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Technology, Trust, and the Flow of Quality Information: A Grounded Theory Study of Decision-Making Among K-12 Education Leaders in New York State

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Abstract

This qualitative study utilizing the grounded theory methodology examined the lived experiences of education leaders in New York State regarding decision-making in light of the extreme variability in the flow and quality of online information. Study findings indicated that the leaders' strong desire to avoid misinformation, combined with the strong tendency to rely on social influence exerted within local and regional peer groups, ultimately limited the amount of interaction or reliance upon online sources for decision-making. Study participants indicated they relied heavily on trusted advisors and peer groups in the same geographic area for professional advice and as a decision-making sounding board. An emerging theoretical framework, the transput lens for education leadership decision-making, was created to provide an approach to understanding ways K-12 education leaders interface with information in decision-making in the face of copious amounts of information, social influence, and both human and technological biases inherent in everyday interactions and platforms. The preliminary theory of a transput leadership paradigm illuminates the concurrency of communication inputs/outputs required of a leader making decisions in the fast-paced environment of the digital age. Recommendations included further research on the cognitive strategies of disconfirmation, and utilizing quantitative research with an expanded sample population. Further recommendations included expanding professional networks beyond the local level to increase opportunities for diversity of thought, and modeling of digital citizenship behaviors proactively for school and community stakeholders.

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Dedication

This research is dedicated with gratitude to those who supported me throughout this journey of scholarship, and those who helped me to grow my wings. Thank you to Dr. Pulos, Dr. Dotterer, and Dr. Robinson for patiently helping me to find my academic voice. Thank you to my parents for always being there to support me in my work, starting with the 4th grade spelling bee through to the completion of my doctorate well over 40 years later. Thank you to my dear friends, the Shaws, who gave me their guest room for 53 Friday nights and sent me out the door with hot coffee on 53 Saturday mornings so I could attend classes in Syracuse every other weekend in pursuit of this degree. Thank you to my daughters, Hannah and Marina, for their constant belief in me and for being loud, unwaveringly optimistic cheerleaders when I needed to hear "you got this, mom" the most.

Finally, this research is dedicated to my grandsons, Roukous and Beau, who were born while I was still a full-time student in the St. John Fisher DEXL program. I hope they will grow to know how much they truly inspire and activate me, and that they will always know the values of goodness, knowledge, truth, and discernment in the information they choose to make both big and small decisions in life.

Biographical Sketch

Melissa is the Director of Strategic Partnerships at the State Educational Technology Directors Association (SETDA), a national non-profit organization representing digital learning leaders of all U.S. states and territories.

Melissa earned a Bachelor of Science degree in Arts Management from Russell Sage College (1988) and a Master of Science in Teaching degree from SUNY Potsdam (1993). She is certificated in New York State to teach Elementary Education (N-6) and Reading (K-12). Melissa attended St. John Fisher from 2017 – 2020 as a doctoral candidate in the Ralph C. Wilson School of Education, where she worked under the tutelage of her dissertation chair, Dr. Theresa Pulos, and committee member, Dr. Cathleen Dotterer. Melissa was inducted into the Kappa Delta Pi International Honor Society in Education in June of 2018 and completed her Ed.D. in Executive Leadership in December of 2020.

Abstract

This qualitative study utilizing the grounded theory methodology examined the lived experiences of education leaders in New York State regarding decision-making in light of the extreme variability in the flow and quality of online information. Study findings indicated that the leaders' strong desire to avoid misinformation, combined with the strong tendency to rely on social influence exerted within local and regional peer groups, ultimately limited the amount of interaction or reliance upon online sources for decision-making. Study participants indicated they relied heavily on trusted advisors and peer groups in the same geographic area for professional advice and as a decision-making sounding board. An emerging theoretical framework, the transput lens for education leadership decision-making, was created to provide an approach to understanding ways K-12 education leaders interface with information in decision-making in the face of copious amounts of information, social influence, and both human and technological biases inherent in everyday interactions and platforms. The preliminary theory of a transput leadership paradigm illuminates the concurrency of communication inputs/outputs required of a leader making decisions in the fast-paced environment of the digital age. Recommendations included further research on the cognitive strategies of disconfirmation, and utilizing quantitative research with an expanded sample population. Further recommendations included expanding professional networks beyond the local level to increase opportunities for diversity of thought, and modeling of digital citizenship behaviors proactively for school and community stakeholders.

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Chapter 1: Introduction

Information is a powerful tool that can shape an individual's beliefs and decisions about important matters in society (McGrew, Breakstone, Ortega, Smith, & Wineberg, 2018). We live in a unique period in history in which abundant and instantaneously available information is accessible every moment of each day via digital technologies (Metzger, Flanagin, Markov, Grossman, & Bulger, 2015). In our 21st century society, any discussion about the topic of decision-making, particularly important decisions that affect individuals and society as a whole, must include an acknowledgement of the increasing role of information accessed through technology and the algorithms that shape and promote it (Persson & Kavathatzopuolos, 2018). The trust and flow of information creates the very foundation upon which individuals in society, including our leaders, build their decisions. If this foundation is shaky, all of their important decisions may be called into question.

Misinformation, untrustworthy sources of information, and other manipulations of information widely available on the Internet and social media can have an adverse impact on society (McGrew et al., 2018). For example, widely spread and commonly believed misinformation about medical issues like immunizations, nutrition, or pandemics (like SARS, Avian flu, or COVID-19) can influence parents to make disadvantageous medical decisions for themselves or for their children. Other well-publicized examples of manipulation of facts and information adversely impacting society exist in politics and science, influencing people's knowledge and beliefs about political candidates'

campaigns, or beliefs and persuasions about the scientific evidence of climate change (Lewandowsky et al., 2017). The importance of reliable and credible information for decision-making is that it provides the backbone of civic reasoning and intellectual well-being of society (Lewandowsky et al., 2017). If citizens are apparently unable to distinguish and evaluate the reliability of the overabundance of information online, then they will be inclined to fall prey to untruths and misleading arguments (McGrew et al., 2018). Without the backing of reliable and credible information for decision-making, all decisions can come into question.

The decision-making process has been modeled and long studied by researchers like Hoy and Miskel (2001), Kahneman (2011), Simon (1979) and Weick (1985), but there are still many unknowns about this complex behavior, especially as it relates to the educational leadership role (Johnson & Kruse, 2010). For education leaders, solving real-world problems throughout the school day requires the confluence of a specialized set of leadership knowledge, skills, and abilities that can be applied within the context of the messy, unpredictable, and often chaotic school district ecosystem (Davis & Leon, 2011). For education leaders, the stakes are high regarding many of their daily decisions. Education leaders are entrusted to shape the vision and direction of academic success in a school, to establish the conditions for effective teaching and learning, and to empower others to lead and make important educational decisions (The Wallace Foundation, 2013). To this end, it is imperative that leadership preparation programs focus on building the necessary courses and experiences to produce leaders who possess a flexible repertoire of abilities in leadership, management, decision-making, and pedagogical best

practices that support the development of quality schools (Darling-Hammond, LaPointe, Meyerson, Orr, & Cohen, 2007).

The daily decisions made by education leaders greatly impact the community. For example, decisions regarding the collection of tax dollars, the safety and welfare of students on buses during inclement weather, the safety and structure of the school building's systems and grounds, and accountability to the state for attendance, assessments, students' academic progress, and college-and-career-pathways all fall under the purview of an education leader. Decisions often involve complex issues that require a synthesis of knowledge and skills from interrelated domains or dimensions. For example, to effectively manage a racially motivated conflict among students, a building leader must be able to understand many diverse perspectives simultaneously including the legal, social, cultural, interpersonal, public relations, political, and organizational dimensions of the problem and how they intersect before deciding the best course of action for resolution (Davis & Leon, 2011). Then, the leader must be able to effectively communicate that decision, along with the rationale behind it, to stakeholders including the parents, staff, students, community leaders, and the board of education.

Many K-12 education leaders function within a decision-making environment, both personally and professionally, that is not only high-stakes and fast-paced, but integrates aspects of technology daily. These leaders make real-time decisions in a dynamic, fast-paced setting without the benefit of having full control over the amount, quality, content, or predictable delivery of the information that technology provides to them. Specifically, literature is lacking on the recent phenomenon of educational leadership's decision-making processes complicated by the free flow of the massive

amounts of unvetted digital information procured through daily interactions with search engines, the Internet, and social media.

The context for leaders' decision-making can be further complicated by the inherent trust that is placed in commonplace predictive, analytic recommendations made for humans by technology algorithms in everyday applications like Google Search, newsfeeds, Netflix, and Pandora (Cowgill & Tucker, 2019). Even more complications arise when the social influence of ratings and reviews on platforms like Yelp, Amazon, and Facebook are factored into real-time decision-making (Aral, 2014). Finally, natural human biases factor into decision-making and can be amplified by the use of technology for information and communication (Persson & Kavathatzopoulos, 2018).

Shortcuts as a Challenge to Decision-Making

The benefits of engaging with credible information include improving one's knowledge and understanding of important issues, making informed decisions, fostering assessment of varied viewpoints, and supporting creative solutions in response to societal problems (Kahne & Bowyer, 2017). Research in cognitive science showed that people experienced certain limits in their ability to process large amounts of information, adapting behavior to find a manageable balance between cognitive effort and desired outcome (Metzger & Flanagin, 2013). School leadership effectiveness has been correlated with the leader's cognitive and problem-solving abilities (Leithwood, 1995). Effective school leaders are integrative thinkers who are often called upon to function at high levels of complexity, and as a result, have a set of well-developed heuristics (Davis & Davis, 2003).

Metzger, Flanagin and Medders' (2010) studied focus group data from 109 participants on the use of shortcuts, or heuristics, in credibility judgments about information found online. The researchers found that participants utilized a series of cognitive shortcuts related to endorsement by others and self-confirmation bias. Ultimately, a theme emerged from the research showing that participants preferred using social networks, both online and offline, to help find and verify information (Metzger, Flanagin, & Medders, 2010).

Bias as a Challenge to Decision-Making

People cannot escape cognitive biases, whether unconscious or conscious. Cognitive biases can be an impediment to rational decision-making in leaders (Lewandowsky, Ecker, & Cook, 2017). People's own cognitive biases, like confirmation bias, have proven to be a challenge that individuals in society commonly face when attempting to make effective and informed decisions about important matters (Kahne & Bowyer, 2017). *Confirmation bias* is defined as an unintentional tendency to view evidence subjectively to protect one's beliefs or preconceived notions when making a decision, often leading to error (Jonas et al., 2001).

There are positive ways that information, technology, and statistics can help leaders to make better decisions, with the capabilities to provide assistance wherever humans may have weaknesses, biases, or limitations. There is also a risk, however, that technology's pervasive algorithms can filter certain information, and exacerbate or amplify human shortcomings, like different types of biases (Persson & Kavathatzopoulos, 2018).

As technology engineers and programmers continue to create models and algorithms for everyday activities like stopping hate speech online, making political advertising more transparent, or finding fair and equitable hiring and promotion practices, the human bias must first be addressed before it ends up being inadvertently replicated and programmed into the technology that utilizes it (Noble, 2018).

Cognitive psychologists have studied approaches to the decision-making process. Among them is the classical decision theory (CDT) that was developed in the first part of the 20th century attributed to a group of economists and psychologists including Ward Edwards and Herbert Simon, among others. The theory focused on the reasoning process among decision-makers who aim to use information to make choices that both achieve a desired goal while balancing their beliefs and preferences (Dastani, Hulstijn, & Van der Torre, 2003).

Key assumptions of the CDT approach include: clearly defined problems and clearly set goals, purposefully minimized (or eliminated) risk and uncertainty within the given decision-making environment, and thoughtful evaluation or ranking of identified alternatives that are available. All of these assumptions hinge on the belief that the decision-maker is believed to be rational and always acts with the best interest of the organization in mind (Dastani, Hulstijn, & Van der Torre, 2003).

The CDT has traditionally focused on components that influence cognition, for example the way heuristics and biases disrupt effective reasoning and deliberation when choosing between options (Epstein, 2012). The CDT posits that decision-making involves aligning possible options with values and that there is a strong match between decisions people make in hypothetical situations and the decisions they are likely to make

in real life situations (Epstein, 2012). A perceived flaw in the CDT approach is that decision-makers, especially school leaders, regularly are forced to operate under conditions of uncertainty and risk, rather than within an environment that has removed uncertainties or accounted for all potential risks.

Conversely, naturalistic decision-making (NDM) is based on both qualitative and quantitative observations in real-life situations about how decisions are made. The approach was developed in 1989 by Gary Klein in order to understand how people make decisions in applied settings, rather than in contrived models or artificial settings (Klein & Hoffman, 2008). Real-world contexts can be messy and may involve information that is incomplete, untrue, or unreliable, such as the flow of information online (Klein, Ross, Moon, Hoffman, & Hollnagel, 2003). Rather than analysis of alternative choices and elimination of risk, the NDM approach focuses on aspects of the decision-maker. Things within the control of the decision-maker like learned patterns, past experiences, and intuition provide a useful foundation and mental models as a means of making good decisions even in the face of a rapidly changing environment (Klein, 2015).

CDT suggests that effective communication plays an important role in de-biasing the decision-maker and uncovering fallacies and heuristics (Epstein, 2012). By contrast, NDM indicates that the decision-making process involves assimilating information and relevant data while communicating a shared and evolving picture of the situation (Epstein, 2012). Both theories of decision-making are relevant as education leaders navigate the fast-paced decision-making required in their roles, and complicated by the abundance of information that technology delivers moment to moment.

As education leaders strive to make informed decisions, the literature has shown that humans are not able to completely avoid biases in their cognitive processing and decision-making, and that it is easy for unconscious or conscious biases to distort findings in research, influence judgments, or impact decisions (Friedman, Fireworker, & Nagel, 2017).

Decision-Making and Growing Social Impact of Algorithms

Algorithms have a growing social impact (Cowgill & Tucker, 2019). An *algorithm* is a formula involving a limited sequence of actions that is performed. Algorithms can be simple or very complex, as in automated reasoning or *machine learning*, where a computer learns from data inputs, and predicts outcomes of new data (Persson & Kavathatzopoulos, 2018).

Complex and hidden algorithms play an important part in finding information while using a search engine. The Pew Internet and American Life Project (Madden, 2012) surveyed consumers to gather data on search engine use. Search engines are generally viewed as a trusted resource and an easy way to locate credible and reliable information (Noble, 2018). Survey results showed that 73% of Americans have used a search engine, with 83% of search engine users choosing Google (Madden, 2012). A site's ranking in a Google search query relies heavily on computer algorithms (Noble, 2018). Users who agree to the terms of service of the search engine consent to the algorithms' results through continued use of the platform, which is being commonly adopted in schools, colleges, and libraries (Noble, 2018). For example, Google's platform uses a complex, patented, combination of algorithms, and digital traces of past searches, Gmail, or social media sites to generate search results for users. Google's

commercial partners and advertisers are most often reflected in search results and the order of search results will very from user to user based upon these data (Noble, 2018). Google search is as much an advertising platform as it is a public information platform, with 62% of search engine users surveyed not being able to tell the difference between paid search results an unpaid search results (Madden, 2012).

While commonly used technology platforms deliver information and data to their users, these platforms simultaneously and continuously collect data from their users. An algorithm's mathematical model is applied to data (Cowgill & Tucker, 2019). The data can be combined with other types of data to attempt to predict users' behaviors, such as in *predictive analytics* or *machine learning* (Jackson, 2018). Algorithms search for patterns in data with the aim of predicting outcomes and making better decisions (Jackson, 2018). Algorithms are already commonly used in to society make the following types of decisions: criminal courts, hiring in places of business, placement of advertisements, pricing in retail markets, banking for consumer credit and lending, and the types of news and media that are consumed by people (Cowgill & Tucker, 2019). It is possible that modern technology and its embedded algorithms help to minimize instances of human bias, while simultaneously creating a new more complicated paradigm for bias with the potential to impact human decision-making on a large scale (Jackson, 2018).

Technology platforms like Pandora, Netflix, and Amazon commonly utilize *recommendation systems* to assist individuals in making decisions (Chaney, Stewart, & Engelhardt, 2018). The recommendation system forms a feedback loop, aggregating older data with new data, all of which is continuously created and recreated under the influence of the recommendation system (Chaney et al., 2018). Recommendation systems

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are used with increasing frequency and can influence how users perceive information by filtering access to media or filtering out divergent opinions entirely, creating a *filter bubble* for the user (Chaney et al., 2018). These aspects of widely used technology are capable of influencing one's cognitive processes, affecting problem solving and decision-making whether or not one is aware of it (Lewandowsky et al., 2017). Leaders use information every day to make important decisions, yet filter bubbles can potentially limit the information that one is permitted to see and interact with. Technology algorithms curate information that individuals receive and determine what they see and don't see when using everyday technologies (Fry, 2018). The implications of these invisible boundaries placed upon digital information and its users for decision-making are potentially far-reaching.

Social Influence and its Impact on Decision-Making

Skilled decision-makers contribute to an organization's success, and effective leaders are often evaluated by their decision-making skills (Johnson & Kruse, 2010). A *decision* is defined as a conscious choice between two or more alternatives (Johnson & Kruse, 2010). Education leaders are faced with continuous streams of information often in vast amounts, and are required to make important decisions regarding the successful administration of a school or district. Some of their daily decisions might include ways to improve student achievement, implement school safety and systems, parent communications, financial decisions, decisions based upon world and local events, safety threats, students' and teachers' social problems, and teacher performance, to name a few.

The 21st century Internet has brought the opinions of other people from around the world into our daily lives (Aral, 2014). Ratings, reviews, and feedback found on social

and commercial technology platforms influence the way we search for a book to read, what appliance to buy, determine which flight to book, or even which medical professional to visit (Aral, 2014). Online consumer ratings and reviews are deemed to be trustworthy by most people, according to a 2012 Nielsen report that surveyed over 28,000 Internet users from around the world (Nielsen, 2012). The survey found that among over 66% of global users, ratings and reviews were the second most trusted source of brand information. The number one trusted source of brand information was recommendations from friends and family members.

Social influence complicates decision-making due to the human instinct to think and act like those around us, compromising our individual decision-making abilities (Aral, 2014). This phenomenon is known *as herd instinct* or *social influence* (Aral, 2014). With respect to online ratings, the herd instinct can systematically bias the ratings to be higher due to a positive social influence. Muchnik, Aral, & Taylor (2013) conducted a randomized experiment with an online social news-aggregation website where users rated news articles and comments based on how much they enjoyed them. The researchers manipulated the ratings and discovered that participants' social influence bias inflated the scores by 25% and that the resulting positive social influence bias persisted for over 5 months.

It is known that education leaders rely on information from their professional and social networks to make decisions regarding inclement weather closures, professional development for teachers, products, services, service providers for their schools, and more. Education leaders have accumulated a number of unique life experiences (both in and out of school) that shape their behaviors, beliefs, values, and worldviews. Most

adults rely heavily on their own past experiences when making decisions (Davis & Leon, 2011). Nielson's (2012) finding about trusted sources of brand information suggests the social influence phenomenon may provide a challenge for leaders who seek in good faith to make informed decisions based on reliable facts and credible evidence. A leadership lens requiring critical evaluation of the inherent biases of others is clearly a factor (Seifert, 2017).

Problem Statement

The Internet has brought into 21st century society opportunities for billions of people to interact with information, participate in social networking, and to access data with unprecedented speed and on an unprecedented scale (Barth & deJong, 2017). There is currently no system for quality control, and no set of universal standards exists for posting information on the Internet (Metzger & Flanagin, 2013). The ubiquitous access to vast amounts of information challenges people to sort out on their own what is credible and accurate by relying on general personal knowledge, heuristics, social influence, or convenience (Marshall, 2013).

For education leaders functioning within a decision-making environment that integrates technology daily, factors such as algorithmically curated content, biases, and social influence are impacting information used for decision-making and it is not known to what extent (Aral, 2014). The trust and flow of information, combined with human experience and judgment, provides the foundation upon which education leaders base their decisions. Without a solid foundation, all of their important decisions could be called into question.

Another threat to education leaders' decision-making is that leaders bring to their roles significantly varying levels of awareness or preparedness to handle decision-making coupled with the implications of interfacing with technology applications. Technology amplifies the problem related to the trust and flow of information used for personal and professional decision-making (Johnson & Kruse, 2010). For example, algorithms filter and determine what content does or does not appear in news feeds and social media feeds, likely minimizing exposure to divergent thoughts or perspectives (Lewandowsky, Ecker, & Cook, 2017).

Another example is social influence bias, also known as the herd instinct, a natural human tendency characterized by lack of individual decision-making, which is multiplied exponentially by the influence of social media sharing, ratings and peer-reviews on products, professional services, and more (Aral, 2014). In this context, these natural human biases can be amplified by the use of everyday technology applications and can influence the decision-making of education leaders.

Education leaders are ultimately responsible for the health, education, safety, and welfare of the children in their school buildings and communities. The daily decisions made by education leaders regarding the collection of tax dollars, the safety and welfare of students on buses during inclement weather, the safety and structure of the school building's systems and grounds, and accountability to the state for assessments, and successful preparation for college-and-career-pathways all impact the entire community. The potential for harm to the entire school community exists when information from online sources is biased, curated, or manipulated to some extent, leading to unintentionally faulty decision-making by leadership.

The problem extends to every K-12 education leader across New York State who makes important decisions daily that impact the entire community. Given that education leaders regularly derive information from multiple sources that are impacted by either social influence or algorithms or both, and that they have little or no control over the quality, content, or delivery of this information, we need to understand how it impacts their personal and professional decision-making in real time.

Conceptual Rationale

For education leadership, effective decision-making is the result of deliberate thought followed by deliberate choices informed by truth, and the most accurate data available (Johnson & Kruse, 2010). The personal beliefs, biases, and needs that a leader brings to the decision-making process all attest to the humanness of leadership, while emphasizing the need to be self-aware and critical throughout the process (Johnson & Kruse, 2010). What is critical to understand is how the personal beliefs, biases, and world-views of those who hold social influence over the leader may come into play. Further, as education leaders commonly engage in shared decision-making within their school ecosystems, it would be beneficial to understand how leaders navigate bias and social influence as they facilitate teams and foster a collaborative organizational culture in a way that neither amplifies any existing bias nor introduces new biases (David & Leon, 2011).

While technology can assist in decision-making, interaction with technology amplifies the challenges faced by people who utilize online sources for information to make well-informed decisions about important matters. For example, social media's complex algorithms and artificial intelligence are being used to personalize information

flow as well as extrapolate data from an individual's online behavior patterns (Garrett, 2017). Google, Facebook, and Twitter have faced criticism from the public for biased algorithms that are complex and lack transparency (O'Neil, 2016). The effects of these modern issues upon decision-making in individuals and society, and in particular education leaders, have not yet been fully explored.

The grounded theory methodology is most appropriate when a phenomenon is little known and study is undertaken with the goal of uncovering new knowledge and constructing an explanatory theory about the phenomenon (Tie et al., 2019). Grounded theory is well suited to dealing with qualitative data gathered from semi-structured or unstructured interviews, as are planned for this study of K-12 education leaders. Grounded theory was the chosen methodology for collecting and analyzing the data for this study, with the aim of generating a descriptive and explanatory theory of the personal and professional decision-making process rooted in the experiences of education leaders in New York State who regularly interface with technology.

Grounded theory was an appropriate methodology for this study as there is a lack of appropriate and sufficient existing theory to explain the recent phenomenon. Further, grounded theory was an appropriate method for this study as it generated a preliminary theory that can be used as a precursor for further investigation of this phenomenon and related issues.

Statement of Purpose

The purpose of this study was to understand decision-making as experienced by education leaders who interact daily with a flow of information provided through technology platforms. Specifically, the research study sought to understand the lived

experiences of K-12 education leaders making decisions in an environment where algorithmically curated content, biases, and social influence may be impacting decision-making with or without their awareness or consent. As interactions with regional peer groups and advisors, use of technology for digital news, social media, and information searches are commonplace sources of information for education leaders, what were the lived experiences of education leaders as they navigate their own personal and professional decisions? Understanding this set of education leaders' experiences provided a contribution to the limited scholarship on this topic, and to the field of educational leadership.

Research Question

Research questions are interrogative statements that narrow the statement of purpose to specific questions (Creswell, 2002). The research question for this grounded theory study was: Given the extreme variability in the flow and quality of online information, what are the lived experiences of K-12 education leaders in New York State regarding decision-making?

Potential Significance of the Study

This study provided a contribution to the scholarly body of work related to decision-making for leadership in education. Given that the study was conducted in New York State, the requirements for leadership preparation programs were taken into consideration as they related to leaders' induction and opportunities to learn necessary skills for decision-making, effective communication with parents, staff, students, and community leaders, and for seeking diverse perspectives and alternative points of view. In New York, it is required that all leadership programs culminate in a 15-week full-time

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clinical experience that is structured to provide leadership responsibilities of increasing breadth and depth. Examining the lived experiences of education leaders in this study provided insight into the adequacy of preparation for the types of real-world decision-making that education leaders will face every day. It is valuable to examine the ways in which the requirements for accredited leadership preparation programs have or have not kept current with the realities of the role. This could impact future recommendations for program or regulation changes at the state level.

Further, this study acknowledged the intersection of leadership, technology, and decision-making as it pertained to future study of information science. The period of years spanning 2017 – 2022 provide a realistic, limited timeframe in which the study is likely to be significant due to the rapidly changing field of technology and the rapidly changing policies and laws regarding use of data and lack of transparency of algorithms on social media platforms. For example, during the timeframe of this study, there have been changes in the policies and practices for fact-checking on Twitter, Facebook, and Instagram resulting in certain posts being clearly labeled as misinformation with the intent to limit their spread.

Finally, every citizen in a democracy needs to be able to identify and utilize credible sources of information to make important personal and professional decisions. Identifying the leadership practices of education leaders who demonstrate effective decision-making behavior and demonstrate credibility provides a leadership model or may help to set standards for leaders in other fields or industries.

Definitions of Terms

For the purposes of this study, the following terms are defined:

Algorithm - the application of mathematical formulae to observed data

Cognitive bias - systematic error in judgment and decision-making common to all human beings due to cognitive limitations, motivational factors, or adaptations to natural environments (Wilke & Mata, 2012)

Confirmation bias - unintentional tendency to view evidence subjectively to protect one's beliefs or preconceived notions when making a decision, often leading to error (Jonas et al., 2001)

Decision - a conscious choice between two or more alternatives (Johnson & Kruse, 2010).

Echo chamber - occurs when most available digital media intentionally limits diverse content and presents content that conforms to the user's preexisting beliefs and biases (Lewandowsky et al., 2017)

Filter-bubble – term coined by Eli Pariser (2011) to describe a phenomenon whereby an individual's social media and online behavior is filtered by social media platform technology using a complex algorithm resulting in newsfeed and search content on Google, Facebook, and Twitter that matches one's worldview based on past online behaviors (Pariser, 2011).

Predictive analytics or *machine learning* - the scientific study of algorithms and statistical models that computer systems use to perform a specific task without using explicit instructions, relying instead on patterns of data and inference instead. It is seen as a subset of artificial intelligence (Jackson, 2018).

Recommendation system - a system that identifies and provides recommended content or digital items for users. As mobile apps and other advances in technology

continue to change the way users choose and utilize information, the recommendation system is becoming an integral part of applications and software products (Noble, 2018).

Social influence bias - an asymmetric herding effect on online social media platforms which makes users overcompensate for negative ratings but amplify positive ones. Positive social influence can accumulate and result in a rating bubble.

Chapter Summary

Information is a critical piece in the shaping of one's beliefs, choices and behaviors relating to all aspects of life in modern society, including health, politics, education, economics, the environment, and social norms (McGrew et al., 2018). For education leaders functioning in a fast-paced decision-making environment that integrates technology daily, factors such as algorithmically curated content, biases, and social influence are impacting information used for decision-making and it is not known to what extent (Aral, 2014). This study provided an approach to understanding the lived experiences of education leaders in New York State who make decisions moment to moment in an environment where algorithmically curated content, biases, and social influence may be impacting decision-making with or without their awareness or consent.

In succeeding chapters, the current literature on this topic will be reviewed, and the research approach and methodology will be discussed. The last two chapters will contain results and data, delimitations of the research will be identified, and implications on the findings will be examined in terms of the research problem and research questions.

Chapter 2: Review of the Literature

Introduction and Purpose

Digital media in the first two decades of the 21st century have provided an unprecedented access to information for public consumption (Metzger & Flanagin, 2013). Daily interaction with technology amplifies the challenges faced by education leaders who utilize multiple sources for information to make well-informed decisions about important matters. For example, social media's complex algorithms and artificial intelligence that are being used to personalize information flow as well as extrapolate data from an individual's online behavior patterns (Garrett, 2017). Literature is lacking on the recent phenomenon of educational leadership's decision-making processes in light of information and social influence, information procured and curated through search engines, the Internet, and social media. The purpose of this study was to understand the experiences of K-12 education leaders in New York State regarding personal and professional decision-making in light of factors inherent in the fast-paced and often high-stakes context. Some factors that may be relevant to decision-making include interfacing with technology, exposure to algorithmically curated content, filters or biases, and social influence.

Challenges in Evaluating Sources of Information Online

Technology has influenced the landscape of information and communication in the 21st century (Seifert, 2017). Metzger and Flanagin (2013) asserted that information seekers face a number of challenges due to the sheer amount of information that is

available. For example, due to a lack of filtering or monitoring by any authoritative body, online information may be out of date or incomplete (Metzger & Flanagin, 2013). Online information at times lacks source information, such as the author's identity, that is crucial to establishing credibility (Sundar, 2008). As there is no system for quality control, no set of universal standards exists for posting information on the Internet (Metzger & Flanagin, 2013).

Technology features like search engines and social media platforms can be confusing for users trying to identify a source of information found there. For example, Metzger & Flanagin (2013) studied the effects of hyperlinked structure, noting that it was challenging for users to follow and evaluate various sources while jumping from page to page of online content linked to the original page. As a result, users tended to disassociate information from its sources as they moved from site to site, conflating results and blurring information (Metzger & Flanagin, 2013). Metzger and Flanagin (2013) found that a majority of information seekers experienced confusion between the source and the content almost immediately after performing an Internet search. Finally, it should not be assumed that people are necessarily motivated to evaluate the credibility of online information. Research in cognitive science showed that people experience certain limits in their ability to process information, adapting behavior to strike a manageable balance between cognitive effort and desired outcome (Metzger & Flanagin, 2013).

Wineberg and McGrew (2019) designed a study to further understand how people experienced in evaluation of online content approached the task. In a sample of 45 experienced users of the Internet, comprised of 10 Ph.D. historians, 10 professional fact-checkers, and 25 Stanford undergraduate students, participants were asked to evaluate

online information and make judgments regarding its credibility. The research design captured data across three separate tasks. Participants engaged in a thinkaloud while evaluating live websites and searching for information on the topics of minimum wage, teacher tenure, and bullying. The findings showed that both the historians and the undergraduate students were vulnerable to trusting official-looking logos and domain names, resulting in both groups being unable to correctly evaluate a false website approximately 50% of the time. The historians and the undergraduates both tended to evaluate the veracity of information by reading more and for longer periods of time, and by searching further within the original website. By contrast, the fact-checker group arrived at more accurate conclusions, in less time, by leaving the original site to open new tabs and search for corroborating information elsewhere. The study concluded that accurately evaluating digital content takes a certain skill set that even many highly educated people do not possess (Wineberg & McGrew, 2019).

Metzger, Flanagin, & Medders (2010) studied 109 participants in 11 focus groups in different regions of the United States. The researchers found that in evaluating online information, participants tended to rely on the use of cognitive heuristics because they did not have either the cognitive capacity or the time to do a systematic evaluation. The researchers found that participants utilized a series of shortcuts related to endorsement, and self-confirmation among others. The endorsement heuristic posited that people are inclined to believe information or sources if other people also believe them (Metzger et al., 2010). The researchers explained the self-confirmation heuristic as the human tendency to view information as more credible if it confirms their preexisting beliefs, and less credible or not credible if it counters their existing beliefs (Metzger et al., 2010).

Processing Information Using Cognitive Biases and Heuristics

Scholars have shown that human beings are by nature biased information seekers and processors, with the tendency to assess new information based on its logical compatibility with preexisting beliefs (Lewandowsky et al., 2017). The more consistent the new information is with information an individual already assumes to be true, the more likely the new information will be accepted as true (Ting & Song, 2017).

One method of information comprehension, known as systematic information processing, asserts that information is comprehended and assessed for credibility and truthfulness by examining the presence of high-quality arguments and evidence (Fridkin, Kenney, & Wintersieck, 2015). The routine exposure to an overabundance of information prohibits most individuals from assessing each piece of information in this manner (Ting & Song, 2017). The other method employed by most people is heuristic information processing, whereby individuals rely on heuristics and social cues to assess information they encounter (Fridkin et al., 2015). In heuristic information processing, cognitive shortcuts like past individual experiences, perceived trustworthiness of a source, attractiveness of a source of information, as well as what others think, all contribute to favoring one's own biases when evaluating information (Metzger et al., 2010).

Bias influences how people process information and make decisions. Biases in human decision-making can be either amplified or corrected by algorithms (Cowgill & Tucker, 2019). Human reasoning is affected by both personal and social motives, which can be either directional or non-directional. Directional motives reflect one's desire for a certain preferred outcome, while non-directional motives reflect one's desire for a thoughtful, accurate outcome free from bias (Jonas, Schulz-Hardt, Frey, & Thelen, 2001).

Cognitive bias is defined as systematic error in judgment and decision-making common to all human beings due to cognitive limitations, motivational factors, or adaptations to natural environments (Wilke & Mata, 2012). Cognitive biases and heuristics can significantly impact an individual's ability to make objective decisions (Chira, Adams, & Thornton, 2008). Biases exist within the context of cognitive shortcuts because information stored as memory is known to influence reasoning due to the fact that judgments are based on recalled information (Chira et al., 2008). Heuristics allow people to make judgments quickly, efficiently, and at times accurately, however, they also have the potential to lead to errors in judgment (Garb, 2003).

Social Influence Bias and Decision-Making

Modern day decision-making is becoming increasingly dependent upon the collective, digital opinions of others (Muchnik, Aral, & Taylor, 2013). Muchnik et al. (2013) conducted a large scale, 5 month long randomized experiment to quantify the effects of social influence bias in rating behavior on a social news aggregation website. Over 100,000 comments were submitted by study participants and then comments were randomly assigned to a treatment group: up-treated, down-treated, or control. The findings showed that over the 5 months, positive manipulation (up-treated comments) created a positive social influence bias that boosted the final mean ratings by 25%. The researchers found evidence that positive social influence accumulated creating *ratings bubbles*, while negative social influence (down-treated) inspired users to correct the manipulated ratings. A *ratings bubble* is caused by human cognitive bias toward the positive, herding on the positive opinions of others, while being skeptical of the negative opinions (Aral, 2014). In the study, the positive herding effects were dependent upon

topic, and whether individuals were viewing the comments of friends or enemies (Muchnik et al., 2013).

Researchers Min and Cunha's (2019) quantitative study on classical decision-making hypothesized how decision-makers might use information to make decisions while attempting to reduce perceived risk. The study included a hypothesis that as the level of risk increases, the more decision-makers tended to rely on information that supported their beliefs systems about their own levels of knowledge and perceived self-competence. In an experiment with 82 participants, the researchers asked them to rank-order 10 attributes (e.g., color, capacity, style) of a refrigerator they felt most knowledgeable about when using the attributes to make a good purchasing decision. Analysis confirmed the hypothesis that in order to reduce risk in decision-making, participants relied more heavily upon information they perceived themselves to be most knowledgeable about. Another similar experiment within the same study revealed findings that indicated social approval was a factor in decision-making. Study participants tended to weigh decision-making on attributes that would be most favorably judged and approved of by others (Min & Cunha, 2019).

Group membership provides a strong motivator to defend one's beliefs in the face of counter-evidence to minimize the risk of losing membership in the group. This also explains why some people are more inclined to believe false information that others easily dismiss (Sunstein, 2014). False beliefs held by individuals are often attached to a group to which individuals belong (Flynn, Nyhan, & Reifler, 2017). Among education leaders, it is known that peer groups are a reliable source of information especially when there are local or regional decision-making teams for school calendars, snow days,

purchasing consortia, or school opening and closure protocols during the pandemic. What is not known is the extent to which personal beliefs, biases, and worldviews of those who hold social influence over the leader may come into play. Education leaders commonly engage in shared decision-making within their school ecosystems as they facilitate teams and foster a collaborative organizational culture in a way that neither amplifies any existing bias nor introduces new biases (Davis & Leon, 2011).

A well-researched dynamic within information groups is the more people with similar opinions talk to each other, the more alike their opinions become, and the more distant they become from what they interpret to be the opinions of others, known as the out-group (Sunstein, 2009). Repetition of information by others in the same group reinforces its truth, whether or not the content is actually credible (Marshall, 2013).

Confirmation Bias and Decision-Making

Ubiquitous access to vast amounts of information challenges people to sort out on their own what is relevant, credible, and accurate by relying on general knowledge, heuristics, social cues or even social pressure (Marshall, 2013). Research suggested that both adults and students use ineffective and misleading strategies to vet the credibility of information online (McGrew et al., 2018).

Confirmation bias is the unintentional tendency to view evidence subjectively to protect one's beliefs or preconceived notions when making a decision, often leading to error (Jonas et al., 2001). Decision-making and information processing are often biased due to interpretation of information limited by one's own viewpoint (Metzger & Flanagin, 2013). Confirmation bias gives preferential treatment and consideration to information that confirms one's hypothesis, while choosing to ignore the information that

disconfirms it (Jonas et al., 2001). Some reasons why people show confirmation bias are related to self-esteem and feeling valued for intelligence, influencing both how one interacts with others and how others respond (Jones & Sugden, 2001).

British psychologist Wason (1960) developed the 2-4-6 number string task to demonstrate subjects' likelihood to use confirmatory strategies (Ting & Song, 2017). Based on studies using Wason's task (1960), subjects were consistently much more likely to use confirmatory strategies than disconfirmatory strategies when seeking to verify information (Jonas et al., 2001).

While scholarly research usually focuses on the irrational nature of confirmation bias, confirmation bias can also be a helpful coping mechanism that allows individuals make decisions quickly while minimizing the discomfort and mental effort required to hold conflicting beliefs (Ray & George, 2019). The desire to minimize discomfort associated with conflicting beliefs is known as the theory of cognitive dissonance, developed in 1957 by social psychologist Leon Festinger. Festinger's theory suggested that people possessed an inner drive to achieve harmony and avoid disharmony, or dissonance. When there is any inconsistency between behaviors and attitudes, individuals seek to change something to eliminate the dissonance (Ray & George, 2019).

The Influence of Technology Upon the Persistence of Bias

New digital platforms and social media platforms have allowed information to reach a wide audience, for example active Facebook and Twitter users have reached 1.8 billion and 400 million per month respectively (Allcott & Gentzkow, 2017). Filter bubbles and echo chambers act on people's cognitive biases encouraging them to become further entrenched in their existing worldviews (Ting & Song. 2017).

The large number of information sources online has caused individuals to rely more on cognitive heuristics in order to assess the credibility of information sources (Metzger et al., 2010). The shortcuts used to assess the credibility of information sources can cause individuals to be more susceptible to perceiving false information as accurate (Ting & Song, 2017). For example, rather than systematically processing the content of a website, research has shown that users tended to rely on superficial features such as the overall visual appeal, design, font size and color schemes to assess a website's credibility (Connaway, Dickey, & Radford, 2011).

An *echo chamber* occurs when most available digital media intentionally limits diverse content and presents content that conforms to the user's preexisting beliefs and biases (Lewandowsky et al., 2017). The echo chamber can exist either by a user's choice or it can be formed by content delivered to the unaware user as a product of algorithms or artificial intelligence, like the recommender systems used by Facebook (Marshall, 2017). Echo chambers can promote untrue content and allow inaccurate beliefs to persist (Garrett, 2017). Belonging to a social network that consistently affirms one's beliefs can be interpreted as endorsement of a particular viewpoint, regardless of exposure to other contradictory information (Garrett, 2017).

A recent technological advancement exploits echo chambers to create a predictable profile based on social media behavior (Lewandowsky et al., 2017). Researchers Youyou, Kosinksi, and Stillwell (2015) demonstrated an algorithm that could infer an individual's personality with a higher rate of accuracy than was achieved by the individual's co-workers on the basis of just 10 Facebook likes. When the

algorithm had access to data from 300 Facebook likes, its accuracy outperformed the research participants' own spouses (Youyou, Kosinski, & Stillwell, 2015).

Eli Pariser (2011) coined the term *filter-bubble* to describe a phenomenon whereby an individual's social media and online behavior is filtered by social media platform technology using a complex algorithm resulting in newsfeed and search content on Google, Facebook, and Twitter that matches one's worldview based on past online behaviors. In a filter bubble, personalization is achieved at the expense of a variety of information sources and diversity of thought (Dutton, Reisdorf, DuBois, & Blank, 2017). Filter bubbles result in isolated online communities where people consume information that reinforces their worldview without the introduction of any conflicting ideas (Pariser, 2011).

The influence of technology on consumption of information is important because the algorithm-driven filter bubble surrounds individuals with ideas aligned with their pre-existing beliefs, amplifying their confirmation biases (Pariser, 2011). A study on the spread of misinformation on Facebook found that the homogeneity of echo chambers was a primary driver of misinformation online (Del Vicario et al., 2015). One persistent problem identified by scholars is that while spreading false information is easy, correcting the misperceptions that result from the exposure to misinformation may be much harder (De Keersmaecker & Roets, 2017).

De Keersmaecker & Roets (2017) conducted a quantitative random control experiment online with a sample size of 390 participants. In both the experimental and control groups, participants were shown a photo of a young woman named Nathalie with a caption beneath the photo stating that she was married and worked as a nurse. The

experiment group also saw in the description that she was arrested for stealing and selling

drugs from the hospital where she worked to buy designer clothing for herself.

Participants were asked to evaluate Nathalie by answering a series of questions. After

they answered the questions, they were told that the part about the drugs and stealing

wasn't true. In the experimental group, the effects of the false information about Nathalie

persisted in participants' opinions and colored their judgments, even after the

misinformation was corrected, especially among participants with lower cognitive ability.

Algorithmic feedback has social impact. For example, decisions about credit

scores and job applications are influenced by algorithmic data about an individual.

Whether or not these algorithmic predictions are accurate, these tainted outcomes are

then used a baseline data for use in future algorithms (Cowgill & Tucker, 2019). This is a

feedback loop that tends to either reinforce or amplify biases in the original predictions.

The Growing Social Impact of Algorithms in Everyday Technology Applications

Modern technology has become embedded in most aspects of everyday life, and

people generally don't read the terms of service agreements for software, or the privacy

policy of Facebook, or other applications that they regularly use. Algorithms can take

advantage of users' personal data to embed bias into systems that influence important

decisions impacting consumer credit, jail sentences, job applications, and hiring strategies

(Wachter-Boettcher, 2017). Algorithms are being used by courts to influence sentencing

of criminals, to determine who sees what ads, to make diagnostic medical decisions, to

predict political outcomes, and even to create *proxy data* about users for data that doesn't

actually exist (Wachter-Boettcher, 2017). Proxy data is a substitute for substantive

knowledge used by Google to infer data about its users in the absence of actual data

based on searches, clicks, interests, and more. Proxy data is based on assumptions and can become entrenched in algorithmic models over time, even if totally inaccurate (Wachter- Boettcher, 2017).

Eslami et al. (2015) studied the extent to which people were aware of the presence of algorithmically curated content in one's daily life. Based on the sample of 40 Facebook users studied by the researchers, 62.5% stated that they were unaware of the algorithmic news feed curation feature on the platform. Consequently, these participants wrongly attributed the content of their news feeds to the intent or habits of their "friends" (Eslami et al., 2015).

Rader and Gray (2015) surveyed 464 respondents and found that 75% of them did not believe they would be able to see every post created by their friends, indicating they knew that there was a hidden algorithm in the Facebook platform curating their news feed. What Rader and Gray's (2015) research did not reveal was whether this influenced participants' future interactions with the platform.

Lambrecht and Tucker (2019) conducted a study of STEM job opportunities which were promoted in an ad designed to be gender neutral. Empirical findings showed that due to an algorithm, fewer women than men actually saw the ad. Lambrecht and Tucker (2019) explained that the inequity was driven by the expense of advertising to the young women, who are a desirable demographic in the market. The researchers concluded that an algorithm designed to simply promote cost-effectiveness was in fact discriminatory and had economic and social impacts (Lambrecht & Tucker, 2019).

Decision-making that utilizes algorithms is becoming a pervasive aspect of people's social, economic, and professional lives (Shrestha & Yang, 2019). For example,

online companies like Amazon use recommender system algorithms to curate the set of products each user is shown on the dashboard of the home screen (Shrestha & Yang, 2019). Shrestha and Yang posited that while the prevalence of such systems is growing, so is concern among academia that algorithms may be unfair, biased in areas like gender, race, culture, and discriminatory against certain minority groups. For example, a study by Caliskan, Bryson and Narayanan (2017) discovered that natural language algorithms harbored historical biases by associating words like *doctor* with males and *nurse* with females. Because algorithms are based on historical data, past discrimination and stereotypes are part of a loop that predicts future data - which will also contain the same persistent discrimination and stereotypes. It is concerning when this is compounded by pervasive algorithmic decisions influencing aspects of people social and economic opportunities, like getting a good bank interest rate, getting a job, getting accepted into college, or being able to secure a place to live (Shrestha & Yang, 2019).

Algorithms function as a way to direct and discipline the attention of a platform's users and define what content finds or is delivered to those users (Bucher, 2017). The implications are great in the world of data and circulation of information (Beer, 2013). The problem is the difference between the rigid algorithmic approach to data and information as opposed to a person's sensibilities and knowledge of appropriate context (Beer, 2013).

The Role of Preparation in Leadership and Effective Decision-Making

A school leader's ability to use cognitive and problem-solving strategies has been positively correlated with leadership effectiveness, expertise, and adaptive abilities (Leithwood, 1995). Further, a growing body of research correlated the vital roles of

school building leader and school superintendent with promoting a positive growth in student achievement (Leithwood et al., 2004). School leadership is rooted in social interaction and ability to connect with people. It is a highly important aspect of education leadership. Whether they are first-year novices or veterans of the profession, educational leaders need ongoing support to succeed in a job that is dramatically changing, especially when school leaders' decisions impact so many people in the school and community (Davis & Leon, 2013).

The Professional Standards for Educational Leaders, formerly known as the ISLLC Standards, were revised in 2015 by the National Policy Board for Educational Administration. The national Standards are grounded in current research and the real-life experiences of educational leaders, including the demands of decision-making. The standards were designed to ensure that educational leaders are ready to meet effectively the challenges and opportunities of the job today and in the future as education, schools, and society continue to transform. The Standards provide a model for professional standards outlining clear examples of qualities and values of effective educational leaders (National Policy Board for Educational Administration, 2015).

Standard 2 is related to the ethical and professional norms of effective educational leadership and includes decision-making, transparency, and trust. Specifically, the Standard states that effective leaders:

 (a) Act ethically and professionally in personal conduct, relationships with others, decision-making, stewardship of the school's resources, and all aspects of school leadership; (b) Act according to and promote the professional norms of integrity, fairness, transparency, trust, collaboration, perseverance, learning, and

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continuous improvement; (c) Place children at the center of education and accept responsibility for each student's academic success and well-being (National Policy Board for Educational Administration, 2015, p.10).

In New York State, all school leader preparation programs are bound by the Regulations of the Commissioner of Education Part 52.21(c). These requirements assure that all programs produce education leaders who can demonstrate the knowledge and skills to make effective decisions, seek diverse points of view, use multiple sources of information and data sources, and communicate effectively with parents, staff, students, and community leaders. Specifically, part B section 1, item (v) of the requirements states school building leaders and school district leaders must be adequately prepared to "effect any needed educational change through ethical decision-making based upon factual analysis, even in the face of opposition" (New York State Education Department, 2020, p. 13).

The work of the education leader is defined by decision-making, often in the midst of unknowns (Johnson & Kruse, 2010). Further, the work of education leaders is people intensive, with the literature suggesting that education leaders are committed to doing good things for those with whom they work, and deriving satisfaction in helping solve the problems of others (Johnson & Kruse, 2010). The combination of the child-centered national and state standards of practice and a personal desire to do good things may add a moral and ethical layer to decision-making that is unique to education leaders.

Leaders make decisions within a given context that may consist of social, political, cultural, or economic factors that impact the decision-making process. Decisions must be considered within their own specific contexts, and no two are exactly

the same (Johnson & Kruse, 2010). Leaders must be flexible in their ability to read the context, gather relevant information, and make the best decision possible in the face of nuance and complexity. Leithwood et al. (2004) summarized the ways that flexibility in decision-making was imperative for education leaders as they grappled with day-to-day decisions about everything from student progress to resource allocation within the school or district. The researchers advocated for more research on how decision-making flexibility was exercised by leaders within a given context rather than the development of any one particular leadership model (Leithwood et al., 2004).

Human decisions are variable, often differing significantly from those of their peers, or even from their own previous actions, or from the values and judgments they claim to embrace (Kahneman, Rosenfield, Gandhi, & Blaser, 2016). Kahneman et al. (2016) asserted that predictions and decisions generated by algorithms are often more accurate than those made by experts, even when the humans have access to more information than what was provided to the algorithm. Kahneman et al. (2016) maintained that no matter what type of algorithm is employed, that people must keep control. Leadership is called for in decision-making scenarios.

The Role of Trust in Education Leaders' Decision-Making

Trust is an assurance that allows people to manage inherent risk and eliminate ambiguity in human relationships and it impacts one's actions, decisions, or relationships with others. As a decision mechanism, trust liberates people to act with more certainty and positive feelings, while the lack of trust results in hesitancy and guarded behaviors (Center for Creative Leadership, 2018). The research of Kouzes and Posner (2011) asserted that credibility is the foundation of leadership. Credibility is based upon how

leaders earn the trust of their constituents and inspire their confidence, first by getting to know them and then by upholding the shared values of the organization (Kouzes & Posner, 2011).

Trust is an important part of a school's organizational culture as school leaders, teachers, students, parents and community leaders coexist within a school's ecosystem. The perception of trust among stakeholders improves the quality of interactions in a school and can improve school culture, in turn improving teaching and learning opportunities (Adiguzelli, 2016). Given that education leaders are increasingly expected to lead their schools within a framework of collaboration, established trust is crucial. School leaders' influence on staff motivation, commitment, and working conditions can either directly or indirectly improve teaching and learning (Leithwood et al., 2004).

Chapter Summary

Human bias, social influence, and the prevalence of algorithms built into the Internet and on social media platforms provide a challenge for education leaders who seek in good faith to make informed decisions based on reliable facts and credible evidence (Seifert, 2017). The literature showed that bias, algorithmically curated content, and social influence are impacting decision-making in individuals and in groups (Aral, 2014). For example, social media's complex algorithms that are being used to personalize information flow as well as extrapolate data from an individual's online behavior patterns are capable of influencing one's problem-solving and decision-making cognitive processes whether or not one is aware of it (Lewandowsky et al., 2017).

Social Influence bias, also known as the herd instinct, is a natural human tendency characterized by lack of individual decision-making (Aral, 2014). Social influence bias is

multiplied exponentially by the influence of social media sharing, ratings, reviews and peer reviews on products, professional services, professional contractors, and more (Aral, 2014). In this context, human biases can be amplified by the use of technology platforms and can influence the decision-making of education leaders.

Research in cognitive science showed that people experience certain limits in their ability to process information, adapting behavior to strike a manageable balance between cognitive effort and desired outcome (Metzger & Flanagin, 2013). Metzger, et al.'s (2010) study on the use of cognitive heuristics in credibility judgments found that participants utilized a series of shortcuts related to endorsement, and self-confirmation among others.

Education leaders have both national and state standards that require proficiency in decision-making, effective communication with stakeholders, and use of multiple sources of information. Inspiring trust and confidence as a school leader requires work to strengthen the school's organizational culture and to do the right things, and in the right way, in the eyes of the students, staff, parents, and community (Leithwood, 2005).

Chapter 3: Research Design Methodology

Introduction

We live in a modern era where the amount of instantaneously available information made accessible via digital technologies is unparalleled in history (Metzger, et al., 2015). Leaders must be adept at navigating confirmation biases and technology algorithms that can potentially undermine rational decision-making (Ting & Song, 2017). This study examined the lived experiences of education leaders in New York State regarding decision-making in light of the extreme variability in the flow and quality of online information.

New York State K-12 education leaders are responsible for making decisions in real-time in a fast-paced and dynamic environment that includes information and communication utilizing common technology-based platforms. The trust and flow of information, combined with human experience and judgment, provides the foundation upon which education leaders' base their decisions. Without a solid foundation, all of their important decisions could be called into question.

High stakes decision-making is required of K-12 education leaders in New York State who are ultimately responsible for the health, education, safety, and welfare of the children in their school buildings and communities. Given that education leaders regularly derive information from multiple sources that are impacted by either social influence or algorithms or both, and that they have little or no control over the quality,

content, or delivery of this information, we need to understand how it impacts their personal and professional decision-making in real time.

The research question for this grounded theory study was: Given the extreme variability in the flow and quality of online information, what are the lived experiences of K-12 education leaders in New York State regarding decision-making?

The purpose of research is to gain new information or expand knowledge through disciplined inquiry. The methodology of a study is the way the research is designed, determining explicit criteria for the ways that data are gathered, used, analyzed, and interpreted related to the research question (Tie, Birks, & Francis, 2019). Denzin and Lincoln (2005) stated that a qualitative research method allows for a more naturalistic approach to research enabling a researcher to interpret meaning that subjects bring to the phenomena under study. This qualitative research study design utilized grounded theory methodology, one of the twelve specialized types of qualitative research (Yin, 2016).

The grounded theory methodology is most appropriate when a phenomenon is little known and study is undertaken with the goal of uncovering new knowledge and constructing an explanatory theory about the phenomenon (Tie et al., 2019). Use of the grounded theory method can contribute in areas in which little research has been done (Lawrence & Tar, 2013). A grounded theory is a theory that is discovered and developed by the researcher, emerging out of the systematic collection and analysis of data (Lawrence & Tar, 2013).

Theory is grounded when it is closely tied to evidence while explaining the relationships, events, and life experiences of the people and processes the researcher is seeking to understand (Lawrence & Tar, 2013). Grounded theory is different from other

qualitative approaches in that it empowers the researcher to analyze and create emergent categories within the data. Further, it allows for those categories to shape further data collection while the researcher is still doing the fieldwork (Lawrence & Tar, 2013). The grounded theory researcher aims to analyze data from the lived experiences of the research participants to better understand how they construct their world and to use a continuous loop of analysis and data collection to generate a theory grounded in that data (Lawrence & Tar, 2013).

Grounded theory is defined as a "specific, highly developed, rigorous set of procedures for producing formal, substantive theory of social phenomenon," (Yin, 2016). One of the hallmarks of grounded theory research is the aim to generate a theory that is grounded in the data (Tie et al., 2019). Glaser and Strauss (1967) developed the constant comparative method that represented an original way to organize and analyze research data (Tie et al., 2019). Bryant and Charmaz (2010) and Charmaz (2014) are associated with the constructivist genre of grounded theory. Constructivists focus on how participants make meaning in relation to the area of study. Constructivist researchers are known for co-constructing meaning and experiences with their subjects (Tie et al., 2019).

The purpose of the research study was to identify and interview education leaders in order to understand their lived experiences regarding their own decision-making in a fast-paced and dynamic environment that includes flow of information and communication utilizing common technology-based platforms. The paucity of research on this timely topic means that data around the concepts and variables of this phenomenon are yet to be identified, but for education leaders who interact with technology frequently everyday, factors such as algorithmically curated content, biases,

and social influence are impacting decision-making and it is not known to what extent (Aral, 2014).

Research Context

The study included a purposive sample of 15-20 K-12 education leaders in New York State who were selected from a professional network of education leaders and referrals from leaders in that network. New York State provided an appropriate backdrop for the research study of with consistent standards for education leaders, policies and practices for implementation of educational technology, and a professional network of education leaders that are accessible and more familiar to the researcher as compared to other states. Further, conducting the research study in New York State provided the opportunity for the researcher to conduct convenience sampling if necessary.

Research Participants

Marshall and Rossman (2016) asserted the importance of an appropriate sampling strategy as it impacts the overall credibility, trustworthiness and transferability of the research. Purposeful sampling is primarily used in qualitative research (Gliner, Morgan, & Leech, 2017). According to Flick (2014), purposive sampling is most effective for collecting data through interviews or comparison.

The target population for this study was education leaders in New York State. Purposeful sampling was used to select participants for the study who self-reported that they had at least 1 year of experience as a leader in some aspect of K-12 education and served in some type of a decision-making role either at the school or district level. Potential participants were recruited using a recruitment letter sent via email (Appendix A). Potential participants were recruited from among a group of education leaders within

the researcher's professional network. That recruitment effort was supported by snowball and theoretical sampling strategies (Flick, 2014). The purpose of purposive sampling was to select specific individuals to provide detailed descriptions and information in response to the research question (Flick, 2014).

Qualitative sample sizes should be large enough to obtain enough data to sufficiently describe the phenomenon of interest and address the research question. Saturation occurs when adding more participants to the study does not result in additional perspectives or information (Tie et al., 2019).

For phenomenological studies, Creswell (1998) recommended a sample size of between five – 25 participants and Morse (1994) suggests at least six. For grounded theory studies, Creswell (1998) recommended a sample size of 20 - 30 interviews. To preserve the quality and integrity of the data collection, while operating within the time constraints of the academic year, the researcher aimed for a sample size of 15 – 20 participants. Additionally, as the goal of qualitative researchers should be the attainment of saturation, the required number of participants should depend on when saturation is reached (Creswell, 1998).

Instruments Used in Data Collection

The goal of the study was to capture K-12 education leaders' experiences and ways that the challenges of decision-making are approached via the use of semi-structured interviews conducted virtually using a videoconferencing platform such as Zoom, Microsoft Teams, or Google Meet (at any school location) in New York State. The research provided detailed information from interviews that took place over a sustained period of time during the months of May through October of 2020.

Interviewing is a common method of collecting qualitative data (Merriam, 1998). Brinkman and Kvale (2015) stated the quality of an interview is judged by the strength and value of the knowledge that emerges from it rather than by specific rules or steps to be followed.

The study utilized semi-structured interviews as the primary source for data collection. Semi-structured interviews permitted the researcher enough flexibility to find out the why, and to develop a deeper understanding on topics that might be sensitive (Miles & Gilbert, 2005). The semi-structured interview protocol was developed by the researcher to address the research question and was pilot tested by the dissertation committee before being administered to participants. The interviews were administered one-on-one, virtually, using a videoconference platform of the participant's choice, such as Zoom, Microsoft Teams, or Google Meet. The interviews were timed, recorded, and transcribed with the knowledge and consent of each participant. The researcher acknowledges that using the videoconferencing platforms such as Zoom, Microsoft Teams, or Google Meet, is a limiting condition of the research in that people who are unfamiliar or have trepidation about videoconferencing may decline to participate in the study. The researcher hoped to mitigate some of that trepidation by allowing each research participant to choose the videoconferencing platform that they were most comfortable with and had experience using. The semi-structured interview questions were open-ended, designed to draw out and uncover themes based upon the perceptions and lived experiences of the education leaders participating in the study.

The researcher conducted the interviews to collect data. In the grounded theory methodology, interviews are a common method of generating data (Tie et al., 2019). In

order to follow best practices of research on human subjects and maintain confidentiality, each participant was assigned a confidential participant number that has been used throughout Chapters 4 and 5 instead of a name. The participant number was used on all protocols and digital (audio and video) recordings to maintain confidentiality and no other identifying information was used throughout the research study to ensure anonymity of the participants.

The digital recordings of video and audio from the scheduled interviews were stored locally on the researcher's computer hard-drive, in a locked, password protected file on a locked, password protected computer in the researcher's home. Any printed transcripts were cleaned and any personally identifying information from the data was deleted by the researcher and will remain locked in a secure container in the researcher's home for a period of 3 years, then destroyed. Proper protocol was followed by the researcher, including acquiring informed consent from participants, and providing a full disclosure and explanation of the purpose and parameters of the study to each participant. Further, each participant was assured of full confidentiality, and the researcher will continue to protect individual identities.

Creswell (2016) outlined appropriate interview protocol as follows: (a) basic information about the interview, (b) introductions to familiarize the participant with the study and confirm consent, (c) demographics questions, (d) interview questions, and (e) closing comments and instructions. The researcher followed this protocol for each separate interview, with the exception of the demographics questions, which were omitted.

Procedures for Data Collection and Analysis

The data collection process for this qualitative study began with an application to the Institutional Review Board (IRB) at St. John Fisher College for review. Following IRB approval, using the recruitment letter (see Appendix A) and email addresses that the researcher already had based on the researcher's professional network, the researcher contacted an initial group of approximately 10 education leaders from across New York State. The researcher then requested that original group of 10 to forward the recruitment letter, sharing the researcher's contact information with other members of their professional networks who might be interested in participating in the study. This method of referral was employed to round out the sample group of 15 participants. The researcher contacted study participants once, and the researcher reserved the right to add in participants as part of a theoretical sampling strategy, but ultimately did not opt to do theoretical sampling.

The researcher followed all proper consent protocols, which included securing each participant's written consent to participate in the research via a signed consent form. Each participant consented to the audio and video recording of the interview protocol.

Following a short explanation of the interview process by the researcher, participants participated in the semi-structured interviews conducted virtually at a scheduled, mutually convenient time. Each interview protocol lasted approximately 45-60 minutes. Memoing was used to support the research and collection of interview data (Tie et al., 2019). Memoing is another key element of grounded theory that provides detailed documentation of the researcher's thoughts, feelings, and insights as the researcher interacts with the data. Lempert posited that memo writing is crucial as it prompts the researcher to analyze and code the data, and begin to develop categories

early in the coding process (Lempert, 2007). Memo writing is a process that fosters the researcher's analysis and is essential to quality research (Birks & Mills, 2015).

The digitally recorded interviews were transcribed verbatim to allow for coding and analysis. In grounded theory methodology, data are collected and analyzed concurrently. The transcribed interviews provided a detailed account of the interview and were kept in a password protected, locked, secure location, accessible only to the researcher, in the researcher's home.

Initial coding is the first step in grounded theory data analysis (Birks & Mills, 2015). Coding is an analytical process that helps the researcher identify concepts, patterns, similarities and differences in data. In constructivist grounded theory, coding occurs in three iterative phases of initial coding, focused coding, and theoretical coding (Tie et al., 2019). Ultimately, coding is the key to bridging the collected data with the generation of a theory that explains it (Charmaz, 2012).

In initial coding, the researcher inductively generates as many codes and labels as possible to fracture the collected data based on repetitive words or phrases. Charmaz (2006) advises keeping the codes closely matched to the data and including action words. It is during this initial phase of coding that the researcher establishes a direction forward by labeling and looking at meaning through categorizing, patterns, and comparison of incidents (Tie et al., 2015).

The second (intermediate) stage of analysis is focused coding. The purpose of intermediate coding is to move toward abstract concepts with the goal of giving rise to a new emergent theory. It is during this stage that categories are refined, while concurrently undertaking constant comparative analysis and memoing (Birks & Mills,

2015). As solid categories emerge, relationships are identified between and among categories, requiring grounded theory researchers to become fully immersed in the data (Tie et al., 2019).

The third (advanced) phase of analysis is called theoretical coding. Theoretical coding is the stage when the categories are integrated and synthesized into a theory (Saldana, 2013). Theoretical coding is the final strategy for analysis and is an essential step in producing an organized, substantive theory that is grounded in the data (Tie et al., 2019).

Theoretical sampling is another hallmark of grounded theory. Theoretical sampling is defined as the process of recognizing and investigating clues that arise during analysis in a grounded theory study (Birks & Mills, 2015). This type of sampling frees the researcher to respond to the data by sampling new participants to procure relevant information, for example to bolster developing categories (Tie et al., 2019). The analysis of the theoretical sample brings to light gaps, relationships, or anomalies in existing data illuminating what is not yet known (Tie et al., 2019). The sample size of 15-20 research participants allowed for the flexibility of adding new participants while remaining in the recommended range for the methodology. The researcher had the option to revisit original participants to ask additional follow-up questions as needed, but did not do so.

Theoretical sensitivity was a term first described by Glaser & Strauss (1967) as a researcher's sense or recognition that an important piece of data had emerged. Theoretical sensitivity encompassed the entire research process. Grounded theorists become more sensitive to possibilities via analysis the more they are immersed in their own data (Birks & Mills, 2015).

A credible qualitative study is one that provides assurances that the researcher's data, interpretations of the data, findings and conclusions accurately reflect the world that was studied (Yin, 2016). The quality of grounded theory research is connected to the researcher's knowledge and skills, the alignment between the methodology and the research question, and the fidelity to the process and methods (Birks & Mills, 2015).

Summary

The study design was qualitative research using grounded theory methodology. According to Denzin and Lincoln (2005) a qualitative research method allows for a more naturalistic approach to research enabling a researcher to interpret meaning that subjects bring to the phenomena under study.

The purpose of the research study was to understand the lived experiences of K-12 education leaders making decisions given the extreme variability in the flow and quality of online information. Aligned with the grounded theory methodology selected for this study, purposive sampling was be used to select participants for the study. Participant responses to a series of prepared interview questions were captured during semi-structured interviews conducted during a virtual meeting that were recorded and transcribed. Concurrent data collection and analysis, three stages of coding in tandem with constant comparative analysis, theoretical sampling, and memoing formed the iterative system of actions undertaken by the researcher. The researcher utilized these structured processes to generate an integrated grounded theory from the data (Charmaz, 2006).

The study provided an approach to understanding the lived experiences K-12 education leaders face in decision-making in the face of algorithms, social influence, and

both human and technological biases inherent in everyday platforms. From the

perspective of education leadership, there was a need to know more about leaders'

decision-making as it pertained to future study of information science and technology.

The period of years spanning 2018 – 2022 form a limited timeframe in which the study

will remain potentially significant due to the rapidly changing field of technology and the

rapidly changing policies and laws regarding use of data, including lack of transparency

of algorithms on social media platforms.

Chapter 4: Results

Introduction

The study aimed to gain a clearer understanding of K-12 education leadership decision-making given the unpredictable quality and flow of digital information in our society. Specifically, the study focused on the lived experiences of K-12 education leaders making decisions in an environment where technology's algorithmically curated content, inherent biases, and social influence could potentially impact the daily decision-making process across both personal and professional contexts. Study results were captured by the researcher through a series of 15 recorded interviews with education leaders in New York State conducted virtually via a videoconferencing platform. Interviews were transcribed using *rev.com* ultimately yielding 148 pages of responses that provided rich data for the researcher to code and analyze.

The thematic categories emerged against a backdrop of education leaders' universal concern for any decision's impact upon students. Doing *what is best for students* was a common thread for decision-making mentioned by 100% of the study participants. The three thematic categories that emerged from the data were: lenses for decision-making, flow of information, and influences of online information and social media.

This chapter will provide details of the research process appropriate to grounded theory study as outlined in Chapter 3. The bulk of this chapter will elaborate upon the findings from the interviews and data analysis as they pertained to the research question

and the purpose of the study. The preliminary theory will be revealed, while weaving in connections to established research to set the stage for the recommendations and discussion in Chapter 5.

Research Question

The research question that guided this grounded theory study was: Given the extreme variability in the flow and quality of online information, what are the lived experiences of K-12 education leaders in New York State regarding decision-making? Given that education leaders regularly derive information from multiple sources that may be impacted by either social influence, unreliable sources of online information or both, we need to better understand the aspects of their personal and professional decision-making process.

The research question was addressed by conducting virtual interviews with 15 participants who self-volunteered for the study. All participants self-reported that they met the criteria of at least one year of experience as a leader in some aspect of K-12 education, and held some type of a decision-making role either at the school or district level. The semi-structured interview protocol was guided by the interview questions found in Appendix B. Each interview lasted approximately 45 – 60 minutes. All of the participants read and electronically signed the approved IRB adult consent form prior to the start of the interview.

A participant number was assigned by the researcher to ensure confidentiality and to protect the identity of each participant. Throughout the succeeding chapters highlighting the analysis of data, findings and implications, participants will be referred

to as (P1), (P2), (P3), etc. with no other identifying information used throughout the research study to ensure anonymity of the study participants.

Data Analysis and Findings

All of the 15 interview recordings were transcribed verbatim by *rev.com* and were subsequently analyzed by the researcher utilizing open coding to discover categories and concepts. During this initial phase of analysis, the researcher condensed 148 pages of interview transcripts to approximately 35 pages of relevant data with chunked, coded sections. Memo writing, a process that fostered the researcher's coding and analysis of the data, was utilized throughout the process.

The focused coding phase allowed the researcher to further analyze the data, which resulted in refinement of categories, while concurrently undertaking constant comparative analysis and memoing (Birks & Mills, 2015). The researcher allowed the more solid categories to emerge from the data and began to identify relationships between and among categories. Three thematic categories of education leaders' lived experiences with decision-making, their processes, resources, and experiences with media or social media emerged from the data: lenses for decision-making, flow of information, and influences of social media and online information. The rest of the chapter will explore in greater depth each thematic category and the themes within it.

Participants in this study were divided regarding their own personal use of social media with 12 out of 15 participants sharing that they had a Facebook account, and nine out of 15 sharing that they had a Twitter account. Participant 1 (P1) shared, "Yes, I tweet. Yes, I use Facebook. Those are actually the only two that I use. I use email. I use our website to communicate with people." (P1) Conversely, among those participants in the

study who did not have social media accounts, some described their reasons and opinions in the following excerpts from their interview data. For example, Participant 4 (P4) shared, "I can clarify that I don't use social media personally so I don't use Facebook and those types of things. I certainly don't look to those sources as a place to garner information for a professional decision." Participant 6 (P6) shared a stronger view about why he doesn't engage in social media stating, "I'm not a huge fan of social media. I don't use it myself and I don't tweet. But I think there's a lot of. . . in my experience, there seems to be a lot of garbage on social media too."

Offering a contrasting opinion of personal use of social media was Participant 8 (P8) who described it as an efficient way to communicate with a group:

Just about every school now has social media platforms. The character ed[ucation] program we have has a social media platform. Most of the educators I know have Twitter. It's fantastic in the way that it allows you to reach the greatest number of people quickly. (P8)

Finally, Participant 15 (P15) shared the following insight in response to the researcher's question about the influence of social media for education leaders:

Regarding social media, I think it's more important to teachers than it is to leaders, especially now during COVID it's more of a support group for each other. I think when it comes to education leadership, it is Facebook, Instagram, Snapchat, Twitter, it's become a great communication tool or you can report out, keep your community informed with information that you want them to be informed of or you want them to be aware of. But I don't necessarily view it as a professional two-way tool for leaders, the social media aspect. (P15)

Study participants were asked a series of interview questions designed to draw out their lived experiences with digital media or online information and decision-making. Study participants were asked interview questions (Appendix B) that invited them to describe decisions they had made and to further describe the process they used to make it. Participants were also asked to describe their interactions with online forms of media, and how trust played into those scenarios. Finally, participants were asked to describe their interactions and experiences with social media, media, or online information. When referring to a professional decision at the school or district level, 100% of participants weighed all decisions against the measure of their highest commitment to what was best for students.

A few examples of this in the participants' own words are included here: "It comes from my inner being. It comes from my soul. I make decisions based on how it's going to affect children, period" (P1), and "I try to just weigh everything against how is it going to affect students? What's best for them? It's not always just giving them what they want, but it's hearing them, and then just trying to be fair." (P5) Participant 7 (P7) added: "The impact on staff, the impact on administrators, [is there] but often this stuff we can never lose sight of is the fact that the decisions all have an impact on kids. And so you always use that as your prism." (P7)

Flow of Information

Against the aforementioned universal backdrop and priority of *what is best for students*, the other themes identified in this study are related to education leaders' decision-making experiences and are expressed through the lens of the incessant and often concurrent flow of information for decision-making (input) and for communication

(output). The themes within this category of flow of information that emerged from the interview data were: feedback, controlled messaging or justification, reliable sources of information, and over-abundance of information.

A theme that emerged through analysis of participant interview data was utilization of feedback from others as part of the decision-making process. A majority of study participants indicated that feedback from people, rather than media, social media, or online sources of information, played an important role in school culture and ultimately in education leaders' decision-making process. While the Internet provides easy access and an abundance of both high-quality and low-quality information, study participants described the opportunities to get information at the local level from relevant stakeholder groups.

Some participants described it as feedback, some described it as input, some even referred to it as *pushback* as part of the feedback loop – but 13 out of 15 participants had some experiences to convey to the researcher around this theme. Participant 3 (P3) described his decision-making process through the scenario of creation of a 90-day entry plan as a new district administrator. He was aware that he might not have much support from stakeholders in the beginning, and it influenced his thinking about the process, the structure for the plan he ultimately chose, and his decisions around implementation:

> But in terms of the parents and community and possibly even the staff, there is
> also potential pushback there, and so in the crafting of the plan, [I] was also very,
> very mindful of including lots of words that indicated a willingness, openness,
> and an intention to collaborate, to garner input from others and to have decision-
> making be this triangulation or this conversion of best practices along with

stakeholder input and with distributed leadership as the rollout model. (P3)

P6 shared his experience with teacher feedback that was mixed, and how it made consensus building among the five school buildings he supervised very difficult:

It's inevitably messy because 50% of the teachers will say, "Thank you for doing this." And the other 50% say, "We hate this. Why are you doing this?" And then principals started to take that heat. And so within a week of that, we've got principals saying, "Why did you do this?" So what we try to do is we create feedback loops and we do that in lots of different ways. (P6)

Sometimes, a leader's leadership style incorporates the values of stakeholder input and feedback from others factored into everyday decision-making. For example, this excerpt from Participant 7 (P7) shed light on the importance of feedback in his role as a superintendent:

So my style is, I'm pretty deliberate and I do like to have the input of a lot of people before making a decision. It's not that I don't have my own opinions, but I think that I know the limitations of my opinions and I know that I have blind spots. And so the more information I can get from as many stakeholders as possible, to me, is a more sound decision, or at least, it is a decision that can be more easily explained. Actually, I guess, that's sort of a key piece of my decision-making is when asked "why" do I have a sound reason as to why I made the decision that I did. (P7)

Servant leadership is a leadership style embraced by some education leaders. As a leader, it is important to listen and to acknowledge that you don't have all the answers. Participant 11 (P11) described her servant leadership style, valuing the ideas and opinions

of others in her decision-making process:

> In terms of the little decisions, I guess for me, it's easy for me to, I guess, take sort
> of a humility stance and understand that people have talents and that I would be
> an idiot as a leader to ignore what people know and what they could bring to any
> decision. (P11)

At times, feedback comes to a leader in the form of pushback. K-12 education leaders know how to take the feedback and use it to move forward. Participant 9 (P9) described the feeling of being stuck in the middle during her time as a building principal, and how it was an important part of her role to learn to listen to feedback from all sides:

> I think that that's probably the hardest part about being a middle manager because
> I was a principal. So, you're there on the front lines. You can see and hear what's
> happening in the classroom. You can see and hear what's happening with your
> teachers. You're the one getting the feedback. You're getting all the complaints
> and there's always going to be people not happy with your decisions or whatever.
> But I felt like every decision I made, people needed to know, whether they agreed
> or not, that I was doing it for the sake of the students. (P9)

Feedback is important for leaders to hear and have as input for decision-making, and also for them to consider as they are creating messaging that will become an output for that school, district, or the larger community. Participant 11 (P11) described the importance of using feedback to create a message (communication output) that would be effective and credible:

> When you also put it out to the larger group, you're asking for input and feedback,
> so you can really refine the message. Because even though the message is coming

from you as the leader, it's a message on behalf of all of these people. So, having

those people, their input, and their feedback, they can say, "Yeah I actually helped

her write that." It gives them sense of ownership, then they have more buy-in.

(P11)

Most leaders who participated in the study described experiences of gathering

feedback from people, including stakeholders from the community, schools, parents, and

others, far more often than gathering feedback from digital or online sources. Participant

10 (P10) was asked during her interview if she relied on online or digital media sources

for information for decision-making. Her response summarized her experience as

follows:

I would say we don't rely on those things because we truly rely on the people.

There's a people aspect to our business. It's what we do. I wouldn't rely on a news

feed or media, but what I would do is reach out to my network that I've created.

So if I'm working on something specific, I might throw it into the Twitter-world

and ask for some feedback, or I'm more likely going to call my regional network

of principals and those colleagues that I trust and rely on because ultimately I can

put myself out there and get back the feedback and the hard answers that I need,

even though it's not what I want to hear, but it's what you need to hear. You rely

on people. (P10)

Education leaders regularly rely upon people as part of their decision-making

process. Education leaders, especially public school leaders, have a tremendous

responsibility to a number of stakeholders including parents, students, teachers, school

board members, community members, and others. Participant 7 (P7) expressed it in the following way:

> Almost every decision I make has to be explained to someone. And so that's a critical piece. I don't want to be faced with, "What the heck were you thinking?" I like to hear, "Tell me more about your thinking." And so you're in the position, you represent a lot of people with a lot of responsibility and you should be expected to explain or have to explain every decision. (P7)

The need to publicly justify one's decisions and to make transparent the decision-making process is an integral part of a school building leaders' responsibilities, and this theme emerged as a concern for several participants. Whether justification was for the variety of stakeholders, of for oneself, the need to justify decisions emerged as a theme related to the flow of information. P5 also described the need to be able to justify a decision to himself, bringing decision-making into alignment with his personal ethics. The scenario P5 described was one where students were being evaluated for inclusion in the honor society, and he was trying to reconcile noticeable discrepancies in the recommendations from the teachers on the selection committee:

> I have to justify it to myself. So I'm trying to do it delicately because I know it could impact my relationships with those teachers later on. Also, in the end I know I have to sleep at night, and I have to do what's right for those students who might not have a voice in those committee meetings. (P5)

Once a leader has made the public justification of a decision, it often sets in motion a series of other decisions, also needing to be justified. Missteps could easily multiply, so leaders tend to use caution and interview data showed that education leaders

often involve teams or collaborators to make a decision and to create a level of buy-in. Further, the decisions made now may greatly impact the future, possibly escalating an ordinary decision into a high-stakes decision-making scenario for an education leader grappling with important issues like student safety, spending pubic tax dollars, or learning environments and materials. P6 described the scenario around a spending decision to procure technology during the remote learning scenario forced by the COVID-19 pandemic:

> We have to think about what do we put in place now that we'll be able to live with in the future? That [decision] will take us in a path that we still want to go in, right? It's not going to kind of further drive us down a path we didn't want to be in, in the first place. Once you buy the tech, you almost have to use it just to justify having purchased it. And once you've trained teachers, you almost have to use it just to justify having trained them. And so it's tough. (P6)

A majority of study participants shared they also rely upon peer groups who act as trusted advisors and influence decision-making. Whether making the call to cancel school due to snowy weather for safety reasons, or seeking high-quality curricular materials, education leaders tend to form strong networks of colleagues who share ideas and similarities. The State of New York Education Department has divided up the state into Joint Management Teams (JMT) served by the regional Boards of Cooperative Educational Services (BOCES). This structure fosters joint or regional decision-making and decision-making in groups rather than in isolation. Participant 14 (P14) described how that structure could be limiting for education leaders:

> It's myopic, really. As your overall peer influence group, I think it's shortsighted

if you limit it to the region that you live in or that you're from. It took this jolt of

COVID to move us [education leaders] forward. But it's changing everything

about efficiencies, about learning styles, about the whole notion of flipped

learning for students. But the role of education leaders have probably changed

more than anything, and their only source of information really has been the

Internet – and coming from trusted sources.

P6 described the positive side of what it is like to be part of such a regional peer

group:

I've got other trusted colleagues, other administrators in my district and in other

districts and people at our BOCES that I do think their opinions, I respect and I'll

run ideas by them or particularly if it's an area where I don't have a lot of technical

expertise. I absolutely will go ask. (P6)

Participant 4 (P4) shared the important role the regional or local groups of

advisors have had in her career and how they impacted decision-making in her role in

curriculum and instruction:

Sure, we have a regional group that focuses on curriculum and instruction, and

there are people that I've been in contact with throughout my 30 years in

education. I know those people that have been around, but I also know the things

that they're choosing for their districts, if they're working they can prove that

they're working. It's not because somebody likes it or not. . .we are looking at

people's data to say, "When you chose this why did you choose this? What were

your decisions behind it? What are you seeing in your implementation?" Knowing

the right questions to ask. (P4)

Social media presence can unintentionally blur the lines between the personal and professional messaging and communication. As described by one study participant (P8) who belongs to a Facebook group, it is an inevitable consequence of the social nature of people and the platforms that enable nearly an instantaneous connection and easy access to information, or misinformation:

> It's who we are now. It's how most people communicate. I'm on a mom's group on Facebook. There's like 6,000 women in it. Whatever is shared from our school district is on there before I even get the phone call from the district, and people are talking about it. Asking others, "What does this mean?" (P8)

In this context, social media provides a quick source of information for the community that may or may not contradict whatever information could potentially be provided to the community in deliberate messaging by the school. P14 further elaborated on the importance of access to technology for information, stating, " leaders talk about equity and access - meaning not just access to technology, access to information that they can only get through technology now, when here you have your entire student body and your entire faculty working from home."

A final theme emerged from the data related to education leaders' and the flow of information was that education leaders tend to gravitate toward the most reliable sources for information factored into decision-making. For example, P7 illuminated a few of the sources other than social media that he must consider when making a decision:

> And so, that's always a significant piece of trying to make decisions, is you certainly have legal guidance and you have input from the state education department. You have input from, nowadays, the governor. You have

commissioner's regulations to weigh, you have education law to weigh, you have

the political constraints around a lot of decisions. (P7)

P14 shared the following about the importance of reliable sources of information,

put into the context of the quick decisions made during the COVID outbreak and the

rapid shift to remote learning models for schools in New York State:

So your source of information, it has to be from the CDC, from your county

health department, from your governor regardless of what state you're in, from

your mayor. So right there you've got four areas that you're responsible to get that

information from and it's changing on a daily basis. It's no longer even an option

about the use of technology. It's about having that high level of literacy, critical

analysis of who you're getting the information from and timeliness. Using the

media and online information is the only option for decision-making in this

scenario. And it's real. (P14)

We live in a 21st century society where the amount of instantaneously available

information made accessible via digital technologies is unparalleled in history (Metzger

et al, 2015). A citizen's ability to identify and use credible and reliable sources of

information for decision-making is a skill vital to participation in a democratic society.

High stakes decision-making is required of education leaders who are ultimately

responsible for the health, education, safety and welfare of the children in their school

buildings and communities. The basis for education leaders' decision-making may hinge

on the trust and flow of information, including massive amounts of information from a

variety of online sources. Participant 13 (P13) described the problem with the over-

abundance of information:

The quality of verifiable, great information that's out there is so much. How do

you make sense of it all? Social media, and these outlets of bogus information and

fake, hateful, and misleading information. It's out there. Do you think that's really

the problem for an education leader? Or is it, gosh, there's just too much out there.

How do I make sense of it all? How do I contextualize it for me? (P13)

Leaders need to make sense of information, no matter where it comes from, and

put it onto context. P14 suggested some strategies that she, and other education leaders

can use to cope with the copious amounts of information served up by the Internet and

social media:

It's so easy to get caught up in it, and there's such a mass amount of information

it's actually overwhelming. So I think the most important thing is to use a critical

lens, and know the sources of information, and making sure it's from an

authoritative source that you have vetted, especially now that is most important

because there is so much misleading information that has come out. (P14)

One aspect of the research question that did not come up in the findings was the

influence of algorithms and curated information content provided by Google searches,

likes on Facebook, data gathered by technology companies for purposes of targeted

marketing ads via use of Alexa or Siri. P14 shared that living in a digital age and

interacting with technology means that people are both consuming and providing date

concurrently and that widespread awareness of this problem may still be emerging even

among education leaders:

A few years ago in New York City there was a big lawsuit against Google, and

Google came out and said, "Listen, we said, in the beginning, our mission, we

collect data, period, all data. We use it for our benefit. We never hid the fact and here it is." Yet these are the same folks that really have no problem using Siri, using Alexa, and you're just feeding data in all these sources. So do I think they're aware? I think to a point, but I don't think they're even scratching the surface just yet. (P14)

Chapters 1 and 2 of this study introduced the idea that bias inevitably exists among human decision-makers. Bias influences how people process information and make decisions. Cognitive bias is defined as systematic error in judgment and decision-making common to all human beings due to cognitive limitations, motivational factors, or adaptations to natural environments (Wilke & Mata, 2012). Decision-making and information processing are often biased due to interpretation of information limited by ones' own viewpoint (Metzger & Flanagin, 2013). This is known as confirmation bias.

As study participants shared their lived experiences related to the research question, five participants (P1, P2, P6, P7, P10) made mention of ways they acknowledge filters, or the presence of bias either in themselves or others and the difficulty in establishing trust under those circumstances. The presence of too much information triggers the use of heuristics or shortcuts for decision-making, often appearing in the form of biases (Metzger & Flanagin, 2013). Biases exist within the context of cognitive shortcuts because information stored as memory is known to influence reasoning due to the fact that judgments are based on recalled information (Chira, Adams, & Thornton, 2008). Heuristics allow people to make judgments quickly, efficiently, and at times accurately, however, they also have the potential to lead to errors in judgment (Garb, 2003).

The next section illuminates the themes that emerged in the category of lenses for decision-making: filters and perceptions (biases), inner knowing (gut-instinct), self-talk, and professional knowledge.

Lenses for Decision-Making

Human beings are by nature biased information seekers and processors, with the tendency to assess new information based on its logical compatibility with preexisting beliefs (Lewandowsky et al., 2017). Similarly, the second thematic category that emerged from the interview data was that education leaders who rely on others for information are aware of the presence of both implicit and explicit biases. Participants relayed examples from their experiences about how they navigate decision-making while maintaining some element of trust and confidence that a good, trustworthy decision is being made. Participants indicated the sources of their information mostly included people, and that they were aware that their opinions and judgments could be colored by bias. The themes that emerged within this category were: inner-knowing, professional knowledge, and filters or perceptions. Behaviors or strategies within these themes included fact-checking behaviors (P1, P6), awareness of filters or biases (P2, P7), listening for perceptions of others (P10, P7) and self-talk (P2, P3, P12).

P1 shared his experience of receiving an email that appeared to be from the New York State Education Department in Albany asking for information from him. He was mistrustful and employed a well-rehearsed strategy of first checking with an outside source (or multiple sources) to verify the authenticity of the request before responding:

> I don't trust it. I can't trust the media. I can't trust online bots, whatever they're
> called. It looked really, really important and I still thought, "I don't trust this."

This looks like somebody is trying to sell me something. So, I started to read

further and further and it *is* from State Ed and it *is* something important that I'm

going to have to respond to, but I didn't trust it because anytime I get an email or I

see something on Facebook or anything even on Twitter that somebody might

tweet to me, I always have to check it, recheck it, recheck it, recheck it. (P1)

As shared in Chapter 2 of this study, Wineberg and McGrew (2019) studied the

success of the fact-checker group versus other groups in detecting a "fake" website. The

fact-checkers in that study arrived at more accurate conclusions, in less time, by leaving

the original site to open new tabs and search for corroborating information elsewhere.

The study concluded that accurately evaluating digital content takes a certain skill set that

even many highly educated people do not possess. Further, an effective strategy used by

the professional fact-checkers was to go beyond the source of information and sought to

verify by checking other sources for that same information. Fact-checking is one strategy

that can be employed by any decision-makers who are responsible for high-stakes

decisions. This strategy was also mentioned in the interview with P6 who frequently both

reads and writes research through his years of doctoral work:

So I get a little bit annoyed when I hear people saying, "Well, the research says

this, or the data says this." And I know that in most cases, there's research and

data that say lots of different things. And so I try to look for a balance.

Something's more trustworthy to me if I can see the same kind of conclusion in

multiple kinds of research. You see the same thing in quantitative and qualitative,

then I'm more apt to trust it. If I see the same kind of thing coming out of like a

more practitioner based journals with, like if teachers are trying something out,

and they report it works. (P6)

Bias can take the form of a filter through which people see and hear information. Decision-making and information processing are often biased due to interpretation of information limited by ones' own viewpoint (Metzger & Flanagin, 2013). Research participant P7 shared how he exercised caution even when collaborating and communicating with his trusted peer-group of superintendents. He described how he constantly questions the bias or filters within which his colleagues may operate:

I tried to have a pretty deep, a pretty strong relationship, with my inner circle and part of that is knowing their perspectives. Knowing how they look at things. Certain people look at things certain way, even though they're a very seriously trusted source, you know that they have their perspective and their blind spots and their way of looking at things. So all of that goes into the filter in making decisions. (P7)

Bias as a filter is described by P2 in her interview. P2 acknowledged that the same situation or information potentially could be processed quite differently by two people. In the context of this excerpt from her interview, she speaks to self-actualization and the ability to realize what experiences come to bear on any individual's decision or experience, and how filters may explain why there is a different decision or outcome in spite of it:

We all have filters that we filter everything through. And those filters are our experiences. And so you're filtering everything that you're going through by your filters. And when it comes out on the other end, [your] filters are different than

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[mine]. So even though we just had the same experience, when we retell the story

- it's different! (P2)

Finally, another strategy shared by Participant 10 (P10) in her interview was her ability to listen carefully for hints about the perceptions and filters, also known as biases, of others. P10, a building principal, attributed her listening skills to the fact that her first appointment to a school leadership position occurred before the age of 30. She expressed an awareness of the filters that others may possess and tries to counterbalance that by listening and heightening her own perceptions:

Listening is so, so important. I thought I was a listener, but I wasn't listening. Now I listen to *listen*, actively listening, and try to be much more receptive and cognizant of how people are perceiving things because maybe they're not perceiving them the way you want them to. They perceive what *they* think they need, and then I try to be more receptive and cognizant to what they're *actually* needing. (P10)

Some of the participants mentioned in their interviews that they rely on sources of information not at all related to social media or online information, or other people, rather coming from within. This set of data describes the sources of inner-knowing that leaders may rely upon for decision-making. Participants lived experiences provided data that described this as their own inner knowing or intuition, also referred to as *gut instincts*.

A source of information that many participants mentioned was their inner knowing. Leaders need to be able to trust their *gut* – sometimes more than external sources of information. It is hard to define, but according to the data shared by study participants, it exists and they often relied upon it for decision-making when there wasn't

time for information gathering or seeking feedback, or collecting input from stakeholders.

Several participants described the interrelationship between *gut* and decision-making (P2, P4, P6). Participant 2 (P2) used inner speech or dialogue, questioning herself to check-in about how she is feeling, and then lets her gut take over:

> If I have to make a decision really quickly and I can call somebody, like I could seek wise counsel or hopefully maybe there's wise counsel standing right next to me. Or, sometimes my gut, tells me like, "Okay, this feels right, or this doesn't feel right. And since I don't have a lot of time, I'm going to go with what feels right." (P2)

P6, P4, and P2 described their thoughts on the interrelationship between time and decision-making. Each shared that when they don't have a lot of time and they need to make a decision rather quickly, they have learned to rely on their own professional knowledge, past experiences, and gut. P6 described his thinking in this interview excerpt:

> So, I mean, in terms of making the decision, when I think about this, I think of, I think the personalities involved, I know the teachers, I know that in this case, if I were to just make a decision without including them, that wouldn't go well. I think what's doable? Sometimes there's data and sometimes there's things like that, but a lot of these like short everyday decisions are just kind of like you know the players and you have a gut feeling about what's going to work or not work. And you just have to make a decision and go with it. (P6)

Finally, P4 described the importance of trusting your own knowledge and experiences, which in her opinion supersede the gut in the process for reaching a sound

and trustworthy decision:

> I know it's important to do your own independent research and read and have some level of expertise on what it is that you're going after. I don't think it's a gut thing, more as a your knowledge and experience lead you to know what kinds of things have to be in place in order for something to be successful. (P4)

Self-talk was another dimension of this thematic category. P2 described how she taught it to her students as a social-emotional learning strategy:

> Because decision-making is such an internal process, it's very difficult to think of it as something you have to teach out loud. But I tell my students and I tell my son, that smart people talk to themselves. I say, "Let me show you what I do when I talk to myself. And I would start doing it out loud." (P2)

Participant 12 (P12) described self-talk as it related to asking questions and mindfulness:

> I think about Piaget's hierarchy of needs and getting to the level of actualization, you're closer to being at the level of actualization when you realize what's happening inside of you. Like asking yourself in this moment, "what am I experiencing? Why am I experiencing it? And what previous experience am I really dealing with right now?" I definitely ask myself those questions. (P12)

Finally, P3 described a scenario about a time when he got an upsetting email from a colleague. P3 described his self-talk revealing his thought process as he made his decision to wait more than 24 hours before responding:

> Let's say you get an email, or you get a correspondence that really sets your blood boiling. As a leader, what is your reaction? I ask myself "Are you going to

respond immediately while you're not in your best frame of mind, or you're going to identify whether or not you have a bit of time to not only think about what you're really going to say, but to allow your emotions to come down to a place where it's actually safe to interact with others? Is your goal to communicate that you were displeased by the correspondence that you received? Or is your goal to resolve the matter so that both parties or all parties involved can return to productivity?" (P3)

Throughout the examples and interview excerpts shared in this thematic category of acknowledgement of bias, education leaders acknowledged their awareness and shared some strategies for counteracting and reaching a trustworthy conclusion. Several participants (P1, P2, P6, P7, P10) indicated awareness that other people's perceptions are colored by biases or social influence. An implication for further study could be the extent to which each leader is cognizant of his/her own bias or effects of social influence, and how that manifests in their own decision-making independent of others.

Influences of Online Information, Media, and Social Media

The third thematic category of past experiences with social media and media emerged as participants described their lived experiences and how those experiences continued to shape their present day interactions with media and social media. P12 shared that he doesn't really think leaders' decisions are influenced by media, social media, or online information: "It doesn't really come from all of the information that's bombarding us in that noise from online. It's almost like education leaders intuitively turn away from that." When participants shared experiences about times they did engage with media, social media, or online information it left an impression. Across a variety of

contexts, participants shared examples in their interviews that resulted in the following themes: influence of Facebook groups (P9), and social media's amplification of negative and harmful news coverage (P10), spread of misinformation, and public perceptions. Each excerpt from the participants' interviews paints a picture of their lived experiences in relation to the research question.

P9 described misinformation surrounding an incident in the cafeteria where she had to send a letter to parents to stop the viral spread of misinformation on a private Facebook group for parents:

Well suddenly, I was getting this feedback from parents that the [cafeteria] aides were pushing kids heads down and…all this misinformation. And so, I usually try to keep all the communications positive, but I actually put out a letter and said because I was hearing all this verbiage going on and said, "I've been getting numerous complaints and let me tell you exactly what happened and what the situation is because there's too much misinformation." (P9)

She continued by sharing the inherent danger of the private groups where misinformation can spread so quickly that school leaders are sometimes blindsided can't get ahead of it. In the experience described by P9 the misinformation wasn't dangerous, but the potential for miscommunication existed and was amplified by members of the online Facebook group. P9 continued to share how the truth came to light:

And it was rare I had to do that, but again, I think people start talking on social media and suddenly, I had a few parents call and tell me this was going on. I just explained the situation. And then, I guess they went back to the Facebook page and said, "Hey, people shouldn't be chatting like this. You should call the

principal. That's what I did. She gave me 30 minutes of her time." It was a

positive conversation and a much better way to handle it. (P9)

There are a number of positive aspects to the use of social media and online

information related to education leadership. P15 shared a number of examples from her

experiences:

> Well I think it does provide a lens to model positive behavior. So around
>
> wintertime, you see the superintendent that will sing a song to the community
>
> about having a snow day or you'll see items like that really positive acts of
>
> kindness, character positivity moves. It's a way to share that information, which is
>
> really nice, or shed a light on some of the kindness and good acts that are going
>
> on. It also allows others to replicate best practice. So if there's been either a
>
> tremendous fundraiser or something, things like that usually go viral very fast and
>
> it gives other leaders those ideas that, again, they can replicate in their own
>
> environment. (P15)

One suggestion for a positive use of Facebook Live came from the parents of

students at the mid-sized school where P10 is the building principal. P10 describes how

parents requested that she organize and share a Facebook Live morning news with

announcements to resemble what students would hear if they were in school, instead of

trying to learn remotely at home. As P10 expressed, Facebook Live was one way that

they could connect and reassure students and parents during the stressful time of COVID-

19:

> Parents trying to help kids learn at home asked, "Would you consider putting on a
>
> Facebook Live and doing a morning newscast for us every morning? Maybe at

nine o'clock, and just do the morning news like you might at school?" They were like, "We need some consistency. We need to be able to start our day and have some routine. We need help." I said, "Yeah, no problem. This is what we'll do." If that helps you, then by all means, we'll do it." It just helps everybody be connected and have some sort of semblance of normalcy. (P10)

Describing another situation earlier in her career as a building principal, P9 described the types of impact that negative parent comments had upon her and her administrative team at the district level. According to P9's experiences, she noticed there had been an uptick in the number of negative comments and overall negativity in the social media sphere:

I found that people, parents were so supportive and positive in my early years as a principal. But the last few years, I think parents became much more negative and wanted to criticize people. And honestly, we had conversations as an administrative team about that and really felt like that negativity came as social media increased. Because it's really easy to spout off and vent on a closed Facebook page and be negative and nasty and not go to the teacher first or whatever, but it's much harder to call somebody up or meet with them face to face and say the same things you would say. You can hide behind that computer screen. (P9)

Another theme that emerged among participants was the awareness of public perception and the interrelationship between public perception and their credibility as leaders. As discussed in earlier chapters, education leaders are entrusted to shape the vision and direction of academic success in a school, to establish the conditions for

effective teaching and learning, and to empower others to lead and make important educational decisions (The Wallace Foundation, 2013). The trust and flow of information creates the very foundation upon which education leaders build their decisions. If this foundation is shaky, important decisions may be called into question and leadership's credibility may be doubted. Credible education leaders, who act as trusted sources of information for their students, teachers, parents, and communities, are accountable for making decisions, explaining the rationale, and for maintaining credibility in the eyes of their followers. P1 relayed his experience during a situation where he learned to become more cognizant of public perception and its implications:

I got to a place where I was not physically well. And I wrote something on Facebook, and one of the other assistant superintendents said to me, "You need to get that off Facebook because people aren't going to be able to trust you and rely on you because they think you're falling." And I thought, "Oh, I never thought about that," because you're connected both personally and professionally when you get to that [leadership] level. (P1)

Another instance of the impact of public perception entangled with social media presence is expressed by P4 who describes why she intentionally opts not to use social media:

It's more not wanting to be placed in a position to have students or their families follow my personal life and information because I'm a pretty private person and don't feel like that ever has any place and that type of thing. Also more importantly, to not be put in a position to refuse to accept a student or a parent or somebody in the community as somebody into following me, so I figure it's easier

not to have a presence. I know there are people who feel strongly against that who

think that it's really important for you to have that social media presence, but

when it comes to a social media presence personally I don't think that it has any

place. (P4)

P8 shared the following experience from earlier in her career described as a

lesson-learned about "intent versus impact" of social media messaging and public

perception:

And some things just shouldn't be communicated via social media, things that you

want to be talking to parents about and talking to people face to face. I'm

definitely somebody that's gotten burned in my teaching career. I don't know if it

was in my leadership career, but with tone or lack of transparency, things like

that. You have to be really careful when you're communicating in an electronic

format about that. It's like intent versus impact. So, you have to be thinking about

impact as well as your intent of what you put out. (P8)

Digital media in the first two decades of the 21st century have provided an

unprecedented access to information for public consumption (Metzger & Flanagin, 2013).

Social media and media each possess the power and potential to reach a large number of

people very quickly. One of the dangers of this is that negative messages can be

amplified quickly by going *viral*. One of the themes identified in the data analysis of the

participant interviews was that of controlled input/out put of information related to school

situations, especially when trying to counteract misinformation. Other study participants

also described experiences with misinformation. P10 relayed a memorable experience of

an incident at her school that went viral due to national news media attention and the
parents who amplified it through the use of social media:

> We made worldwide headlines in September. It wasn't good. It made local
> attention and blew up and made national and worldwide headlines. So you would
> say that social media was not in our favor and it really imploded on us because we
> didn't use our public relations and our communications specialist to get in front of
> it. Then it didn't help because there was more misinformation with a parent who
> drew in media attention. (P10)

The data analysis of transcribed interviews resulted in three thematic categories,
themes, and properties as summarized in Table 4.1. The result of the analysis is the
development of a preliminary theory, the *transput leadership lens.* This core category, or
preliminary theory*,* emerged from analysis of the codes and categories that developed
during coding (Saldana, 2013). The preliminary theory incorporates the set of interrelated
themes and concepts uncovered by the analysis of the interview data and by the research
outlined in the Chapter 2 literature review of this study.

Table 4.1

Summary of Categories, Themes and Properties of the Transput Leadership Lens

Category	Themes	Properties
Lens for Decision-Making	Inner-knowing	Self-talk, intuition, gut-instinct
	Filters and perceptions	Awareness of bias in self and others
	Professional knowledge	Past experiences
Flow of Information	Feedback	Stakeholders, loops, pushback

	Controlled messaging	Justification, staying ahead of media
	Reliable sources	Critical lens, research, websites
	Too much Information	strategies for verification, data, trusted peer group
Influence of Social Media or Media	Amplification of media	Facebook groups, public perception
	Spread of misinformation	Facebook groups, viral, social media

Summary of Results

The thematic categories that emerged from the data were: lenses for decision-making, past experiences with media/social media, and flow of information.

This chapter provided details of the research process appropriate to this study's grounded theory methodology as outlined in Chapter 3. The chapter shared the findings from the interviews and provided insights into the lived experiences of K-12 education leaders' decision-making by highlighting interview excerpts in their own words. Data analysis revealed a synergistic relationship of communication with self, other people, and technology as sources of information for decision-making. The study summarized the paradigm of education leaders as they grappled with information travelling in two different directions at once. The study's data analysis revealed the ways that K12 education leaders in New York State actively sought sources reliable of information, used different sources of information to make decisions, and then sought to communicate it to

others in such a way so as limit misinformation and to avoid misunderstanding. Data

were analyzed and presented as they pertained to the research question and the purpose of

the study. The key findings and their relationship to the current body of research,

implications and limitations, and recommendations for future research are discussed in

Chapter 5.

Chapter 5: Discussion

Introduction

The purpose of this qualitative study was to understand the lived experiences of K-12 education leaders making decisions given the extreme variability in the flow and quality of online information. The trust and flow of information, combined with human experience and judgment, provides the foundation upon which education leaders base their decisions. Therefore, this study sought to provide an approach to understanding ways K-12 education leaders interface with information and technology in decision-making in their personal and professional lives.

For education leadership, effective decision-making is the result of deliberate thought followed by deliberate choices informed by truth, and the most accurate data available (Johnson & Kruse, 2010). The personal beliefs, biases, and needs that a leader brings to the decision-making process all attest to the humanness of leadership, while emphasizing the need to be self-aware and critical throughout the process (Johnson & Kruse, 2010). While technology can assist in decision-making, interaction with technology can also amplify the challenges faced by people who utilize online sources for information to make well-informed decisions about important matters. The findings from this study are supported by Seifert (2017) suggesting that human bias and social influence perpetuated and amplified by the Internet and on social media platforms provides a challenge for education leaders who seek in good faith to make informed decisions based on reliable facts and credible evidence (Seifert, 2017).

The findings uncovered education leaders' universal concern for any decision's potential impact upon students. Doing *what is best for students* was a common thread for decision-making mentioned by 100% of the study participants. The national set of leadership standards, the Professional Standards for Educational Leaders (2015), states in each one of its 10 Standards, that effective leaders are unequivocally responsible for promoting the "academic success and the well-being of each student." In New York, the education leadership preparation program requirements echo this core value for education leaders stating that leaders must act ethically and professionally to provide high-quality education and promote the academic success and well-being of each student and commit to being agents of continuous improvement with respect to students' academic success and well-being (New York State Education Department, 2020, pp. 13-16). The study's findings suggest the core value of student-centeredness ran deep and true with participants, emerging as a value that guided their actions and decision-making on a daily basis.

Trust is an important part of a school's organizational culture as school leaders, teachers, students, parents and community leaders coexist within a school's ecosystem. National Educational Leadership Standard number two states that education leaders must "act according to and promote the professional norms of integrity, fairness, transparency, trust, collaboration, perseverance, learning, and continuous improvement." Given that education leaders are increasingly expected to lead their schools within a framework of collaboration, established trust is crucial. School leaders' influence on staff motivation, commitment, and working conditions can either directly or indirectly improve teaching and learning (Leithwood et al., 2004). This aligns with the research of Kouzes and Posner

(2011) stating that credibility is the foundation of leadership. Credibility is based upon how leaders earn the trust of their constituents and inspire their confidence, first by getting to know them and then by upholding the shared values of the organization (Kouzes & Posner, 2011). The study's findings provide evidence of a translation from theory to practice in the lived experiences of participants, and the data echo the research of Leithwood et al., (2004), Kouzes and Posner (2011), the national standards (NPBEA, 2015) and the New York State requirements for education leaders' preparation programs.

Results from the data collected for this study led to the identification of 3 core conceptual categories: lenses for decision-making, constant flow of information, and experiences with social media and online information. The data supported the literature discussed in Chapter 2 showing specifically that bias and social influence impacted decision-making in individuals and in groups (Aral, 2014). Synthesized, these core conceptual categories formed an emerging theory of a transput leadership lens for education leaders making decisions in the digital age. The preliminary theory of a transput leadership lens for decision-making in the 21st century illuminates the incessant flow of information from different sources and the concurrency of communication inputs/outputs required of a leader making decisions in the fast-paced environment of the digital age. Chapter 5 presents an emerging theoretical framework created to provide an approach to understanding ways K-12 education leaders make decisions as they interface with the flow of information, social influence, and both human and technological biases inherent in everyday interactions and platforms. Further, the ways that education leaders have been prepared to tackle the challenges of decision-making will be discussed. The

bulk of Chapter 5 presents key findings and their relationship to the current body of research, implications and limitations, and recommendations for future research.

Implications of Findings

Given the extreme variability in the flow and quality of online information, K-12 education leaders in this study shared their experiences, behaviors or strategies to cope with decision-making while maintaining their credibility and responsibility in the eyes of those people in the school, community, and other local or regional stakeholders. Aligned to the research question, the study findings indicated that the leaders' strong desire to avoid misinformation, combined with the strong tendency to rely on social influence exerted within local and regional peer groups, ultimately limited the amount of interaction or reliance upon online sources for decision-making. Study participants indicated they relied heavily on trusted advisors and peer groups in the same geographic area for professional advice and as a decision-making sounding board. Study participants responses strongly indicated that they preferred to tap into reliable sources for online information such as the Center for Disease Control website, the New York State Education Department website, research publications and professional journals, and legal documents over other online sources or media. Findings uncovered an awareness of the potential for misinformation on social media or online, and most actively sought to avoid it. One explanation for this could be the context of current events in the year 2020 (when the research was conducted) which will be further discussed in this chapter.

Lenses for Decision-Making

Leaders rely on a lot of sources to make sense of information used for decision-making. Education leaders are forced to be critical-thinkers and carefully evaluate

sources. Leaders are fundamentally responsible for concurrently being both a consumer of information and a producer of reliable information. The literature supported this study's findings that ubiquitous access to vast amounts of information challenges people to sort out on their own what is credible and accurate by relying on general personal knowledge, heuristics, social influence, or convenience (Marshall, 2013).

The involvement of stakeholder groups within the school community like parents, teachers, students, school board leaders, and community members may raise the stakes for the leaders' decision-making. The results of the study indicated that leaders tended to gravitate to known and trusted sources for information rather than casting their nets wider to all that is available online or in social media.

Within the core category of lenses for decision-making fell the themes of inner-knowing, reliance on professional knowledge, and perceptions or filters, also known as cognitive biases. The literature showed that bias is an unavoidable human tendency. For example, Kahneman's (2011) studies of rational human behavior and heuristics confirmed that human beings are naturally prone to bias. Kahneman (2011) asserted that a key strategy needed to counteract the natural tendency toward bias is to slow down and learn how to recognize one's own biases.

Research also showed that biases tend to become a natural default under certain circumstances. As education leaders strive to make informed decisions, the literature has shown that it is easy for unconscious or conscious bias to distort findings in research, influence judgments, or impact decisions (Friedman, Fireworker, & Nagel, 2017). The results of this study found that social influence from a group of peers, heuristic information processing, and confirmation bias were the most common types of bias that

were evident in the experiences shared by study participants. The social aspect of the information for decision-making appeared to be more highly valued and utilized than social media or online media sources. Study results showed that leaders tended to rely on peer groups or stakeholders to provide context, or help to make sense of information.

Filters or Biases

Social influence bias, confirmation bias, and shortcuts to decision-making were evident in the results of the study. Rather than the pitfalls of misinformation or technology's algorithms providing the greatest challenges to education leaders, the unseen social influence of peer groups, and cognitive biases precipitated by heuristics and an over-abundance of information proved to be greater challenges that remained beneath the awareness of some participants.

Social influence bias, also known as the herd instinct, is a natural human tendency characterized by lack of individual decision-making (Aral, 2014). Bias kicks in when there is social influence from a group of peers. Several participants (P1, P2, P6, P7, P10) indicated they relied heavily on input from their peer groups when making a decision. Group membership provides a strong motivator to defend one's beliefs in the face of counter-evidence to minimize the risk of losing membership in the group. This also explains why some people are more inclined to believe false information that others easily dismiss (Sunstein, 2014). False beliefs held by individuals are often attached to a group to which individuals belong (Flynn et al., 2017).

A well-researched dynamic within information groups is the more people with similar opinions talk to each other, the more alike their opinions become, and the more distant they become from what they interpret to be the opinions of the out-group

(Sunstein, 2009). The study participants who indicated that they relied upon the trusted advisors within their peer group, for example a regional group of school superintendents with their BOCES, mentioned the value of input from those peers in decision-making. Many decisions regarding the school calendar, the opening or closing of school related to COVID-19, remote learning, contracts with vendors or transportation companies, are made jointly among the education leaders in the same Joint Management Team (JMT). In this case, the structure set up by NYS creates myopia for decision-makers. The literature suggested that repetition of information by others in the same group reinforces its truth, whether or not the content is actually credible (Marshall, 2013).

Nielson (2012) surveyed over 28,000 Internet users from around the world, finding that the number one trusted source of consumer brand information was recommendations from friends and family members. Social influence complicates decision-making due to the human instinct to think and act like those around us. Pariser (2011) coined the term filter bubble to describe a phenomenon whereby an individual's social media and online behavior is filtered algorithmically to match one's own worldviews, without diversity of thought or conflicting viewpoints being presented. This study's findings suggested a similar effect, but with the filter bubble being created through repetitive exposure to the same information through trusted peers groups formed locally or regionally, rather than in an online or digital context. In a filter bubble of information, consensus may be achieved at the expense of a variety of information sources and diversity of thought.

Further complicating the use of information for decision-making is the way in which education leaders engage with stakeholders, including parents, teachers, students,

and community leaders. Education leaders described taking in information from these groups of stakeholders, while at the same time being keenly aware of the responsibility to also concurrently provide those groups with credible information. The way that leaders strategically cope with this revolving door of information and navigate the issue of credibility and trustworthiness is reflected in the emergent transput leadership model discussed in this chapter.

Leadership Preparation and Induction into Decision-making

All school leaders in New York State must be certified by the state and must pass a rigorous set of certification examinations. In order to prepare education leaders to be effective school or district leaders, the state requires that candidates complete a combination of coursework and a minimum of 15 weeks of clinical field study during which they assume leadership experiences that closely match the demands of the role. Many leadership programs in the state require more than the minimum number of hours. Considering the background experiences of each education leader in New York State gives an important context to this study. Knowing the uniform set of requirements, standards of practice, and how decision-making has been taught to aspiring leaders according to state guidelines provides a baseline for performance and expectations of certified New York State school and building leaders. It further defines the standards and values they are expected to uphold within their roles as leaders.

Too Much Information

The responses from participants (P13, P14) shared an example of one approach to managing the constant flow of information was to cut the noise and turn attention to only trusted sources, usually not from the Internet or social media. P13 shared how the over-

abundance of quality information may affect education leaders' decision-making, "what I tend to see is that more often than not, people aren't drowning by misinformation, but they're drowning with so much reliable information. They can't put it all together. Because it is about sense-making, right? That's the translation that needs to happen."

Leaders need to be able to make sense of information in order to make good decisions. Madsbjerg (2017) introduced the term *frictionless technologies* as an innovation whereby technologies operate seamlessly, requiring little thought, input, or effort by humans. This is problematic in that it possesses the potential to influence humans' thinking. Madsbjerg writes, "why seek out new information, why learn something different, when data [through technology] can serve up exactly what reflects already-established outlooks and preferences?" This echoes the research of Metzger et al., (2010) finding that participants utilized a series of shortcuts related to endorsement, and self-confirmation among others. The endorsement heuristic posited that people are inclined to believe information or sources if other people also believe them (Metzer et al., 2010).

From a leadership perspective, the cognitive overload that can result from too much information, even if it is trustworthy and high-quality, leads to a tipping point at which leaders employ that strategy of shortcuts that can lead to flawed decisions. This is a threat to leadership with decision-making roles and responsibilities.

The literature stated that another method employed by most people was heuristic information processing, whereby individuals relied on heuristics and social cues to assess information they encountered (Fridkin et al., 2015). In heuristic information processing, cognitive shortcuts like past individual experiences, perceived trustworthiness of a

source, attractiveness of a source of information, as well as what others think, all contribute to favoring one's own biases when evaluating information (Metzger et al., 2010). The findings of this study found in the core category named lenses for decision-making provided evidence of heuristic information processing, although described in participants' own words.

The CDT approach to decision-making is a rational model showing how a decision could be made to achieve a desired outcome (Adiguzelli, 2016). CDT can be applied in certain conditions in which the decision-maker has full information relating to the problem and has ranked alternatives, according to their own knowledge, preferences, and desires (Min & Cunha, 2019). CDT posits that decision-makers are rational, have their own beliefs and preferences, seek to minimize risks, and rank alternatives according to information that is available (Adiguzelli, 2016). Min & Cunha (2019) found that classical decision-makers were motivated to reduce perceived risk by selecting alternatives that they felt most knowledgeable about, while also considering how any given alternative would be most favorably judged by others. The findings in this study provided similarities to the Min & Cunha (2019) research. While describing their lived experiences with decision-making, education leaders shared how they: sought to minimize risk, considered many alternatives that were ranked by past experiences, professional knowledge, and gut-instinct, and also considered the reactions and approval of others when making decisions. Similar to CDT, participants further described a singular, student-centered goal for most decisions, and indicated that they were always acting with the best interest of students and their school or district in mind.

Experiences with Social Media or Online Information

Research participants were asked to describe a memorable time when they made a decision, and their trust of online information or social media came into play. Participants responded in a variety of ways to the interview question about experiences with social media or online information, with both positive and negative experiences shared. Some participants indicated that they avoided social media altogether and did not trust online sources of information much, if at all. This theme related to the Metzger et al., (2010) study on heuristic information processing in which cognitive shortcuts like past individual experiences, perceived trustworthiness of a source, attractiveness of a source of information, as well as what others think, all contributed to favoring one's own biases when evaluating information.

Supporting Madsbjerg's (2017) concept of frictionless technology, the findings suggested that the technology integration and interjection of digital information into people's everyday lives had become seamless and automatic, to the point where it was deemed unremarkable or went unnoticed in participants descriptions, despite the fact that it definitely had a presence. Data showed that the participants' past social media experiences and pre-conceived beliefs provided a backdrop for their future interfaces with it. The extent to which this colored participants' thinking or influenced their responses in this particular study would require further research.

Participants in the study further shared descriptions of attempts to avoid the spread of misinformation that was perpetuated by social media or media. Participants described a heightened awareness of the influence of social media in their school community, especially among parents and teachers, acknowledging several incidents with

Facebook groups. These all factor into the public perceptions and mitigation that leaders must employ when using social media to counteract misinformation or create a controlled message that bolsters confidence and good public relations between school and community.

Context of Current Events

The implications of this study are contingent upon the time and current events within the timeframe of the study. The threat of misinformation, untrustworthy sources of information, and other manipulations of information widely available on the Internet and social media can have an adverse impact on society (McGrew et al., 2018). For example, widely spread and commonly believed misinformation about medical issues like immunizations, nutrition, or pandemics (like SARS, Avian flu, or COVID-19) can influence adults' medical decisions for themselves or for their children. Other well-publicized examples of manipulation of facts and information adversely impacting society exist in politics and science, influencing people's knowledge and beliefs about political candidates' campaigns, or beliefs and persuasions about the scientific evidence of climate change (Lewandowsky et al., 2017). The conclusions from these studies are affirmed in our current experiences with COVID-19 and the 2020 presidential election season. The importance of reliable and credible information for decision-making is that it provides the backbone of civic reasoning and intellectual well-being of society (Lewandowsky et al., 2017). If citizens are apparently unable to distinguish and evaluate the reliability of the overabundance of information online, then they will be inclined to fall prey to untruths and misleading arguments (McGrew et al., 2018). Without the backing of reliable and credible information for decision-making, all decisions can come

into question. The literature, study findings, and current events implied that education

leaders are risk-averse when it comes to the high-stakes decisions that impact children

and their school communities. The implications of this study might have been different if

conducted 2 years ago and might also be different if conducted another 2 years into the

future.

Homogeneity of Thought

In a filter bubble of information, consensus may be achieved at the expense of a

variety of information sources and diversity of thought. Findings of this study indicated

that participants minimized the influence that social media or online information exerted

upon their decision-making. Rather, the social influence of peers and trusted advisors was

a more important factor. The influence of group dynamics suggested by study

participants echoed the literature on confirmation bias, social influence bias, and

endorsement heuristics (Metgzer et al., 2010). The endorsement heuristic posited that

people tended to believe information or sources more readily if other people also believed

them (Metzger et al., 2010).

Decision-making and information processing are often biased due to

interpretation of information limited by ones' own viewpoint (Metzger & Flanagin,

2013). Confirmation bias gives preferential treatment and consideration to information

that confirms one's hypothesis, while choosing to ignore the information that disconfirms

it (Jonas et al., 2001).

Preliminary Theory

The core categories of lenses for decision-making, constant flow of information,

and experiences with social media and online information grew organically from the

descriptions provided by research participants as they shared their lived experiences. An emerging conceptual model illustrates the complexities of decision-making in light of the constant flow in large amounts of information that are input and output concurrently.

The definition of *transput,* a computer science term, collectively refers to both input and output. Central to this idea is the concept of the processing of many elements, and weighing alternatives concurrently. The preliminary theory of a transput leadership paradigm illuminates the concurrency of communication inputs/outputs required of a leader making decisions in the fast-paced environment of the digital age. The model in Figure 5.1 represents an emerging theoretical framework, the Transput Lens for Education Leadership Decision-Making, created to provide an approach to understanding ways K-12 education leaders interface with information in decision-making in the face of copious amounts of information, social influence, and both human and technological biases inherent in everyday interactions and platforms.
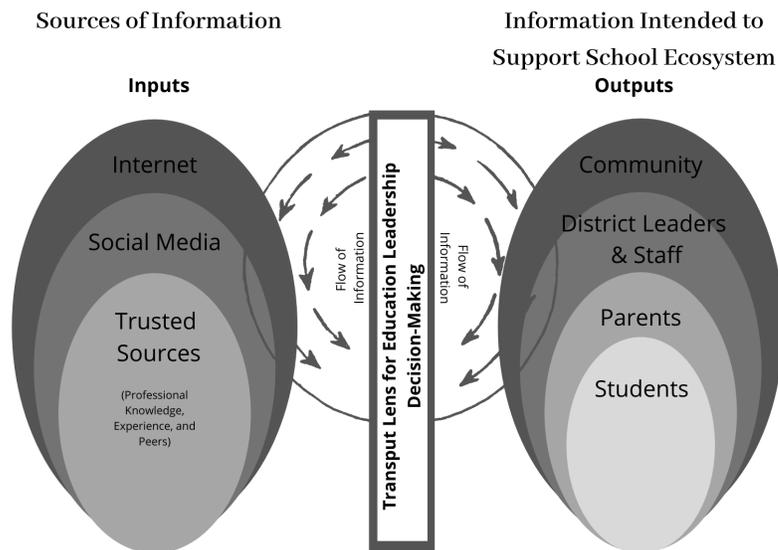

Figure 5.1. Transput Education Leadership Lens for Decision-Making

The model represents the lens that transput leaders use to process and intake large amounts of information from a wide variety of sources, including the Internet, social media, New York State Education Department, and others mentioned by participants in this study. The education leader is in the middle of the model pulling in information, making decisions and judgments using a variety of filters, biases, and strategies then pushing information out to the school and community. The trust and flow of information that education leaders must depend upon for decision-making also includes the leaders' own lenses for evaluating information. The challenge often lies within their own biases.

Stodgill's (1974) study of the trait approach to leadership asserted that "the traits that leaders possess must be relevant to the situations in which the leader is functioning," (Northouse, 2016). Borrowing from that leadership theory that leadership behaviors and leadership situations are shaped by context, the transput leadership lens illustrates that the fast-paced and dynamic flow of information due to the ubiquitous access to technology. In our 21st century society, any discussion about the topic of decision-making, particularly important decisions that affect individuals and society as a whole, must include an acknowledgement of the increasing role of information accessed through technology. Education leaders are functioning within the context of a fast-paced world full of information. Yet, as expressed by participants in this study, their primary concern in making any decision large or small, is what is best for students.

A key component of the model is the concurrent nature of the input and output of information for communication, and the lens through which education leaders process that information. As study results indicated there is a fair amount of bias involved in the

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lenses that education leaders said they relied upon the most – inner-knowing, professional knowledge and past experiences, and filters.

Limitations

The qualitative study utilized the grounded theory methodology for the purpose of gaining a better understanding of the lived experiences of education leaders in New York State with regard to decision-making given the unpredictable flow and quality of online information. A potential limitation of the study was the limitation of participants to include leaders in only New York State. New York State Education Department divides up the state (with the exception of New York City, which has its own Department of Education) into regional groups known as Joint Management Teams. This configuration limited the possibilities for independent decision-making by any one school building or district leader in many situations.

A further limitation of the study was related to the sample population of education leadership. Education leaders tend to stay in their profession for a long tenure, so the population's career longevity could lead to bias when it comes to the implementation of technology and social media for decision-making. P4 shared: "I wonder if you were to ask this question 5 years from now and 10 years from now I think the way that people gather information and use those sources will be very different because we grew up without them."

Another potential limitation for this study was the rapidly changing nature of information and technology. For example, within the short timeframe of this study, Twitter, Instagram, and Facebook put a new feature of *fact-checkers* in place to minimize the effects of misinformation. A controversial practice, designed to take down any

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information that is deemed to be false according to mainstream beliefs, it represents a new social media practice that could be viewed as censorship and could have impacted the perceptions of participants in this study, skewing the results.

Finally, a limitation of the study possibly could be related to the context of current events including the political climate of the COVID pandemic and the 2020 presidential election. There was a large amount of emotion and public mistrust of the media and social media during this particular time due to a few instances of widespread misinformation negatively impacting the public. Education leaders are so focused on credibility that they may absolutely have steered clear of any social media or online sources that could be deemed untrustworthy as a means to preserve their credibility.

Recommendations

Further research. Based upon the results of this study, further research is recommended. The concepts from the model for the transput leadership lens for decision-making could be researched further in a quantitative study conducted with a larger sample. Further research utilizing a larger sample population that extends outside of New York State is suggested to assess the results and mitigate some of the limitations of this study. Age and demographic information should be collected and incorporated into the data of future studies on this topic.

Given the presence of bias revealed by this study's results, the future research should also explore the cognitive strategies that leaders use to cope with implicit or unconscious bias. In light of the literature and what is known about decision-making, further research is needed to learn what are some ways that education leaders seek out alternative perspectives or diverse viewpoints? In addition, how do education leaders

seek to strategically disconfirm information, as literature showed that disconfirmation

strategies are effective, yet little used? This study did not uncover the lived experiences

of participants with regard to the strategy of disconfirmation related to sources of

information and the field would benefit from further research.

   Diversity of thought. Another recommendation based on these findings and the

accompanying literature review would be to create an expanded network of professional

colleagues to increase the diversity of perspectives for decision-making and the influence

of technology. Education leaders would benefit from the opportunity to develop a

national network of colleagues to develop an understanding on national themes and

trends, share solutions and challenges to common problems of practice, and to bring fresh

ideas. P14 shared, "A bunch of superintendents responded to this survey question about

where they felt they could turn for help - most survey respondents admitted that they felt

really, really alone."

   Some participants mentioned having a mentor (P6, P5, P9) but implied that the

mentor was in the same building, district, or BOCES. Leveraging the power of a national

network of education leaders, like the American Superintendents Association (ASA) or

the Institute for Education Innovation (IEI) could potentially provide connections or

mentors in a position to share diverse viewpoints and unique solutions to common

problems of practice. Knowing that there is a national set of Professional Standards for

Educational Leaders assures us that there should be a network of thoughtful practitioners

who seek to successfully implement them, and a forum in which to share their success

and challenges with each other.

   Model digital citizenship and best practices. One final recommendation is

about the digital citizenship curriculum that educators teach to students. A recommendation for education leaders would be to model those behaviors for their teachers, parents, students, and community. According to the recommendations of the International Society for Technology in Education leadership standards (ISTE, 2018), school leaders should model the safe and ethical use of technology at school. Further, they will need to serve as "advocates for establishing policies that encourage student-centered instruction and empowerment of all stakeholders in the educational process" (ISTE, 2018). Rather than avoid social media as some respondents indicated, provide a positive role model and demonstrate the best ways to engage. Providing positive messages and as P14 stated "provide a lens to model positive behavior or shed a light on some of the kindness and good acts that are going on," could positively impact the flow of information and messaging that are inherent in the education leader's responsibilities.

Conclusion

Leaders rely on a lot of sources to make sense of information used for decision-making. Education leaders are forced to be critical thinkers and carefully evaluate sources. Leaders are fundamentally responsible for concurrently being both a consumer of information and a producer of reliable information. The literature supported this study's findings that ubiquitous access to vast amounts of information challenges people to sort out on their own what is credible and accurate by relying on general personal knowledge, heuristics, social influence, or convenience (Marshall, 2013).

Aligned to the research question, the study findings indicated that the leaders' strong desire to avoid misinformation, combined with the strong tendency to rely on social influence exerted within local and regional peer groups, ultimately limited the

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amount of interaction or reliance upon online sources for decision-making. Study participants indicated they relied heavily on trusted advisors and peer groups in the same geographic area for professional advice and as a decision-making sounding board. Study participants' responses strongly indicated that they preferred to tap into reliable sources for online information such as the Center for Disease Control website, the New York State Education Department website, research publications and professional journals, and legal documents over other online sources or media. Findings uncovered an awareness of the potential for misinformation on social media or online, and most sought to avoid it.

An emerging theoretical framework, the transput lens for education leadership decision-making, was created to provide an approach to understanding ways K-12 education leaders interface with information in decision-making in the face of copious amounts of information, social influence, and both human and technological biases inherent in everyday interactions and platforms. The preliminary theory of a transput leadership paradigm illuminated the concurrency of communication inputs/outputs required of a leader making decisions in the fast-paced environment of the digital age.

Recommendations included further research on the cognitive strategies of disconfirmation, and utilizing quantitative research with an expanded sample population. Further recommendations included expanding professional networks beyond the local level to increase opportunities for diversity of thought, and leaders' thoughtful modeling of digital citizenship behaviors proactively for school and community stakeholders.

As study results indicated there is a fair amount of bias involved in the lenses that education leaders said they relied upon the most – inner-knowing, professional knowledge and past experiences, and filters. Finally, the issue of trust regarding source of

information came to light within this study. Given that education leaders are increasingly

expected to lead their schools within a framework of collaboration, established trust is

crucial. School leaders' influence on staff motivation, commitment, and working

conditions can either directly or indirectly improve teaching and learning (Leithwood et

al., 2004). This aligns with the research of Kouzes and Posner (2011) stating that

credibility is the foundation of leadership. Credibility is based upon how leaders earn the

trust of their constituents and inspire their confidence, first by getting to know them and

then by upholding the shared values of the organization (Kouzes & Posner, 2011). The

trust and flow of information for decision-making is an integral part in the decision-

making of education leaders in New York State.

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Appendix A

Letter of Invitation

Dear K12 Education Leader,

I am conducting doctoral research on K12 education leadership decision-making given the unpredictable flow of digital information in our society. Specifically, the study seeks to understand the lived experiences of K12 education leaders making decisions in an environment where technology's algorithmically curated content, inherent biases, and social influence may be impacting decision-making with or without their awareness or consent. This is a timely topic that leaders face across both personal and professional contexts.

Invitation to Participate in this Study

I am writing to request your participation in this research study that will provide valuable information cross-cutting the fields of technology, information science, and educational leadership. If, for any reason, you are unwilling or unable to participate in the study, please share this letter of invitation with anyone else in your network that might be interested in participating.

Details of Participation

Criteria. I am seeking participants who have had a.) at least one year of experience as a K12 education leader, and b.) have some decision-making responsibilities in that role, either at the school or district level.

Time Commitment. Your personal participation in this research study would consist of one interview, approximately sixty (60) minutes in length, conducted via a videoconferencing platform of your choice, such as *Zoom, Microsoft Teams, or Google Meet,* held at a time that is convenient for you during the timeframe of April – June of 2020. If more information is needed, I will ask your permission to schedule a 20 – 30 minute follow-up interview.

Virtual Meeting Logistics: During the initial videoconference meeting, and any necessary follow-up discussions, I would make an audio recording of your responses for the purposes of accurately transcribing them. Your responses will remain strictly confidential in my writing. Further, the study would not identify you, your schools, or your district in any way.

Next Steps

Participation in this study is voluntary. ***Please contact me using the email below if you are willing to participate.*** I will send you a formal "Consent to Participate" form

prior to scheduling the interview. As a reminder, interviews will be scheduled at your convenience.

       Finally, thank you for your time and consideration of this request! I would be happy to answer any remaining questions you have.

Sincerely,

Missy Greene
Doctoral Candidate
St. John Fisher College
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Appendix B

Interview Protocol

Grand Tour:

As you know, my study is about the phenomenon of decision-making and leadership as seen through the lens of abundant online information, media, and communication. The aim of the study is to capture stories of everyday decision-making and how information found on common technology platforms like *Google* search, newsfeeds, social media (like *Twitter* or *Facebook*), online reviews, and others impacts decisions that leaders make. Through this research I hope to approach an understanding of the lived experiences of K-12 education leaders in New York State.

1. You make lots of decisions every day. Can you start by telling me about a time when you had to make a pretty big decision (either personal or professional) and describe the process that you went through to make it? What information helped you?

2. What about some examples of the type of decisions you make on a daily basis – personal or professional - Can you describe that process for some of these daily decisions? What information helps you?

3. How does time impact that process – for example, if you have to make a decision very quickly?

4. Are there any memorable examples of decisions where your trust in online information or media may have come into play, or into question? What are your strategies when that happens?

5. Are there any other relevant ideas or experiences that I have not asked you about?

       a. Tell me more about those.
       b. Why are they important?