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"Set in Stone" or "Willing to Grow"? Teacher sensemaking during a growth mindset initiative☆

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HIGHLIGHTS

- This study draws on sensemaking theory to explore how teachers explain growth and fixed mindsets.
- Teachers' prior beliefs about learning and learners influence how they engage with these mindsets.
- Teachers express support for the growth mindset initiative and feel it is something they already do.
- Teachers sometimes oversimply these concepts into simply positive and undesirable traits.
- Some teachers misinterpret fixed mindset as a characteristic of low-performing, low-income, or immigrant students.

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Teachers influence their students in many ways beyond the academic skills or content knowledge they teach as part of the formal curriculum. Indeed, they may impart such important life skills as compassion, self-control, and perseverance. There is growing interest in how such skills, often referred to as noncognitive skills, can influence students' academic success (Blackwell, Trzesniewski, & Dweck, 2007; Broda et al., 2018; Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011; Paunesku et al., 2015; West et al., 2016; Yeager & Walton, 2011). Much of this research focuses on estimating the effects of social-psychological interventions on students. Though prior work has increasingly emphasized the importance of adults (i.e., parents and teachers) in shaping children's non-cognitive skills (Gunderson et al., 2013; Haimovitz & Dweck, 2017; Rattan, Good, & Dweck, 2012), few studies have explicitly examined how teachers take up ideas about these non-cognitive factors and incorporate them into their approach to learning or daily classroom practices (Farrington et al., 2012).

In this study, we use data from a high school improvement model focusing on students' non-cognitive skills. One of this model's key goals is to encourage students to develop a growth mindset, a way of thinking that holds that intelligence is malleable and that skills and talents can be developed through effort (Dweck, 2006). We focus on the sensemaking process to explore the following research question: How do teachers participating in a school-based mindset initiative define and explain growth and fixed mindsets?

According to the sensemaking perspective, teachers draw on their prior experiences, beliefs, and contexts to interpret and construct meaning of a new idea (Spillane, Reiser, & Reimer, 2002; Weick, Sutcliffe, & Obstfeld, 2005). In doing so, teachers may reframe the tenets of a new idea in ways that influence how it's implemented in practice. In this study, we examine how teachers' explanations of growth and fixed mindset—as captured in over 150 semi-structured interviews—seem to reflect their prior views about learning and students. We find that the explanations given by many teachers suggest a "false growth mindset" in which a limited understanding of the concept leads people to oversimplify its tenets (Dweck, 2015). Furthermore, our analysis reveals that some teachers describe fixed mindset as a cultural trait and associate fixed mindset with low-income or immigrant students. The sensemaking perspective would suggest that these teachers may be reframing and misinterpreting growth and fixed mindsets to align with biased or deficit thinking (Valencia, 2010).

Our analysis contributes to the research base in multiple ways. We focus directly on how teachers engage with mindsets about intelligence during a school-based initiative focused on non-cognitive skills. In contrast to existing work that uses brief

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questionnaires, we capture teachers' ideas about growth and fixed mindsets using open-ended interviews. These data create an opportunity to develop a more nuanced understanding of the sensemaking process through which teachers take up ideas about growth and fixed mindset. We also highlight common misconceptions that emerge in teachers' explanations and identify challenges and opportunities in the implementation of this school-based mindset initiative.

1. Conceptual framework: Sensemaking during school improvement

Sensemaking is the process by which organizational actors respond to the introduction of a new idea or a change in their experience (Maitlis & Christianson, 2014; Weick, 1995; Weick et al., 2005). This process usually begins with a disruption to the normal routine, such as an unexpected or surprising event, the introduction of a new idea or policy, or a breakdown in the way things are typical done (Weick et al., 2005). Individuals use cues from their environment as well as their prior experiences and beliefs to recognize, comprehend, and then respond to these disruptions. In doing so, individuals interpret what is happening ("making sense" of the disruption) but also construct meaning through the "active authoring of events and frameworks for understanding" (Maitlis & Christianson, 2014, p. 58). Beyond the purely cognitive process described above, sensemaking also includes an emotional dimension (Spillane et al., 2002). When presented with a new or disruptive idea, individuals are motivated to preserve their positive self-image. As such, people are more likely to recall only those aspects of their own beliefs and practices consistent with a new reform idea and are less likely to initially engage with ideas that threaten their sense of self (Gregoire, 2003; Spillane et al., 2002).

Educational reforms rarely make substantial and lasting change in the daily classroom experience of teachers and students (Cuban, 2013; Elmore, 1996; Payne, 2008). Sensemaking offers an explanatory framework for why this change is so difficult. By design, most reforms ask teachers to change something about their normal routine, such as adapting their curriculum and instruction to match new academic standards. Rather than assuming that teachers are unable or unwilling to change their practice, this perspective highlights how teachers must interpret new reform ideas through the lens of their prior knowledge and experiences (Spillane et al., 2002). Research on teacher sensemaking often finds that teachers can develop different interpretations of the same reform idea based on their context, prior knowledge and beliefs, and opportunities to engage in collective sensemaking with their peers (Allen & Penuel, 2015; Coburn, 2001; Rom & Eyal, 2019; Spillane, 1998). Additionally, teachers implementing reforms often overly interpret new ideas as being similar to their existing beliefs or practice, focus on superficial components of reform, and develop an understanding of the reform that can differ substantially from what was intended by the new initiative (Coburn, 2004; Cohen, 1990; Spillane et al., 2002).

Sensemaking may be especially relevant for understanding the improvement effort studied here, in which the primary goal was improving school culture and student learning by promoting growth mindset. In particular, this initiative asked teachers to explicitly teach students about growth mindset, introduced student behavioral and grade reflection processes to promote growth mindset thinking, and then encouraged teachers to adopt classroom practices that promote growth mindset. Unlike in the case of more physically "concrete" programs, in which teachers are requested to implement a particular set of academic standards or use specific curriculum materials, how teachers make sense of an initiative involving a noncognitive approach may have an even more significant effect on its implementation. Furthermore, an initiative specifically intended to promote growth mindset thinking may require teachers to re-examine deeply-held beliefs about their identity as teachers and their ideas about learning that motivate their instructional practices. Employing a sensemaking perspective, we posit that teachers' prior beliefs about learning and learners will particularly influence how they engage with new ideas about growth and fixed mindset.

Such beliefs are likely shaped by pervasive ideologies about merit and ability, including how failure is explained and how success is measured. Deficit thinking, in which academic failure is attributed to students' internal deficits and often ascribed to their cultural background or upbringing, is a commonly-held belief among educators in the United States with roots in racialized discourse about intelligence (Valencia, 1997; 2010). Especially in schools with predominantly White teachers instructing students of color, deficit thinking can result in teachers using students' backgrounds as an excuse for failure (Delpit, 2012; Ford & Grantham, 2003; García & Guerra, 2004; Valencia, 2010), viewing certain groups of students as less capable (McKenzie & Scheurich, 2004; Walker, 2011), and maintaining systemic structures that oppress marginalized students (García & Guerra, 2004; Solorzano & Yosso, 2001). Ingrained deficit beliefs could lead teachers to reject a new educational initiative based on the assumption that their students' failure cannot be addressed through school-based initiatives (García & Guerra, 2004).

2. Background literature on growth mindset

Introduced by psychologist Carol Dweck, growth and fixed mindset represent a continuum of how people think about the nature of intelligence and learning. People with stronger growth mindset beliefs are more likely to value effort, make goals around learning (i.e., mastery) rather than goals around performance (i.e., grades), and attribute failure to lack of effort rather than lack of ability (Blackwell et al., 2007; Dweck & Leggett, 1988; Hong, Chiu, Dweck, & Wan, 1999). Students whose beliefs are more aligned with growth mindset tend to exhibit higher levels of motivation within the classroom, demonstrate more academic growth, and show more resilience when facing academic challenges (Blackwell et al., 2007; Haimovitz, Wormington, & Corpus, 2011; Park, Gunderson, Tsukayama, Levine, & Beilock, 2016; Yeager & Dweck, 2012). Students' mindsets can be influenced by school-based or online interventions, and these interventions may be able to help improve academic outcomes (Blackwell et al., 2007; Boaler, Dieckmann, Pérez-Núñez, Sun, & Williams, 2018; Broda et al., 2018; Durlak et al., 2011; Good, Aronson, & Inzlicht, 2003; Paunesku et al., 2015; Sisk, Burgoyne, Sun, Butler, & Macnamara, 2018; Yeager & Walton, 2011).

While there is increasing evidence that teachers influence the mindsets of children (Blazer & Kraft, 2015; Kraft, 2019; Ruzek, Domina, Conley, Duncan, & Karabenick, 2014), much of the research on students' non-cognitive skills does not directly examine the mindsets of teachers or explore how mindsets influence teachers' instructional practice. Earlier research on teacher mindsets, which often relied on surveys in which teachers respond to simulated situations, concludes that teachers with stronger growth mindset beliefs emphasize effort and improvement over time in assessing student performance (Butler, 2000; Deemer, 2004; Lee, 1996; Rattan et al., 2012). Focusing mostly on math teachers, more recent research uses surveys, interviews, and classroom observations to categorize instructional practices along a continuum of growth to fixed mindset and to examine relationships between teacher practice, teacher mindset, and student mindset (Anderson, Boaler, & Dieckmann, 2018; Park et al., 2016;

Sun, 2018). Citing the lack of evidence that teachers' espoused mindsets predict their students' mindsets, Haimovitz and Dweck (2017) argue that teachers' theories of motivation and associated behaviors may be more important in shaping the mindset of children than whether teachers espouse growth mindset beliefs. Similarly, Park et al. (2016) found no evidence of a relationship between teachers' reported theories of intelligence and their students' motivational frameworks, but did observe a relationship between teacher-reported instructional practices and student mindsets. These findings suggest that examining how teachers understand their mindset about learning—and how understanding translates into daily practice—may be critical for uncovering the link between teachers and student mindsets.

Grounded in her experience working with practitioners trying to promote growth mindset, Carol Dweck has recently warned against the proliferation of "false growth mindset" in which people claim to have a growth mindset when they actually do not or when they do not really understand what it is. Dweck explains that understanding your own mindset and recognizing the circumstances under which you exhibit a fixed mindset can be difficult and time-consuming. In contrast, she argues that "many educators just said, 'Oh yeah, I have a growth mindset' because either they know it's the right mindset to have or they understood it in a way that made it seem easy" (Dweck, 2016; para. 12). Characteristics of this "false growth mindset" include believing that you always have a growth mindset (equating it with being open-minded and flexible), focusing on positive affirmations (e.g., "you can do anything!") or praise that is disconnected from progress or strategies to improve (e.g., "great effort!"), and blaming children's failure to learn on their mindsets (Dweck, 2015, 2016).

Many scholars writing about the promise of school-based mindset interventions are quick to point out the critical role of teachers in implementing these programs (Durlak et al., 2011; Farrington et al., 2012; Yeager & Walton, 2011; Yeager, Walton, & Cohen, 2013). As Yeager and Walton (2011) explain in their review of social-psychological interventions intended to improve student outcomes, teachers may play a critical role in the implementation of such interventions and that "a [growth] mindset intervention might have no effect if students believe that the person who tells them about their potential for growth and improvement does not believe this himself or herself" (p. 290). During the implementation of the growth mindset initiative studied here, teachers and administrators similarly identified the need for teachers to understand and embrace growth mindset in order to implement growth mindset practices in their school.

3. Context of this study

This study focuses on teachers in three high schools engaged in design-based research through a research-practice partnership in a large, urban school district in the southwestern United States. Table 1 displays demographic and performance information about the district and the three high schools participating in this project, which we have re-named Williams, Hancock, and Smith High Schools. Like many urban districts, the student population includes substantial percentages of economically disadvantaged children, children of color, and English Language Learners. Reflecting broader trends across the country, the demographic composition of the teaching staff does not mirror the background of their students (U.S. Department of Education, 2016). Across all three high schools, the majority of teachers are White (70–80% of teachers). The vast majority of students at Hancock and Smith (80–90% of students) are Hispanic, while Williams High School is more racially/ethnically diverse (45% Hispanic, 25% African-American, 30% White). Academically, the district as a whole and all three participating high schools met their state's accountability standards for the two years preceding the study, although their academic performance is often below state averages. The participating schools vary in their size, student population and performance, and teacher demographics. Most notably, Williams High School has a smaller percentage of economically disadvantaged students and Hancock High School has lower student enrollment.

As part of a larger project, these three high schools were selected to participate in the initial implementation of a school

Table 1
Demographic profile of district and participating schools.

	District	Williams H.S.	Hancock H.S.	Smith H.S.
Student Demographics				
Total Enrollment	85,000	1800	700	1800
Enrollment by Race/Ethnicity				
Percent Hispanic	60%	45%	90%	80%
Percent African American	25%	20%	5%	10%
Percent White	10%	30%	5%	5%
Percent Other	5%	5%	<5%	5%
Percent Economically Disadvantaged	75%	40%	80%	60%
Percent English Language Learners	30%	5%	10%	15%
Teacher Demographics				
Total Number of Teachers	5500	115	55	110
Teachers by Race/Ethnicity				
Percent Hispanic	20%	10%	15%	15%
Percent African American	25%	10%	15%	10%
Percent White	55%	80%	70%	70%
Percent Other	<5%	<5%	<5%	5%
Avg. Years of Experience	10 years	11 years	13 years	8 years
Performance Indicators				
4-Year Federal Graduation Rate	80%	90%	90%	90%
English 1 Proficiency Rate	60%	60%	55%	60%
Algebra 1 Proficiency Rate	70%	65%	65%	70%

Note: School names have been changed and presented data is rounded to protect confidentiality. Certain racial/ethnic categories (Asian, Pacific Islander, Native American, mixed race) have been collapsed into an "Other" category.
Source. State's published Academic Performance Report Data (2014–2015)

improvement model developed by district leaders, school administrators, teacher-leaders, and researchers (described more fully in Cohen-Vogel, Cannata, Rutledge, & Socol, 2016). Focusing on student ownership and responsibility (called "SOAR" by participating schools), this improvement model was piloted, refined, and adapted by school-based teams of teachers at each schools (Cannata, Smith, & Taylor Haynes, 2017). SOAR was fully implemented in these schools during the 2014–2015 academic year. As part of the initial design, school teams agreed upon certain non-negotiables, including practices that encourage students to develop a growth mindset.

Table 2 describes how teachers and teachers leading the implementation of SOAR (referred to as "teacher-leaders") engaged in training related to growth mindset. In the year prior to SOAR's implementation, teacher-leaders from all three schools participated in multiple, district-level trainings related to growth mindset. Teacher-leaders at each school then designed and led at least one professional development session focused on growth mindset for all teachers at their school. The format, timing, and specific contents of these trainings varied somewhat across the schools, and the differences are noted in Table 2. Most importantly, the training on growth mindset for teachers at Williams and Hancock High Schools introduced growth mindset and then mostly focused on the implementation of growth mindset lessons for students. In contrast, the training for teachers at Smith High School discussed brain development, introduced the mindsets, and asked teachers to reflect on their own mindset. All three schools introduced growth mindset to students through classrooms lessons, and teachers subsequently implemented behavioral reflection forms and grade tracking activities meant to encourage growth mindset thinking amongst students.

4. Data and methods

The interview data studied here was collected as part of the larger study focusing on the implementation of the SOAR improvement model. A team of researchers conducted fieldwork at each of the three high schools in October 2014 and April 2015 to better understand how SOAR was unfolding during its first year of school-wide implementation. The purpose of the visits was to understand early implementation of SOAR from the perspective of different stakeholders. We gathered information on teachers' experiences with implementation and their understanding of the various components of SOAR, including growth mindset.

During each fieldwork visit, we interviewed about 30 teachers per school. We interviewed all teacher-leaders at each school during each visit. Other teachers were selected to participate in interviews based on availability and willingness to volunteer. As a result, only about half of the teachers in our sample (57 of 120) were interviewed during both the fall and spring visits. Table 3 includes information about the interviewed teachers, including their subject area, years of experience, role in the SOAR (teacher-leader or teacher), and when they were interviewed. In total, we conducted 177 teacher interviews (representing 120 participants) between the fall and spring visits. Although the interviewed teachers represent a variety of subject areas and experience levels, our sampling strategy means that the interviewed teachers may not be representative of each school's teaching staff and we urge

Table 2
Teacher training in growth mindset and implementation of growth mindset related practices.

Activity	Timeline	Williams High School	Hancock High School	Smith High School
District Training for Teacher-leaders	Fall 2013 to Spring 2014	Teacher-leaders at all three high schools participated in three initial training sessions that included district personnel, researchers, and curriculum developers: *Training Session #1 (August 2013)*: Researcher led introductory training created using Carol Dweck's Mindset: The New Psychology of Success. This training introduced concepts of growth and fixed mindsets, shared research measuring the academic benefits for students exhibiting a growth mindset, and briefly discussed ways that adults can promote growth mindset *Training Session #2 (September 2013)*: Curriculum developer led training on growth mindset intended to build shared understanding of growth mindset, encourage participants to reflect on their own mindset, and discuss specific strategies and practices that promote growth mindsets. Teachers were asked to read and discuss a short article by Carol Dweck during training (Dweck, 2010). Teacher-leaders were introduced to lesson plans and student materials about growth and fixed mindsets and asked to provide feedback. *Training Session #3 (January 2014)*: Researcher led session in which teacher-leaders discussed their experience with the initial pilot of growth mindset lessons and survey results from Williams and Hancock High Schools. Teacher-leaders then discussed how to promote growth mindset through classroom practices across the content areas, including explicitly introducing students to growth mindset through lessons, guidelines for effective questioning strategies, use of praise language that encourages growth mindset, and grading practices that allow students to reflect on their progress and revise their work.		
Piloting of growth mindset lessons	Fall 2013	*October 2013*: Teacher-leaders at all three high schools piloted two lessons with their students on growth mindset. Teachers in Williams High School and Hancock High School conducted pre-surveys and post-surveys measuring growth mindset beliefs of students involved in these lessons.		
School Training for Teachers	Spring 2014 to Fall 2014	*June 2014*: Teacher-leaders introduced staff to overall SOAR initiative and introduced concepts of growth and fixed mindsets. *August 2014*: Teacher-leaders led training for all teachers during in-service day prior to beginning of year that focused solely on growth mindset. Training re-introduced growth and fixed mindsets and focused on a set of lessons that teachers would be implementing on second day of school that were focused on growth mindset. Teacher-leaders modeled these lessons and other teachers could give feedback.	*June 2014*: Teacher-leaders introduced staff to overall SOAR initiative and potential topics (including growth mindset) that teachers would cover in newly created advisory period. *August 2014*: Teacher-leaders led training for all teachers that focused on the implementation of advisory lessons (including lesson on growth mindset). *Ongoing*: Throughout the year, teacher-leaders led feedback sessions in which teachers could discuss the ongoing advisory lessons. In one session, teachers briefly discuss how to promote growth mindset thinking during class.	*February 2014*: Teacher-leader led training on growth mindset in which teachers read and discussed article about how the brain learns, took a brief questionnaire about their mindset, and then discussed growth and fixed mindsets. *August 2014*: Teachers participated in two trainings on growth mindset, one led by a teacher-leader and one led by an external consultant. Training led by teacher-leaders happened during a departmental meeting (by subject area) and focused on praise language. Teachers were provided with examples of praise that promote growth mindset. *Ongoing*: Teacher-leaders brought up growth mindset at regular departmental meetings to remind teachers about growth mindset and discuss implementation of related tools.

Table 3
Description of interviewed teachers.

	Total		Williams H.S.		Hancock H.S.		Smith H.S.	
	N	%	N	%	N	%	N	%
Subject Area								
English Language Arts	24	20.0%	10	25.6%	5	13.5%	9	20.5%
Math	20	16.7%	6	15.4%	7	18.9%	7	15.9%
Social Studies	19	15.8%	6	15.4%	7	18.9%	6	13.6%
Science	22	18.3%	10	25.6%	5	13.5%	7	15.9%
Other Subject[a]	35	29.2%	7	18.0%	13	35.1%	15	34.1%
Years of Experience								
1–3 years	42	35.0%	14	35.9%	12	32.4%	16	36.4%
4–9 years	36	30.0%	8	20.5%	14	37.8%	14	31.8%
10 or more years	42	35.0%	17	43.6%	11	29.7%	14	31.8%
Interviewed								
Both Fall and Spring	57	47.5%	19	48.7%	24	64.9%	14	31.8%
Fall Only	34	28.3%	10	25.6%	7	18.9%	17	38.6%
Spring Only	29	24.2%	10	25.6%	6	16.2%	13	29.6%
Role in Project								
Teacher	91	75.8%	30	76.9%	26	70.3%	35	79.6%
Teacher Leader	29	24.2%	9	23.1%	11	29.7%	9	20.5%
Total Interviewed Teachers	120	100%	39	100%	37	100%	44	100%

Notes: Column percentages are presented for each category.
[a] "Other Subject" includes teachers who teach classes in the arts, foreign language, career and technical education (CTE), and other subjects.

caution in drawing inferences from our analysis to school-wide patterns.

At each school, researchers conducted in-depth, semi-structured interviews with teachers. These interviews typically lasted 25–45 min and were conducted in the teacher's classroom, a conference room, or the school library. In their interviews, teachers were asked to define growth and fixed mindsets, describe any classroom practices they were implementing that were intended to promote growth mindset, and explain how SOAR has influenced their work as a teacher. Teacher-leaders received a distinct interview protocol that focused more on implementation efforts. The interviews in our analytic sample were recorded, transcribed, and uploaded into NVivo, a qualitative data analysis software.

5. Analytic approach

In their review of educators' sensemaking of reform initiatives, Spillane et al. (2002) highlight the importance of examining how educators understand the content of a new initiative, explaining, "what is paramount is not simply that implementing agents choose to respond to policy but also what they understand themselves to be responding to" (Spillane et al., 2002, p. 393). Our main goal in this analysis is closely examining how teachers explain their understanding of growth and fixed mindsets. Given this interest, our primary unit of analysis is the teacher. We focused first on coding the interviews of individual teachers and then examined patterns within and across schools.

We engaged in an iterative coding process to identify patterns in how teachers described growth and fixed mindset and drew upon their prior beliefs about teaching and learning in these explanations. This included coding teachers' explanations of how they encourage growth mindset in their classrooms or respond to a student exhibiting fixed mindset behaviors. It also included when teachers talked about their own mindsets and how learning about mindsets has influenced their teaching practices. Our coding process combined deductive and inductive approaches. Given that the sensemaking perspective holds that implementing agents are likely to focus on certain elements of a reform idea while ignoring others (Spillane et al., 2002), the deductive coding is meant to capture whether and how teachers took up various tenets of a pre-established concept (growth mindset). Based on growth mindset literature and the specific training materials used by teachers in the three schools, we developed four broad codes meant to capture elements of growth mindset (Dweck, 2006; 2010). These four codes, along with code descriptions and sample excerpts, are presented in Table 4. Additionally, we engaged in inductive coding meant to capture the "active authoring" that occurs as teachers construct meaning of growth mindset during the sensemaking process (Maitlis & Christianson, 2014). Through multiple rounds of coding and discussion, we created a set of emergent codes grounded in how teachers talked about or reflected growth or fixed mindset beliefs in their interview responses (Corbin & Strauss, 2014).

Prior to discussing our findings, we would like to make a brief note about researcher positionality in the context of this study. We are both former teachers. We both received some training on growth mindset while teaching, although neither of us made an explicit effort to implement growth mindset practices in our classrooms. In reflecting on our time as teachers, we recognized that we ourselves had embodied and encountered both fixed and growth mindsets in our work with colleagues and students. Neither of us were involved in the design and creation of SOAR, but we both conducted fieldwork research for the larger project from which the data studied here is drawn. Susan was involved in the specific fieldwork research used in this analysis, while Ela was involved in analyzing these data in subsequent years.

6. Findings

In examining the data, we found more similarities than differences across the three schools. We present common findings from all interviewed teachers, but will note differences across schools when relevant. Teachers were asked to describe their understanding of growth mindset, how they would know if a student had a growth or fixed mindset, and how (if at all) they have implemented practices in their classroom to promote growth mindset. In their verbal explanations of growth and fixed mindsets—which often relate these concepts to prior experiences or expectations about teaching and learning—teachers give us a window into their sensemaking processes. We have organized our findings into two overarching sections that examine (1) patterns in how teachers explain growth and fixed mindsets and (2) alignment between these concepts and teachers' own ways of thinking and existing instructional practices.

6.1. Explanations of growth and fixed mindsets

Interviewed teachers explained growth and fixed mindsets in many different ways, drawing on the information that they have learned about mindsets through official training, their own personal histories as learners, and specific examples from their classes or students. Almost all teachers showed at least some familiarity with the concepts of growth and fixed mindset (only a few interviewed teachers explicitly said that they were not familiar with the terms or defined the concepts in ways that were completely unrelated to the common understanding of the concepts). However, many teachers explained growth mindset in vague terms, often defining a growth mindset as being "open-minded" or "willing to grow" and a fixed mindset as being "set in stone" or unwilling to try to improve. This section summarizes common patterns in how teachers defined growth and fixed mindsets. We first examine whether teachers emphasize various elements of growth mindset. We then highlight two misconceptions common among teachers that emerged during our inductive coding process.

Table 4
Thematic coding of growth mindset explanations.

Code	Explanation of Code	Sample Excerpts
Nature of intelligence	Describing growth or fixed mindsets as a way of thinking about intelligence (e.g., as malleable versus innate). Includes descriptions of how the brain works or cognitive processes that support learning.	"In a growth mindset you understand that you can grow and that you can change […] I think the short version is, like, intelligence is malleable, right, so it's not I'm bad at math, I'm good at math […] that would be, like, the fixed mindset" "For me, [growth mindset] is to believe that you can change—I really like the 'change the wiring in your brain' kind of image that keeps coming to mind—and through habit you can form stronger pathways in your brain"
Importance of effort	Describing growth or fixed mindsets based on value placed on effort, practice, or hard work (e.g., effort and practice important for improvement versus giving up easily without trying very hard)	"That you believe that you can get smarter by more effort, it's a fix. Can you get better at something if you work harder, do you believe that? That's a growth mindset." "Intelligence is more effort based, that a person can learn through effort, through activities, and through continued practice rather than just somebody who's automatically smart."
Approaches to failure or obstacles	Describing growth or fixed mindsets as a way to approach challenges, obstacles, or failures (e.g., how failure is a learning opportunity versus failure as defining your potential)	"For example, look at that Rubik's cube. I can't do that because I'm stupid. That would obviously be a fixed mindset. Look at that Rubik's cube. I have tried this five times and I have failed miserably. I think that if I spent enough time on that and maybe looked up some techniques, I could do it. I could learn how to do it. I have the ability to improve." "Well, fixed mindset is just that you are what you are, and anything that happens isn't what you did, it's always an external factor. Like I didn't fail the class, the teacher failed me because he doesn't like me, or I couldn't do any better on that test, because the test was hard, not that I didn't study the right thing or didn't even study."
Orientation to future goals	Describing growth or fixed mindsets as general orientation towards future goals (e.g., plans or goals, possibilities for improvement, ability to change the current situation)	"My understanding of growth mindset would be a mindset where you think outside the box. Everything is not as is. You can always go beyond what you think your expectations are, or think beyond what you think your expectations are. Go beyond your abilities, stretch yourself." "Growth mindset is the belief that we are not set in our ways, the belief that we are able to change the things that happen to us, that we're able to put into place a specific plan to change negative behaviors and incidences in our lives."

As part of our analysis of teachers' growth mindset explanations, we used a set of four a priori codes developed based on existing literature on growth mindset and the specific training materials used by teachers in these three schools. Table 4 presents these four elements of growth and fixed mindsets—beliefs about the nature of intelligence, the importance of effort, approaches to failure, and orientation towards future goals—along with sample excerpts that were coded with these a priori codes. This coding allowed us to examine which elements of growth and fixed mindsets were emphasized in teachers' explanations of the terms as well as describe in greater detail how teachers framed these elements in their own words.

Across all three schools, only a few teachers described growth or fixed mindsets as a belief about the nature of intelligence or made any connections between mindsets and how the brain works. Instead of framing growth or fixed mindsets as theories about ability or intelligence, most interviewed teachers (more than half of teachers in each school) described mindsets as a general outlook about your goals, future, or own improvement. Captured in our fourth code ("orientation to future goals"), teachers often explained growth mindset as having a positive attitude (e.g., "where you can look at things positively"), as focused on improvement (e.g., "believing that you can become better at whatever it is"), or as a willingness to try something new (e.g., "being open to change"). With respect to fixed mindset, interviewed teachers typically explained it as an inability to change or lack of interest in improvement. For example, teachers described having a fixed mindset as "not wanting to change [my] ways" or thinking "no matter what I do, just some people are lucky and I'm just stuck here."

In their explanations of growth and fixed mindsets, some interviewed teachers also discussed the importance of effort and approaches to obstacles. How teachers engaged with these ideas in their explanations seemed to vary more within than across schools. For example, some teachers emphasized a belief in working hard (e.g., "growth mindset is when you believe that if you work hard enough, that you can learn and you can do anything") while others more directly tied mindset with specific approaches to challenging situations (e.g., "being able to take on a challenge and come up with new ways, other ways of solving the same problem"). When defining fixed mindsets, the idea of giving up, blaming others, and making excuses for failure came up repeatedly. In a typical response, a teacher from Hancock defines fixed mindset:

> Well, fixed mindset is just that 'you are what you are,' and anything that happens isn't what you did, it's always an external factor. Like I didn't fail the class, the teacher failed me because he doesn't like me, or I couldn't do any better on that test, because the test was hard, not that I didn't study the right thing or didn't even study.

Because of this strong association between failure and fixed mindset, teachers seemed to equate growth mindset with successful students and fixed mindset with struggling students (further explored in the next section).

In the following sections, we describe two common misconceptions revealed by teachers' explanations of growth and fixed mindset. In contrast to the four elements of growth mindset presented in Table 4, these misconceptions—defining growth mindset as relentless positivity and defining fixed mindset as a cultural trait—emerged from our inductive analysis.

Defining growth mindset as relentless positivity. Teachers often described having a growth mindset as having a positive

outlook or being positive in the face of adversity. The following excerpts, in which teachers are asked to define the term, teachers rely heavily on the language of positivity to explain growth mindset:

> Interviewer: Could just tell me your understanding of what it looks like when students have a growth mindset.
>
> Teacher: To put it in adult terms, I think that a growth mindset is having endless possibilities and never being negative about anything …

> Interviewer: Can you tell me your understanding of the term?
>
> Teacher: A growth mindset from what I get of it, is just positively thinking about everything. There's no 'can't.' There's always 'yes, you can.' And it focuses on effort, actually trying, whether or not you succeed or not, it's the trying that counts kind of thing.

For some teachers, growth mindset combined a positive attitude with always making an effort or taking responsibility for your own success. For a small subset of teachers, growth mindset meant simply being positive no matter the circumstances. This focus on relentless positivity, without any attention to how those with growth mindset approach challenges, aligns with one tenet of Dweck's "false growth mindset" (Dweck, 2015).

Defining fixed mindset as a cultural trait. In describing a fixed mindset or discussing the mindsets of their students, teachers sometimes attributed mindsets to certain groups of people. Across all three schools, teachers commonly associated fixed mindset with students described as lower performing. In contrast, only a few teachers indicated that students of all performance levels can adopt different theories of intelligence. For example, teachers described students with fixed mindsets as "the bare minimum kind of student" or students "who don't turn in work, who don't want to learn." Many teachers conflated beliefs about intelligence with students' cultural and socioeconomic backgrounds. The following examples include exchanges between interviewers and teachers in which teachers were asked to define fixed mindset:

> Interviewer: What student behaviors indicate a fixed mindset?
>
> Teacher: All the negative behaviors […] and their environment. Their parents, you know, they have a certain belief about doing things a certain way and they've been raised to do that.
>
> Interviewer: So how would you describe a fixed mindset?
>
> Teacher: A fixed mindset, is those, 'I cannot learn, I cannot learn' mindset. Keep in mind that the demographic in this school is mostly Hispanic students and their parents come to work in the United States. So their mindset is 'I'm going to get a job and I'm going to work in construction, I'm going to follow what my dad does.' Some of them, many of them, help their parents do whatever their trade is. So their mindset is, 'this is what I can do, this is what I'm equipped to do.' It's hard for them to break that bubble of where they come from and then see themselves going to college, see themselves becoming a doctor, becoming an attorney, or whatever. It's hard for them.

These exchanges reveal a fundamental misunderstanding of fixed mindset in which teachers explain fixed mindset as a characteristic of low-income or immigrant students who are seen as having low aspirations. Similarly, a teacher at Hancock described fixed mindset as a cultural trait by saying that "the implementation of a growth mindset is hard in certain cultures, because certain cultures have the fixed mindset." These explanations also suggest that teachers are engaging in deficit thinking, a common phenomenon in which teachers ascribe school-based problems to students and families due to assumptions about their cultural, racial, and/or socioeconomic background (García & Guerra, 2004; Solorzano & Yosso, 2001; Valencia, 2010).

Although we cannot directly observe teachers' prior beliefs, we anticipate that these teachers are drawing on their prior beliefs about learning and learners in their explanations of fixed mindset. These explanations of fixed mindset differ substantially from the intended meaning of the term.[1] As Spillane et al. (2002) explain, implementing agents can modify a new policy to be consistent with their own interests and agendas as part of the sensemaking process. By equating fixed mindset with certain cultural or socioeconomic backgrounds, this interpretation of fixed mindset could lead teachers to reinforce cultural biases and conclude that having a fixed mindset is an innate trait that cannot change. Further, by associating fixed mindset with students' background or family, teachers do not implicate themselves (or their teaching) as contributing to students' mindsets and attitudes. Such a response, as viewed through the lens of sensemaking, is likely because teachers are motivated to preserve their positive self-image when faced with low performance among their students.

6.2. Alignment with existing beliefs and practice

In their interviews, teachers were asked how they promote growth mindset in their classes and how, if at all, the introduction of the growth mindset initiative has influenced their classroom practices. In this section, we examine this alignment with existing beliefs and practices through the lens of the sensemaking perspective. In particular, we explore how many teachers described growth mindset as "something I already do," what prompted teachers to re-examine their own fixed mindset, and how teachers report that they are promoting growth mindset in their classroom.

Something I already do. Multiple teachers explained that learning about growth and fixed mindsets merely gave them a new language to talk about something they already believed or supported. For example, a teacher from Smith said that, "I already shared that philosophy […] this is really nice because this is how I already think." Many teachers described the introduction of growth mindset as reinforcing what they already do or believed (e.g., "it's nothing new to me. It's just the phraseology"). Similarly, teachers recognized alignment between their current instructional practices and growth mindset. As one teacher from Williams explained "my goals for my students align with those goals, so it helps when they're aligned and I don't have to actually change a large portion of my teaching to support it."

While this perceived alignment seemed to buoy teachers' support for the initiative, it may lead teachers to assume that they already have a clear understanding of growth mindset and fixed mindset because it reminds them of something else. This could keep teachers from learning more about growth mindset, identifying how it is distinct from their existing beliefs, implementing new practices that would further encourage growth mindset, or halting practices that promote fixed mindset. This may be particularly problematic when teachers only have limited familiarity with growth and fixed mindset. In the following example, a teacher from Smith expresses strong support for growth mindset and defines it as something that she has always encouraged:

[1] Dweck (2006) is very explicit that people from all backgrounds and levels of success can exhibit fixed mindsets.

> Well, I love [growth mindset] because it's like somebody just put it into words for me. I've always kind of thought that way and, you know, told kids they can overcome and do whatever they want in life as long as they just put their mind to it. I grew up in this neighborhood and so I tell them […] just get outside the box and set your goals. You don't have to just be like, well, this is the way my family does it, or it's the way you know, or I don't have any resources.

This teacher explains growth mindset as something that she's "always thought." She strongly associates growth mindset with having high aspirations and overcoming obstacles to achieve your goals, which are two messages that she's always thought were important to communicate to students. As we explored in the prior section on misconceptions, this teacher seems to equate fixed mindset with having certain aspirations and attributes mindsets to being from a certain neighborhood. In their work on the role of teacher cognition in policy implementation, Spillane et al. (2002) assert that "when implementing agents perceive an instructional idea in policy, the idea may be over-interpreted as essentially the same as the belief or practice that the teachers already hold" and that these beliefs can actually impede the implementation of school improvement efforts because teachers will actually do little to change their practice (p. 9). In the case of this teacher, her interpretation of growth mindset may lead her to think that she's already "doing" growth mindset and, as a result, does not need to learn more about the concept and how to incorporate it into her class.

Confronting a fixed mindset. In contrast to the teachers quoted above, a subset of teachers explained that learning about growth and fixed mindset prompted them to re-think or reflect on their own mindset. For some teachers, simply learning about growth and fixed mindsets seemed to spur reflection. As one teacher at Williams explained, "I feel like the growth mindset has kind of helped me look at myself […] because we're always expecting [students] to learn from their mistakes but as a teacher you have to deal with the same thing." At Smith High School, numerous teachers mentioned that a training session on growth mindset prompted them to confront their assumptions about their own mindsets. As part of this session, teachers completed a questionnaire about their own mindset (teachers at the other two high schools did not do this). As one Smith teacher explained, she—along with some of her colleagues—were surprised by the results:

> We took a quiz in professional development to see whether we had a growth or a fixed mindset. And it turns out, you know, a lot of us had a fixed mindset and we weren't really aware of it. We had to put on the survey do you think you have a growth or a fixed, and we'd say growth. Because we're all about growth, we're teachers, we're all about helping people grow. We took the quiz to find out that we had a fixed mindset and it was a little bit of a shock. And so we learned more about what having a growth mindset really means as far as your attitude and how you approach life and learning.

Multiple teachers mentioned this training as an eye-opening experience. Compared to the other two schools, more teachers at Smith drew on examples from their work as teachers to explain growth and fixed mindsets. For example, one teacher at Smith used an example about lesson planning to describe how she wanted her own mindset to shift from fixed to growth. She explained that, "in lesson planning, the first thought that comes into mind is 'no, that's too hard for my students, they can't do that.'" Learning about growth mindset prompted her to "change my mind to be like, 'maybe it's not too hard, let's try it. Maybe we can change it a little bit. Let's give it a try before I start saying it's too hard for them.'" For this teacher, the introduction of growth mindset caused her to rethink her assumptions about her students' abilities and try to shift her mindset. While not universal, this type of reflection—in which teachers identified ways in which they have themselves engaged in fixed mindset thinking—seems to support a deeper awareness of mindsets. These reflections also align with how the sensemaking perspective posits that teachers are unlikely to reconsider their own mindset (or how their instructional practices may contribute to the mindsets of students) unless they feel their professional identity is at stake (Gregoire, 2003; Maitlis & Christianson, 2014).

While only a few teachers identified themselves as having a fixed mindset, numerous teachers expressed frustration about colleagues who they thought exhibited fixed mindsets. Some teacher-leaders described teacher mindsets as a "touchy subject." For example, one teacher-leader at Williams explained the challenge of addressing colleagues who expressed a fixed mindset:

> There are still teachers who complain about their students or they talk about how that student was always failing, or attitude, or whatever, and it's hard to go up to them and be like, well, you're really approaching that student with a fixed mindset, or you're really approaching this topic with a fixed mindset, or whatever it may be. It's harder to talk to adults about it, because you don't want to call out your colleague on it, but it's a lot easier to call out a student on it.

Teacher-leaders often highlighted the importance of developing growth mindset in teachers in order for the initiative to be successful. At Smith High School, a teacher-leader emphasized her belief that "we need to change teachers' mindsets before we change students' mindsets." Despite this recognition, teacher-leaders often expressed that they felt ill-equipped to address fixed mindset attitudes in other teachers.

Practices to support growth mindset. Teacher-leaders across all three schools received training about how adults can promote growth mindset and in which they brainstormed classroom practices aligned with growth mindset beliefs. Teacher-leaders specifically discussed how praise language and certain approaches to grading (such as allowing students to re-do assignments) can promote growth mindset. In interviews, teachers were asked about their approaches to praising students and allowing students to re-do assignments, and then were explicitly questioned about whether the introduction of growth mindset had led to any changes in their instructional practices. While numerous teachers said that they now use the language of "growth mindset" and "fixed mindset" in their discussions with students, most teachers reported little change in their instructional practice. In the following section, we briefly describe the classroom practices around praising students and grading policies that teachers reporting using in their classroom to promote growth mindset.

Praising students. Focusing on the positives and praising effort came up for many interviewed teachers when they were asked how they could support growth mindset in their classrooms. Often explaining that they had focused on positive praise prior to the growth mindset initiative, teachers described the importance of "constant positive reinforcement." For example, one teacher from Williams described his approach as rewarding "students who come to work, who have completed their work, whether or not it's the quality that is expected […] effort is what I'm focusing on." While this emphasis on effort aligns with prior research on growth mindset (Mueller & Dweck, 1998), how teachers described their approach to praising students highlighted a key challenge in praising effort and improvement while still holding high standards

for students. In the following example, a teacher at Hancock is explaining her difficulty in implementing growth mindset in her math classroom:

> One of the biggest hurdles I think I have, because I teach math, is the kids walk in, they have been unsuccessful in math most of their school career. So they walk into my classroom with the mentality of 'I can't do this.' And so I'm constantly having to be the cheerleader, and going, 'see you can do this, you can do this.' However, I also have to be the one that says, 'well, even though you can do this, this [answer] is wrong.' […] Because math is pretty black and white, too, you know. That's the part I hate, is having to [say], 'well, this is wrong, this is wrong, this is wrong,' but at the same time saying, 'you can do math.'

This teacher describes herself as a cheerleader who tries to focus on positive encouragement for struggling students ("you can do this"). She suggests that this relentlessly positive approach, which she associates with growth mindset, breaks down when students get answers wrong. This teacher's prior beliefs about the nature of learning in math ("math is pretty black and white") may encourage her to focus on the final outcome and impede her ability to encourage growth mindset thinking in her math class (Boaler & Dweck, 2015).

While some teachers described giving positive praise for any effort, other teachers praised effort in more nuanced ways. In contrast the teacher quoted above, a math teacher from Williams highlighted how she avoids artificial praise and instead focuses on supporting students' improvement in the learning process:

> I don't want to just say, you know, you did a good job, you added two plus two. That's not going to help. They're going to know that that's insincere. But if they figure out anything that's hidden or [if] they're following the steps, I'm going to show them how much they got right. I never say that 'you got this much wrong.' I'll say, 'you got 90 percent of it right, you're just missing this step.' And when they see that it's only one or two steps that they're missing, they become much more receptive. Like, 'I can learn one or two steps.'

This focus on process rather than outcomes is fundamental to growth mindset. Unlike the teacher above who acts as a cheerleader, this teacher from Williams was one of the few teachers who described praising effort while also scaffolding students' learning process in an encouraging way. This pedagogical practice moves beyond simply focusing on the positive and is the most aligned with the true intent of applying a growth mindset in the classroom (Haimovitz & Dweck, 2017; Mueller & Dweck, 1998).

Grading practices. Interviewed teachers discussed various approaches to grading and how these practices could promote growth mindset. Teachers often mentioned giving students multiple opportunities to show mastery and offering opportunities for struggling students to improve their grade. Teachers emphasized the importance of allowing students to learn from their mistakes. As one teacher-leader from Hancock explained, re-doing assignments gives students an opportunity "to see what they did wrong, see what they can improve on, reflect so that they can see … this is what I can do [differently]." While most teachers allowed students to make test corrections prior to the growth mindset initiative, a few teachers began this practice upon learning about growth mindset. For instance, a teacher from Williams explained how learning about growth mindset has shifted her approach to grading:

> I'm allowing kids to do more like corrections on things like tests. It's made me more open to sit down [with a student] and say 'look at this again' and 'let's work through it again.' Because I've learned it's not necessarily about the grade. It's about the learning, and so I think maybe that growth mindset is just as good for teachers. Because we do get really hung up on grades a lot. It's more about the learning process.

Teachers connected growth mindset with other initiatives at the district-level and school-level to reduce course failures among high school students (such as particular grading rules and requirements that teachers offer tutoring for struggling students). Because most of these initiatives pre-dated the introduction of growth mindset, most teachers reported that they had not made any specific changes to their approach to grading as a result of the growth mindset initiative.

7. Discussion

Our analysis highlights opportunities and challenges in how teachers are engaging in this teacher-led growth mindset initiative. These findings may be particularly relevant for educators looking to encourage growth mindsets in their schools and researchers considering how to scale up non-cognitive interventions (Paunesku et al., 2015). In the following section, we briefly review some of the methodological challenges and implications of our findings.

7.1. Methodological considerations

Our primary purpose in undertaking this analysis is to better understand how teachers engage with ideas about intelligence, particularly growth and fixed mindset, as part of a teacher-driven mindset initiative. Since part of the sensemaking process occurs in the mind of each teacher, we cannot truly uncover the entirety of this process. However, by focusing on a large set of teacher interviews in which participating teachers are asked to explain growth and fixed mindset, we draw insight from the way that teachers verbalize their understanding and connect these concepts to their pre-existing beliefs and practices. There are limitations to this approach. Unlike research that takes an embedded, observational approach (such as Coburn (2001)), we are unable to follow how the sensemaking process unfolds over time. Instead, the interviews studied here offer snapshots of how teachers talk about growth and fixed mindsets. Furthermore, we can only rely on what teachers say about growth mindset and do not observe what they do. Observational analysis of classrooms is needed to capture how teachers embody growth and fixed mindsets in their daily practices. While not drawn from schools implementing growth mindset initiatives, recent observational analyses focused on mindsets in mathematics provide an additional methodological tool for understanding how teachers' mindsets could get translated into practice as part of the sensemaking process (Anderson et al., 2018; Boaler & Dweck, 2015; Sun, 2018). Such analysis would be particularly powerful if observations of teachers' instructional practices could be combined with longitudinal measures of student mindsets captured throughout the implementation of a growth mindset initiative.

One challenge acknowledged in much of the work on both student and teacher mindsets is the difficulty of creating valid and reliable measures to capture the concepts (Duckworth & Yeager, 2015; Goddard, Hoy, & Hoy, 2000; Tschannen-Moran & Hoy, 2001). The surveys or questionnaires typically used to study beliefs about intelligence have been critiqued for being overly simplistic (Deemer, 2004) and susceptible to misinterpretation or social desirability bias (Duckworth & Yeager, 2015). This study provides an alternative method for understanding how teachers

interpret growth and fixed mindsets. While the use of interview data may allow for greater nuance in capturing teachers' explanations about mindsets, it still suffers from some of the same limitations of questionnaires, notably social desirability bias. While some interviewed teachers explicitly described themselves as having a fixed mindset, we anticipate that some teachers may have been hesitant to identify how they exhibit fixed mindsets about themselves or students. Despite these limitations, our approach provides valuable insight into how teachers engage in sensemaking during this growth mindset initiative and also reveals common misunderstandings in teachers' interpretations. Interviews may be especially important to capture teacher perspectives during school-based mindset initiatives (see Anderson et al. (2018) for an example of this approach).

7.2. Implications

This study explores how teachers engage with mindsets about intelligence as part of a teacher-driven improvement effort meant to develop growth mindset beliefs in students. In line with prior work on how teachers engage with new ideas (Coburn, 2001; Cohen, 1990), we find that teachers' prior beliefs about learning and learners do not disappear when they are introduced to growth and fixed mindset. Teachers often connected the mindsets with their pre-existing practices or personal experiences. Indeed, many interviewed teachers explicitly positioned growth mindset as something that they already believed about learning. While this alignment buoyed teachers' support for the growth mindset initiative, some interviewed teachers appeared to be over-simplifying or re-interpreting growth mindset in ways that diminish its power as a tool to support student learning. In particular, our findings reveal two important challenges: (1) the oversimplification of growth and fixed mindset among teachers and (2) the conflation of fixed mindset with certain cultural and socioeconomic backgrounds.

The sensemaking perspective and related cognitive models for how teachers process reforms (Coburn, 2004; Gregoire, 2003; Spillane et al., 2002) offer a framework for explaining why teachers may embrace this "false growth mindset" or use cultural deficit language in describing fixed mindsets. On an individual level, the introduction of growth and fixed mindsets requires that teachers assimilate this new knowledge into their existing schemas about intelligence and learning. Prior research on sensemaking during reform efforts finds that implementing agents often over-interpret new ideas to be more familiar than they actually are and focus on superficial aspects of new reforms (Spillane et al., 2002). As illustrated in their descriptions of growth mindset (as "common sense" or "just phraseology"), teachers in our sample tended to interpret growth mindset as something that they already believed or did. Consistent with Dweck's warnings about "false growth mindset," many teachers also suggested that growth mindset is the "right" way to think about learning and used generic language (such as being open-minded or close-minded) when defining the mindsets (Dweck, 2015, 2016). Although teachers with these superficial interpretations of growth mindset often expressed support for the growth mindset initiative, they typically reported that they had made little to no change in their instruction practices to promote growth mindset. As Gregoire (2003) proposes in her cognitive-affective model of conceptual change, teachers who do not feel personally implicated in the presentation of a reform message will not further process the ideas behind the reform or consider what it means for their own beliefs and teaching practices.

Sensemaking is also a social process that depends on the interaction of different organizational actors and the contextual factors surrounding the process (Weick et al., 2005). Notably, interviewed teachers often identified students and sometimes colleagues who had fixed mindsets during their interviews but rarely recognized fixed mindsets in themselves. Some teachers explicitly described fixed mindset as a feature of certain cultural or socioeconomic backgrounds. Especially given the demographic mismatch between teachers and students in the three schools studied here, this misinterpretation could reflect teachers' implicit biases. Teachers who engage in deficit thinking tend to view certain groups of students as less capable and may lower their expectations for struggling students (Delpit, 2012; Valencia, 2010). An interpretation of mindsets relying on deficit thinking could lead teachers to view the growth mindset initiative as remediating students with "deficiencies" (e.g., 'fixing' students with the wrong mindset) or to appropriate the language of growth and fixed mindset to label students based on their pre-conceived notions of ability and success. Despite the evidence that teachers influence the mindsets of their students (Blazer & Kraft, 2015; Park et al., 2016; Rattan et al., 2012; Ruzek et al., 2014), deficit thinking could also lead teachers to discount mindset initiatives entirely because they do not want to assume responsibility for students' mindsets (García & Guerra, 2004).

Encouragingly, our analysis also reveals important opportunities that emerged in the implementation of this growth mindset initiative. Teachers overwhelming expressed support for the initiative and praised its focus on students' non-cognitive skills. Such support may indicate that teachers would be willing to spend additional time to learn more about growth mindset and reflect on how to support growth mindset in their classroom. Another promising practice that emerged from our findings is the use of professional development tools that encourage teachers to reflect on their own mindsets in various situations. Multiple teachers at Smith High School, who took a questionnaire intended to gauge their mindset, expressed surprise that they held fixed mindset beliefs and felt that this training encouraged them to reconsider their own mindsets. This incongruence between teachers' expectations and results from the questionnaire prompted them to further engage in the sensemaking process (Weick et al., 2005). Compared to the teachers in our sample from the two other high schools, interviewed teachers at Smith often used their own personal experiences in defining growth and fixed mindsets and explained how the initiative had encouraged them to reflect on their own mindsets as educators.

However, even when teachers seemed motivated to further examine their own mindsets, teachers reported that they often lacked the necessary support to do so. Beyond the initial training for teachers, the initiative offered little in the way of time, resources, and additional training for teachers about how they could promote growth mindset in their classrooms. In one of the few documented studies on teacher professional development related to growth mindset, Anderson et al. (2018) find that participation in the year-long mindset training shifted teachers' mindsets to align more closely with a growth mindset and had a significant, positive change in classroom practices aligned with growth mindset, such as encouraging students to struggle through problems and mistakes. In contrast to the SOAR initiative studied in our analysis, this year-long training included a 30-h online course, in-person meetings with other teachers engaged in the course, and on-site coaching with classroom observations.

Recent research offers additional insight into how this growth mindset initiative could achieve its goal of improving school culture and student leaning. Reviewing research on how teachers and parents may shape the mindsets of children, Haimovitz and Dweck (2017) conclude that "it would not be sufficient to simply teach a growth mindset to parents or teachers and assume it will organize their behavior in ways that shape their children's mindsets."

Instead, teachers may need further training on how their instructional practices and interactions with students promote growth mindset (Park et al., 2016). Teacher-researcher partnerships may be critical to better supporting teachers in implementing school-based initiatives targeting growth mindset and, ultimately, in ensuring that these initiatives are successful.

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