

Student Perceptions of Teachers' Mindset Beliefs in the Classroom Setting

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Abstract

Academic Mindset is a collection of 4 beliefs that directly impacts student academic perseverance, academic behaviors and academic performance (Farrington et al., 2012). Research suggests teachers and students hold beliefs about the stability/malleability of ability (Dweck, 2006); however, little is known about the nature of the relationship between student ability beliefs and teacher ability beliefs in classroom settings. The current research explores the nature of Student Mindset beliefs (n=359) (SM), Students' Perception of Teacher Mindset beliefs (SPTM) and Teacher Mindset (TM) beliefs. Results suggest that Student Mindset (SM) is related to Teacher Mindset (TM) and fully mediated by Student Perception of Teacher Mindset (SPTM). Implications for educators are discussed.

Keywords: teachers' mindset beliefs, students' mindset beliefs, classroom environments

1. Introduction

Classroom settings are complicated. Complex interactions occur among teachers, students, environments and pedagogy. Finding what works to improve student learning can be daunting amidst all of these possible interactions, however, student and teacher beliefs appear to be a key component of successful student outcomes. Research suggests a strong relation to student performance for students who believe their ability can always be improved. These students demonstrate improved learning outcomes, resistance to failure and persistence in the face of setbacks (Dweck, 2012). Research studies in goal theory (Dweck, 1986; Dweck & Leggett, 1988) attribution theory (Weiner, 1979) expectancy-value theory (Eccles, Adler, Futterman, Goff, Kaczala, Meece, & Midgely, 1983) and self-efficacy (Bandura, 1986) suggest that what a student believes about themselves and their learning impacts their performance in the learning environment. More recently, as part of a comprehensive and critical research review of the behaviors and beliefs essential for student success conducted at the University of Chicago, it has been suggested that these key student beliefs are best represented as one of five broader, bigger categories, referred to as the essential "non-cognitive" factors known to directly impact academic performance (Farrington, Roderick, Allensworth, Nagoaka, Keyes, Johnson, & Beechum, 2012). The five broad categories suggested in the review include: Academic Behaviors, Academic Perseverance, Academic Mindsets, Learning Strategies and Social Skills.

The Academic Mindset category encompasses student beliefs and will be the focus of this paper. Academic Mindsets is a term that includes 4 beliefs which are listed below (Farrington et al., 2012).

- 1) I belong in this academic community
- 2) My ability and competence grow with my effort
- 3) I can succeed at this
- 4) This work has value for me (Farrington et al., 2012, chapter 2, p. 9)

The second belief focusing on student ability and competence, is one of several implicit beliefs related to people's perception of their abilities. Implicit beliefs about ability are commonly referred to as "mindset" (Dweck, 2006). Specifically, mindset is the extent to which people believe their ability can be grown by effort and persistence versus the extent to which people believe their ability is fixed or unchangeable, regardless of

how much effort they expend. If a student believes they can grow their ability through effort, hard work and persistence, they are said to hold a “growth” mindset; whereas, as student who believes their ability is pre-determined and unchangeable regardless of effort or persistence is said to hold a “fixed” mindset view.

There have been numerous studies investigating the nature of mindset and its implications for students in all types of classrooms. For example, college level engineering students with growth mindsets are more likely to engage in group work and to have an optimistic view of creativity (Alpay & Ireson, 2006). Murphy and Thomas (2008) investigated computer science majors’ mindsets and found that “interventions designed to encourage malleable views of ability may help Computer Science students become more resilient, willing to take risks and appreciative of group work” (p. 275). Mindset has been shown to influence learning versus performance goals and motivation in pre- med students (Grant & Dweck, 2003). Even students’ interpretation of success and failure has been linked to one’s mindset (Hong, Chiu, Dweck, Lin, & Wan, 1999). Mindset beliefs have additionally been linked to numerous positive outcomes for student learning and motivation (Blackwell, Trznesniewski, & Dweck, 2007; Aronson, Fried, & Good, 2002; Yeager & Dweck, 2012; Paunesku, Yeager, Romero, & Walton, 2012). For this reason, considerable recent research has emphasized changing students’ mindset beliefs from fixed to growth in order to promote positive learning outcomes (see Yeager & Walton, 2011, for a good summary). Despite enthusiasm for brief student interventions to change beliefs, much less is known about the classroom setting and specifically how teachers influence student mindset beliefs, if at all. In fact, Farrington et al. (2012) note in their comprehensive and critical review, “While numerous studies have identified specific aspects of classroom context that contribute to strong academic mindsets, a gap persists between research findings and teachers’ intentional use or strategies to promote positive student mindsets” (p. 37).

With regard to the classroom context, Carol Dweck suggested that teachers might be one influence by which children “get messages about the meanings of smartness” or form their mindset beliefs (Dweck & Bempechat, 1983). While this intuitive statement seems logical, thus far, specific empirical validation of this idea has been lacking. In fact, much less is known in general about teachers’ mindset beliefs since the primary focus in this area has been on learners and their mindset beliefs.

Additionally, there have been a handful of research studies investigating teachers’ theories about the nature of intelligence suggesting that teacher beliefs about student ability may impact instructional approaches (Swann & Snyder, 1980). Teachers who were led to think that students’ intelligence was fixed offered students less support. In contrast, when teachers believed that intelligence was malleable they provided increased support and reported instructional goals that explicitly taught students how to problem solve (Swann & Snyder, 1980). Related research outside of the educational field confirms that individual mindset beliefs may impact work with subordinates or mentees (Heslin, Vandewalle, & Latham, 2006). In the workplace, managers with a growth mindset were more likely to coach and help employees than were managers who believed that their subordinates’ traits and abilities were fixed. Butler (2000) and Plaks, Stroener, Dweck and Sherman (2001) measured the impact of implicit beliefs on the stability of ability as either fixed or growth for teachers and students. Results suggest that teachers holding malleable theories of intelligence tend to be more open to learner information about change over time. In summary, beliefs about mindset play a role in the amount of instructional support teachers offer students, which in turn is likely to have classroom implications for student learning.

Other researchers have offered a theoretical framework for how teachers’ mindsets and student mindsets might interact in the higher education classroom setting (Yorke & Knight, 2004). While purely theoretical, the researchers suggest that there may be four possible scenarios for the interactions between teacher mindset and student mindset including the following four pairings: Teacher malleable, Student malleable; Teacher malleable, Student fixed; Teacher fixed, Student malleable; and Teacher fixed, Student fixed. The implications of these possible pairings have yet to be explored empirically.

Research conducted by Rattan, Good and Dweck (2012) explored the impact of mindset beliefs on pedagogical practice. Undergraduate students (not teachers) were placed in a teacher role and given scenarios describing students with low math ability. Those with a fixed mindset “were more likely to comfort students for their presumed low ability and to engage in pedagogical practices that could reduce engagement” (Rattan et al., 2012, p. 5). While empirical understanding of teacher mindset beliefs is underway, research exploring teacher mindset beliefs and whether or not they impact student mindset beliefs is virtually non-existent.

The present research explores the nature of students’ mindset beliefs and how they are related to their teachers’ mindset beliefs in the classroom setting in order to answer the following three questions:

- 1) Is there a relation between students’ mindset beliefs and their teachers’ mindset beliefs?

- 2) Is there a relation between students' perception of their teachers' mindset beliefs and their own beliefs?
 3) Is there a relation between students' perceptions of their teachers' mindset beliefs and their teachers' mindset beliefs?

2. Method

2.1 Participants

Teachers ($n=7$) from one elementary school and one middle school within a large (46,000 students, 84 schools) public school system located in the Southeastern United States were recruited by email after school district and Institutional Review Board permissions to conduct research were obtained. Each teacher provided their grade level, content area, gender and years of teaching experience. Teachers were informed that their survey responses would be connected to their students' responses. The teachers' demographic data included 1 male and 6 females ranging from 2 to 16 years of teaching experience.

Students were recruited from the teachers' class rosters (approximately 550 students). Only those students whose guardians returned the paper consent forms completed the survey ($n=359$). This resulted in a 65.3% student participation rate. Demographic data for the two schools is listed in Table 1.

Table 1. School demographics

	School A ($n=756$)		School B ($n=1358$)	
	<i>n</i>	%	<i>n</i>	%
Gender				
Male	393	52	665	49
Female	363	48	693	51
Ethnicity				
White	552	73	1086	80
Black	144	19	177	13
Hispanic	15	2	27	2
Other	45	6	68	5
Free Lunch Status				
Eligible	136	18	217	16

2.2 Procedures

For the teacher survey, the researcher administered the well-known and extensively used paper and pencil three item survey originally created by Dweck and Henderson (1989). The scale was used with permission by Carol Dweck. This measure has high internal consistency (alpha ranging from .94 to .98) and high test-retest reliability ($r=.80$, $N=62$). As noted by Hong, Chiu, Dweck, Lin and Wan (1999), "only three items are included because the items are intended to have the same meaning and continued repetition of the same idea becomes somewhat bizarre and tedious to the respondents" (p. 590). Two additional items were included as pilot questions, but not scored. All items were reverse scored with the most malleable mindset receiving a score of 6 and the most fixed mindset receiving a score of 1. The percentage of teachers with a fixed mindset, growth mindset or no mindset was calculated using the method detailed in Dweck and Henderson (1989) where responses on the three items were averaged for a total mindset score. As described in Dweck and Henderson (1989) scores between 1 and 3 were scored as *fixed* mindset, scores between 3.1 and 3.9 were considered to have no clear mindset or *neutral* and scores between 4 and 6 were considered to be *growth* mindset scores.

Students were administered paper and pencil surveys by the classroom teacher during the first few minutes of their regularly scheduled classroom time. Students were instructed that the surveys pertained just to the classroom teacher administering the survey. No duplication of students occurred in the sample as care was taken to exclude middle grade teachers who taught the same students. The student surveys were anonymous and no identifying data was recorded with exception of the name of classroom teacher. For the student surveys, students

were also administered the well-known and extensively used mindset survey as detailed above but in addition, three questions were included to assess Student's Perceptions of their Teachers' Mindset (SPTM). These items were constructed by simply adding the words "my teacher thinks" prior to each original mindset question. In addition to the 3 standard mindset questions and the 3 student perception of teacher mindset questions, 4 additional questions related to school and learning were also piloted in the survey but not included in the present analysis.

3. Results

Teacher surveys were scored for the seven teachers. Two of the teachers had fixed mindsets (scores of 2.0 and 3.0) and the remaining five teachers had growth mindsets (scores of 4.0, 5.0, 4.0, 5.0, and 5.6). The average mindset score for the teachers (TM) was 4.085.

Scores for Student Mindset (SM) were also calculated. 87/359 students or 24.2% had fixed mindsets, 47/359 or 13.1% had neutral or no clear mindset, and 225/359 or 62.7% had a growth mindset. Additionally, Student Perception of their Teachers' Mindset (SPTM) was also calculated. 59/359 or 16.4% had a SPTM that was fixed, 49/359 or 13.6% had a neutral SPTM and 251/359 (69.9%) had an SPTM in the growth range. TM, SM and SPTM mindset score totals for each teacher are depicted in Table 2.

Table 2. Descriptive findings of teacher mindset, student mindset and student perception of teacher mindset by teacher

Mindset by Teacher and Students (<i>n</i> = number of students per teacher who reported Mindset)							
	1 (<i>n</i> =59)	2 (<i>n</i> =72)	3 (<i>n</i> =68)	4 (<i>n</i> =58)	5 (<i>n</i> =65)	6 (<i>n</i> =20)	7 (<i>n</i> =17)
TM	3.00	4.00	5.00	4.00	5.00	2.00	5.60
TM Category	fixed	growth	growth	growth	growth	fixed	growth
SM Mean	4.25	4.09	4.15	4.23	4.00	3.29	4.70
SPTM Mean	4.37	4.29	4.30	4.49	4.42	3.78	5.02

Note. TM=Teacher Mindset, SM=Student Mindset, SPTM=Student Perception of Teacher Mindset.

Descriptively, 68.24% perceived their teacher to have the same mindset beliefs as themselves. In addition, 59.33% of students were accurate in their perception of their teachers' mindset beliefs and 55.7% of students shared the same mindset as their teacher.

Multiple analyses were conducted to examine the possible relations among the dependent measures: SM, TM and SPTM. With regard to the first research question, there is a positive relation between Student Mindset (SM) and Teacher Mindset (TM) ($r=.126$, $p<.05$). Additionally, regression analysis revealed that Teacher Mindset (TM) accounted for 2.1% of the variance in Student Mindset (SM) ($R\text{ square}=.021$). Teacher mindset predicted Student Mindset (SM) when controlling for grade level.

The second research question was also answered positively. There is a relation between Student Mindset (SM) and Students' Perceptions of their Teachers' Mindsets (SPTM) ($r=.126$, $p<.05$). Teacher Mindset (TM) accounted for 1.9% of the variance in Students' Perceptions of their Teachers' Mindsets (SPTM) ($R\text{ squared}=.019$).

Mediation was suspected and a hierarchical regression analysis was conducted. Findings supported the presence of full mediation as noted in Table 3.

Table 3. Hierarchical regression for variables predicting student mindset

	B
Step 1	0.154
Grade	
Step 2	
Grade	0.225
TM	0.162
Step 3	
Grade	0.13
TM	0.041
SPTM	0.754

Note. * $p < .05$, *** $p < .001$, TM=Teacher Mindset, SPTM=Student Perception of Teacher Mindset.

Based on regression analysis, Teacher Mindset (TM) predicts Student Mindset (SM) and is fully mediated by Student Perception of Teacher Mindset (SPTM). A possible model to explain this interaction is depicted below in Figure 1.

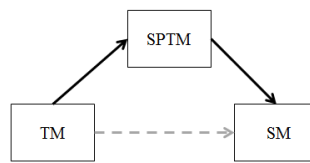


Figure 1. Theoretical Mediation Model

4. Discussion

When unpacking the key classroom influences that impact student learning, teacher beliefs and expectations as well as student beliefs and expectations for learning seem to be an important consideration. One key belief about learning held by teachers and students alike can be found in the body of research exploring academic mindset (Dweck, 1989; Farrington et al., 2012). Specifically, the extent to which teachers and learners believe that individual learner competence can be grown through effort and persistence appears to be a key influence in classroom learning and learner outcomes. Results presented here suggest that students' mindset beliefs are impacted not only by what their teacher believes, but additionally, student mindset beliefs may be mediated by a third variable—the student's perception of their teacher's mindset beliefs. Furthermore, while 59.33% of students were accurate in their perception of their teacher's mindset, students' perceptions of their teacher's beliefs (SPTM) accounted for and influenced their own mindset belief (SM) more than whether or not they were able accurately identify their teachers' mindset belief. This finding suggests that a key factor in student mindset beliefs is not just what a teacher believes, but what each student perceives their teacher to believe about their individual ability and their individual potential for growth and improvement.

Findings regarding the importance of the perception of reality over reality itself have a long tradition in the motivation literature. Marshall and Weinstein (1984) noted that classroom environments were interpreted differently by high achieving versus low achieving students noting considerable within class variability in how students perceive teacher feedback and classwork. Albert Bandura eloquently stated, "People's level of motivation, affective states and actions are based more on what they believe than what is objectively true" (Bandura, 1997, p. 2). Also, in her comprehensive summary of classroom motivation work, Carole Ames noted, "To predict and examine motivated cognitions, affect, and behavior of a student, it is necessary to attend to how that student perceives and gives meaning to classroom experiences" (Ames, 1992, p. 267).

Additionally, findings are consistent with the cognitive mediation model of motivation (Meece, Blumenfeld, & Hoyle, 1988). This model suggests that students' thoughts, perceptions and interpretations mediate the effects of teacher behavior. More specifically, in the current research, student beliefs do appear to be related to and impacted by teacher beliefs; however, this impact is mediated by students' perceptions of their teachers' beliefs. Findings presented here offer another confirmation of the work conducted by Meece et al. (1988).

Moreover, given the significance of mindset beliefs with regard to student perseverance, performance and behavior (Farrington et al., 2012), as well as the demonstrated impact of changing fixed mindsets to growth mindsets especially for certain student groups (Yeager & Walton, 2011) exploration of the classroom environment mechanisms that underlie student formation of mindset beliefs seems timely and valuable.

While Dweck and Bempechat (1983) were one of the first to propose that students absorb messages about "smartness" or ability and potential from their classroom teachers, the present study offers some empirical support for this notion. Findings presented answer all three research questions positively and suggest that student beliefs about mindset are related to teacher beliefs about mindset and students' perceptions of teachers' mindsets. Moreover, findings also suggest that student perceptions of teacher mindset beliefs fully mediate the relationship between a student's belief and a teacher's belief suggesting an additional confirmation of the cognitive mediation model of motivation. Since mindset beliefs have been demonstrated to have implications for classroom learning and motivation, the present study also has implications for practicing teachers, pre-service teachers, teacher educators and administrators who seek to understand more fully how students come to form their implicit beliefs about the nature of ability particularly related to how teachers influence student beliefs.

Future research into the specifics of how teachers convey their mindset beliefs to students in classroom settings (i.e., praise, feedback, grading practices) as well as how students' perceptions of their teachers' beliefs influence their own motivation and classroom behavior is needed. In addition, future research should explore the nature of mindset beliefs across different teachers and more teachers since an obvious limitation of the present study is its relatively small number of teachers. Exploration of the impact of teacher mindset on the same student across differing teachers and classroom settings with differing mindsets may deepen our understandings of how students are impacted by varying teacher beliefs. Research is also needed to understand how parental mindset beliefs may or may not be related to student mindset beliefs as well as how mindset beliefs may or may not be related to developmental learner characteristics.

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