of my uneasiness, but Zoe did not.

My last in-person interviews were on March 11th, 2020. At those interviews, we had made plans to follow-up with more observations in two weeks after Sago’s spring break. I also had initial interviews and observations to start after the spring break with my district level participants. But starting that next week, Sago and all of the other school districts in Florida locked down due to the Covid-19 pandemic. I reached back out to my participants after their spring break, and completely understood when two of my district participants decided to drop
out of the study. The district level observations I was intending to do were also canceled, with no back up plans to be able to gather that type of data. So, I was left with my two district level participants and no observations, which meant my understanding of the district data use culture was limited.

Equity became a recurring topic as I started creating the narrative profiles for Sago District and Sunshine Elementary, and continued throughout the analysis process. This study was limited in its discussion around equity though as it was not intentionally a focus of this study when I designed it. I did not ask any questions in my semi-structured interview guides explicitly about using data for equity, and did not search out information about how the equitable aims of the district had been communicated to the school leaders, and from the school leaders to their staff. Going through the analysis, I wish I had that information to better inform my interpretations.

Reflecting on this study and my process of making sense of and using my own dissertation data, I can relate to my themes. First, much as the various contexts surrounding the teachers at Sunshine Elementary influenced how they made sense of and used data, my personal contexts greatly shaped how I made sense of and created my findings. I learned that it is very difficult to complete your dissertation research in the shadows of grief, chronic health issues, and a global pandemic. These things challenged me emotionally, mentally, and physically in ways I could not have imagined when I was proposing this study. Even now, lingering brain fog is leaving me unsure if this study is good enough, or if I have been able to fully express my thoughts in this manuscript. Does what I wrote even make sense? I have always tried to conceptualize my body as separate from myself because I am seemingly always at war with my body, but all of these experiences hit home how truly embodied research is. I can claim that I am
the research instrument in qualitative research and refer to my analytic mind, but this was a process that included my emotional and physical states as well. When and how I was able to collect, analyze, and interpret my data was shaped by these contexts.

Data use also requires mindset shifts, and though I am not talking about the same beliefs of the teachers at Sunshine Elementary, my beliefs about myself and how research should be done came to light in this process. Research is more deeply iterative than I had previously known. I tend to like following a clear and logical procedure when working so that I feel like I am doing the right thing. And while following Braun and Clarke’s (2006) guidance for reflexive thematic analysis helped, the nature of qualitative research is messy. Though I consider myself a qualitative researcher, the messiness still makes me feel uneasy at times. I worry that I am way off track, which is sometimes paralyzing, or at least anxiety producing. I had to really fight with the belief that I was doing something wrong, or missing some crucial step in order to get through the analysis in this study as I iteratively went through data, to coding, to theming, and back to data again and again.

I also related to the educators’ lack of time expressed in the final theme. I feel odd even saying that as I have had eight years to complete my doctoral studies, with four and a half years of that time coming after I had passed my qualifying exam and had reached candidacy. But going back to the point of context mattering, those years did not seem like enough when I look back at everything I was trying to accomplish during that time. That is not to say that I did not try my best to be thorough in making sense of my data and presenting it as clearly as possible, but I definitely felt the pressure of time beating down my neck throughout the analysis process, all the more so in the months that I was left unable to engage with my data due to various health issues.
When I was reflecting on my participants and the case in Chapter Four, I also had to deal with some ethical uneasiness that I felt in completing this study. Much like I cannot separate my mind from my body, I cannot separate my professional role from my student one. When those intersected around Marie, I was unsure how to move forward, and was really worried that my job had messed up my student data collection. Talking with both my major professor and my boss helped ease these concerns, but the weight was not fully lifted until I was able to reconnect with Marie and center our interactions around the study.

**Implications**

Ultimately, the findings of this study are most directly applicable to the educators in Sago District. Though this study was not designed to be generalized, some of the findings echo those of other studies that are established in the literature. Given this and in light of the context provided in the study, these implications can be considered by other practitioners and those that build the capacity of educators to use data effectively. First, it is important to ensure a common understanding of the purpose of these initiatives when trying to implement them. As discussed in this study, different understandings of the purpose of data use for MTSS facilitated different uses of the data at Sunshine Elementary (e.g., data for grouping, data for instructional improvement). Additionally, the first key practice of data use for equity (Datnow & Park, 2015) is to explicitly articulate that the purpose of data use is for equity. For MTSS, this would mean making sure that everyone, from teachers to district leaders, know that MTSS is a way to ensure that all students are getting the supports they need to do well academically and behaviorally. With data use, it would help if district guidance around data was clear about the purpose, whether it is simply for
improving test scores, or if it is about instructional improvement. Ensuring the alignment of the district supports and expectations with the stated purpose would be important as well.

Along with clearly establishing the purpose of data use, district and school leaders should also be clear if data are being used punitively or not. At Sunshine Elementary, the initial reaction that the data chats would involve a punitive use of data resulted in Melissa describing the first year of the data chats as “horrible” because there was so much fear around looking at individual-level data. Punitive data use is more in line with accountability cultures (Datnow & Park, 2018; Firestone & Gonzalez, 2007; Gannon-Slater et al., 2007), and was harmful in Sunshine Elementary’s first year of trying to build a data use culture for organizational learning. When teachers are afraid that the data will be used against them as a “gotcha”, they become less likely to want to engage with it, thereby limiting the usefulness of data for instructional improvement (Mandinach et al., 2015).

Time was indicated by the participants in this study as a limiting factor in teachers using data well and being able to make the leap to instructional changes. It takes time to use data well (Mandinach, 2012), especially when using data use for equity (Datnow & Park, 2015). Because of this, practitioners that are developing these initiatives, whether at the district or school level, should ensure that enough time is set aside specifically for the purpose of using data. This should include adequate time to not just review the data, but to also reflect on their practices, make the connections to the curriculum and develop plans to modify instruction.

Lastly, a lack of human capacity is an issue in building data literacy (e.g. Choppin, 2002; Datnow, Park, & Wohlstetter, 2007; Feldman & Tung, 2001; Herman & Gribbons, 2001; Kerr et al., 2006; Mandinach, 2009a; Miller, 2009; Young, 2006). Other researchers have identified that there is a need for professional development on data use broadly (Conrad & Eller, 2003; Datnow
& Hubbard, 2015; Jacobs et al., 2009; Honig & Venkateswaran, 2012; Wayman et al., 2012), as well as specifically on the connection between data use and instructional strategies (Goertz et al., 2009; Jimerson & Wayman, 2015; Mandinach & Gummer, 2013c), and this study adds to the call for more professional development and supports for educators using data. At all levels, the educators in this study indicated a desire for more trainings or coaching around data use. These supports could encompass the first two implications—providing a learning scenario where those providing the supports could ensure a common purpose and make it clear that this is not about punishing teachers.

**Future Research**

Future research is needed in several areas. First, this type of study is not meant to generalize findings, but instead to deeply understand an exemplar case of a phenomenon. This meant that I was looking to gain an in-depth understanding of one elementary school that was identified as using data well, within one school district that was identified as implementing a multi-tiered system of supports. It would be inappropriate to generalize these findings to other situations. Future research could employ different methodologies, such as surveys or series of interviews and observations across several schools and districts to examine educator data use more broadly. Other studies could also explore a case study more longitudinally to see how data use cultures develop and evolve.

Additionally, this study was situated within an MTSS framework, but did not include an examination of data use specifically within the problem-solving process for small groups of students or individual students at the Tier 2 and Tier 3 level. The findings from this study were around Tier 1 data use. To gain further insights into how educators use data within an MTSS at
those levels, other research studies specifically focused on those types of data use would be needed.

As mentioned as a limitation, this study did not intentionally focus on equity. Further research is needed to explore how data use for equity is situated within the context of an MTSS framework, and how equity can happen within our prevalent accountability culture. Also, this study adds to the calls of many researches that there is a need for more professional development and support for educators to use data well. But, further research is needed into how this can be realistically accomplished in our school districts.

Summary

Collecting and using data is a non-negotiable practice in schools (Coburn & Turner, 2011, 2012; Hamilton et al., 2009; Ikemoto & Marsh, 2007; Mandinach, 2012; Mandinach & Gummer, 2013c; Spillane, 2012), with the underlying assumption that data use will inform decision-making and transform practice (Mandianch & Gummer, 2013b). But, data use is complex (Coburn & Turner, 2012; Farrell & Marsh, 2016b, Garner, 2018; Horn et al., 2015), and often data use initiatives have limited results (Booher-Jennings, 2005; Carlson et al., 2011; Crocco & Costigagn, 2007; Diamond & Cooper, 2007; Heilig & Darling-Hammon, 2008; Turner & Coburn, 2012). This complexity is what drove this research as I sought to explore how educators come to understand and use data within a multi-tiered system of supports framework.

Pulling from sensemaking theories (Bertrand & Marsch, 2015), data literacy frameworks (Mandianch & Gummer, 2016c), and theories of data use cultures (Firestone & Gonzalez, 2007), I made sense of the main findings from my case study of Sunshine Elementary School and Sago District. Educator beliefs and attributions, along with the school and district guidance, shape how
educators make sense of data. At Sunshine Elementary, teachers were not yet ready to reflect on their own instructional practices, but instead focused on how student understanding, student attributions, or the test itself impacted student outcomes. This led to data use that was focused on grouping students according to projected FSA proficiency so they could be retaught concepts they missed. The tension between data use for accountability and for organization learning was evident in the practices at Sunshine Elementary and Sago, highlighting their desire to focus on instructional improvement, but being limited by accountability pressures.

This study expands on other work around educators’ sensemaking of data (Bertrand & Marsh, 2015; Garner, 2018), by extending into an MTSS context. It helps to inform the literature on data use within an MTSS by focusing on how educators come to understand data, and how that influences how data are used. There are several implications for practitioners and others that support data use in schools and districts, which include ensuring a common understanding of the purpose of data use and MTSS, using data in a non-punitive way, allowing enough time for data use, and providing professional development and other supports for data use. The multifaceted view of educator data use provided in this study allows practitioners and researchers to better understand and support data use efforts, with the hope that these types of targeted supports will lead to improved educator reflexivity in their practice and ultimately improved student learning.
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APPENDIX A:
SEMI-STRUCTURED INTERVIEW DISTRICT PROTOCOL #1

1. Tell me about yourself and your role in [County].

2. What does MTSS mean to you?
   a. How is MTSS reflected in your role?
   b. How do you support schools to implement MTSS?

3. What does the word ‘data’ mean to you?

4. Tell me about some of your past experiences with data and instructional decision-making.
   a. How do you support schools to use data?

5. Walk me through some data that you have recently used.
   a. Why was this data selected?
   b. What are your thoughts on this data?
   c. What did you do with it? Why?

6. Any other thoughts?

7. Please recommend any other staff I should speak to, any documents I should review, or any meetings I should attend to get a better picture of MTSS and data use in [County].
APPENDIX B:

SEMI-STRUCTURED SCHOOL INTERVIEW PROTOCOL #1

1. Tell me about yourself and your role in [County] and at [School].

2. What does MTSS mean to you?
   a. How is MTSS reflected in your role?
   b. How does the district and/or your school support MTSS implementation?

3. What does the word ‘data’ mean to you?

4. Tell me about some of your past experiences with data and instructional decision-making.
   a. How does the district and/or your school support your data use?

5. Walk me through some data that you have recently used as part of the problem-solving process.
   a. Why was this data selected?
   b. What are your thoughts on this data?
   c. What did you do with it? Why?

6. What else should I know to get a better picture of MTSS and data use in [County] and [School]?

7. Any other thoughts?
APPENDIX C:  
SEMI-STRUCTURED INTERVIEW DISTRICT PROTOCOL #2

1. Tell me about the object that you brought in. How does this represent data to you?

2. Walk me through the piece of data you brought in.
   a. Why did you select this data?
   b. What are your thoughts on this data?
   c. What did you do with it? Why?

3. What are your thoughts on these data documents?

4. Here is what I observed at your district data/MTSS/elementary principal meeting. What are your thoughts?

5. Any other thoughts?
APPENDIX D:
SEMI-STRUCTURED INTERVIEW SCHOOL PROTOCOL #2

1. Tell me about the object that you brought in. How does this represent data to you?

2. Walk me through the piece of data you brought in.
   a. Why did you select this data?
   b. What are your thoughts on this data?
   c. What did you do with it? Why?

3. What are your thoughts on these data documents?

4. Here is what I observed at your problem-solving team meetings. What are your thoughts?

5. Any other thoughts?
APPENDIX E:
SCHOOL OBSERVATION GUIDE

Date/Time: Location:
Meeting Purpose:
Participants:

<table>
<thead>
<tr>
<th>Descriptive Running Notes</th>
<th>Reflexive Running Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>What is actually happening? What data are being used and by whom? What process is being used to examine the data? What changes are being made to practice?</em></td>
<td><em>What does this reflect about how data conceptualized? How are data attributed (internal/external, enduring/transitory, control)? What power dynamics are at play?</em></td>
</tr>
</tbody>
</table>