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TRAINING ORGANIZATIONAL TRAINERS TO FRAME FEEDBACK: MITIGATING FACE CONCERNS AND SUPPRESSING EGO DEFENSIVENESS

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TRAINING ORGANIZATIONAL TRAINERS TO FRAME FEEDBACK:
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A DISSERTATION APPROVED FOR THE
DEPARTMENT OF COMMUNICATION

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Abstract

This dissertation applies Implicit Person Theory (IPT) to the contexts of organizational training and feedback. IPT scholars argue that individuals ascribe to one of two groups regarding perceptions of ability: entity or incremental theorists. Entity theorists believe abilities are fixed, and constant; incremental theorists believe abilities are malleable, and subject to development. This study seeks to demonstrate how organizational feedback processes can be framed strategically to maximize learning, including the skills-based learning needed for successful operation in high-reliability organization (HRO) training and non-HRO training. Data were collected at two sites: an anesthesiology department and a communication department at a large southwestern university. Using an experimental design, the researcher hypothesized that growth mindset training would influence the quality of trainers' feedback messaging, and subsequently, trainees' learning outcomes as measured by the following dependent variables: task performance, affective learning (McCroskey, 1994), learner motivation (Richmond, 1990), perceived face threat (Cupach & Carson, 2002), and quality of feedback (Steelman, Levy, & Snell, 2004).

This dissertation develops the extant IPT literature in three main ways: First, the study moved IPT training into the organizational training communication domain by emphasizing the social, not just psychological, dynamics of learning. Second, the research identified that framing organizational feedback using incremental language might violate trainees' expectations and scripts about how feedback interactions should unfold sequentially and have

unexpected consequences on learning outcomes as a result. Third, the dissertation illuminated the role that explicit discussion of theory may have on successful IPT manipulations.

Introduction

I'm not a math person. I'm a really good writer. I'm not artistic. Such common statements illustrate the central role of communicating about one's identity and learning. If a person identifies as "not a math person," that person is able to protect their ego from threats due to their perceived insufficiency. When a student performs poorly on a math test, the statement "I'm not a math person" allows the student to account for the bad score with a socially-acceptable excuse, which focuses on so-called inherent abilities and the student's identity. These statements point to "natural talents" to describe and explain ability. By doing so, the statements remove responsibility and move the locus of control away from the learner. These assumptions and expectations that learners have about their own abilities influence the effectiveness of their learning. After all, the very nature of learning implies that learners are deficient in some way; therefore, learning has the potential to threaten learners' identities.

Much of the research concerning learners' assumptions and expectations about their ability is rooted in Dweck and colleagues' work on Implicit Person Theory (IPT; see Dweck, 2006). IPT posits that people fit into one of two groups regarding their perceptions of their own ability: entity theorists and incremental theorists. Entity theorists (also referred to as learners with a fixed mindset) assume that their own and others' abilities are fixed, unchanging, and constant. Entity theorists are more likely to attribute intellect, morality, and ability to their personality. On the other hand, incremental theorists (also referred to as learners with a growth mindset) view abilities as changeable, malleable, and subject to

development. Incremental theorists are more likely to believe that their intellect, morality, and abilities can change and grow with hard work. A growing body of research on IPT affirms that learners' assumptions about their own ability influence the effectiveness of their learning (Aronson, Fried, & Good, 2002; Blackwell, Trzesniewski, & Dweck, 2007; Cury, Da Fonseca, Zahn, & Elliot, 2008; Good, Aronson, & Inzlicht, 2003; Good, Rattan, & Dweck, 2012; Heslin & VandeWalle, 2008; Kray & Haselhuhn, 2007; Stipek & Gralinski, 1996; Tabernero & Wood, 1999).

This dissertation contributes to theory in three main ways. First, the studies extend IPT research into the context of organizational training. Most existing applications of IPT tend to be pedagogical, focusing on the influence of students' mindsets on learning outcomes (see Elliott & Dweck, 1988; Grant & Dweck, 2003). This research joins in the less explored line of work that focuses on the application of IPT to organizations (i.e., Heslin, VandeWalle, & Latham, 2006; Murphy & Dweck, 2010). Second, the research design uses a communicative approach to explore the link between IPT and framing. Much of the current research on IPT focuses on the psychological implications of the implicit (or lay) theories. Framing is the management of meaning and is performed through strategic messaging (Fairhurst & Sarr, 1996). By training trainers to frame feedback with a growth mindset, organizational trainers are given linguistic tools for use during feedback sessions in order to help shape the way trainees make meaning of feedback and themselves. This dissertation seeks to demonstrate organizational trainers can be taught to frame their feedback to

trainees as instrumental for personal development. This communicative approach to IPT offers a substantive way to shape IPT manipulations because the language used to frame learning may have a significant impact on a learner's willingness to learn, change, and grow. Third, by providing trainers with a way to frame feedback, this research seeks to improve the overall health of organizational feedback systems and, therefore, facilitate *organizational* learning. Organizational learning is "a change in an organization's response repertoire" (Sitkin, Sutcliffe, & Weick, 1999, p. 7-70). In order to facilitate a change in the organization's response repertoire, the organization must be open to learning and development. This change occurs through healthy feedback systems (Argyris, 1977). When organizations fail to learn because of the insufficiency of their feedback process, attempts at learning are met with stagnancy, failure, and—in the case of high reliability organizations (HROs)—lives lost (Weick & Sutcliffe, 2007). Conversely, effective feedback systems (at the individual, group, or organizational level) improve the adaptiveness of an organization, which allows for an increase in growth, success rates, and lives saved (Weick & Sutcliffe, 2007). Training organizational trainers to frame feedback to induce trainees' growth mindset offers a chance to reduce defensiveness that often encumbers learning during feedback sessions (Argyris, 1990).

Literature Review

Organizational Training

Organizational training is the process of developing job-related competencies in order to perform a specific task more effectively (Beebe, Mottet,

& Roach, 2013; Noe, 2010). Job-related competencies include knowledge, skills, or behaviors that are critical for successful job performance (Noe, 2010). Despite the popularity of training research and implementation, corporate training tends to lack a track record of success in general (Cavaleros, van Vuuren, & Visser, 2002; Kalev, Kelly, & Dobbin, 2006). This lack of success includes lackluster effects of training on financial performance (Tharenou, Saks, & Moore, 2007) and long-term soft skill acquisitions (Kalev et al., 2006).

One reason for the divide between organizational training research and the effectiveness of training may be the lack of research that explores the training process. Training is inherently a communicative activity (Beebe at al., 2013; McGehee & Webb, 2009). Numerous communication variables influence the effectiveness of training. Examples of such variables include trainer immediacy (Sitzmann, Brown, Casper, Ely, & Zimmerman, 2008), trainee engagement (Bates & Davis, 2010), nonverbal elements of the classroom environment (Faylor, Beebe, Houser, & Mottet, 2008), learners' receptiveness to feedback (Cimpian, Aree, Markman, & Dweck, 2007), trainers' assumptions about learners' ability (Rattan, Good, & Dweck, 2012), and feedback during the training session (Heslin et al., 2006), to name a few. Thus, intuitively, it makes sense that an understanding of the effectiveness of training should be rooted in an exploration of the quality of the communication processes that constitute the substance of organizational training itself.

Despite the connection between communication and training, the popular research topics do not address the inherent role of communication in

organizational training. Most research focuses on the *resources* put into training and the *product* that results from training, while ignoring the actual *process* of training (Messersmith, Keyton, & Bisel, 2009). Generally, organizational training research focuses on the role of training design characteristics and training context, with specific attention to the antecedents that lead to training outcomes (Martocchio, 1994). For example, a significant amount of research addresses antecedents of training (Martocchio, 1994), such as needs assessments (Ching-Yaw, Sok, & Sok, 2007; Salas & Cannon-Bowers, 2001), cultural context (Aguinis & Kraiger, 2009), and trainee characteristics such as self-monitoring, organizational identification (Prieto & Phipps, 2011), self-efficacy (Aguinis & Kraiger, 2009; Ching-Yaw et al., 2007), and flexibility (Ching-Yaw et al., 2007), and the products of the training (Martocchio, 1994), most notably training effectiveness (e.g., Blume, Ford, Baldwin, & Huang, 2010; Chiaburu, 2010; Ching-Yaw, et al., 2007; Prieto & Phipps, 2011, Saks & Belcourt, 2006; Taylor, Russ-Eft, & Taylor, 2009).

The antecedents and outcomes of training are highly contextual such that the antecedents leading to beneficial outcomes for one organization may not lead to the same results (or may not even apply) in another organization. This contextual nature of the research may be a main reason that more training research is not leading to more effective training in organizations. Training, like communication, is always contextual, and therefore a difficult process about which to generate general laws that apply to myriad possible contexts. However, communication theorists and researchers deal with this difficulty regularly, since

communication, as a phenomenon of study, is also always contextual. For example, Keyton, Bisel, and Ozley (2009) argue that contextual-based applied research can become more theoretical when researchers take their findings that are rooted in situated contexts and describe those findings at higher levels of abstraction. By doing so, communication research findings—and organizational training research by extension—are more likely to extend, clarify, or challenge theory.

Unlike most traditional research on training, this research joins the less explored line of work that focuses on communication in the training environment. Bates and Davis (2010) describe the link between trainers' communication and trainees' ability to apply the training. Specifically, the authors suggest that trainees must explain explicitly the roles and responsibilities of both trainers and trainees in order to maximize trainees' engagement in the training material and application of the training material after the training. For example, Faylor, Beebe, Houser, and Mottet's (2008) research addresses the communicative nature of training by studying the trainer as a variable. Specifically, the researchers found that the nonverbal communication behaviors of the trainer influence trainees' learning. Likewise, Keith and Frese (2008) explored the effectiveness of Error Management Training, which is a training method that involves explicit encouragement for trainees to make errors during training and to learn from those errors. Researchers found that using trainees' errors to provide feedback leads to better training outcomes than alternative training methods that encourage trainees to avoid errors. In a meta-analysis, Sitzmann et al. (2008) found that

communicative elements such as instructor immediacy and human interaction are stronger predictors of training reactions than general trainee characteristics. Taylor, Russ-Eft, and Chan (2005) offer a model of training that, when applied, should result in the transfer of training on the job. The model labels training strategies that focus on communication including feedback, social reinforcement, and clarity of descriptions. In sum, communication focus yields training research that applies to many training events, from diversity and listening training to more specific on-the-job training.

Training in HROs. While the effectiveness of training as it applies to organizations in general has been questioned (Tharenou, Saks, & Moore, 2007), training tends to be more likely to produce successes in high-reliability organizations (HROs; Weick & Sutcliff, 2007). HROs are defined as organizations that are able to manage and sustain almost error-free performances despite operating in hazardous conditions where the consequences of errors could be catastrophic (Weick & Sutcliffe, 2007). Researchers identified a number of characteristics that contribute to HROs' safety performance, the most notable being *continuous learning through extensive training* (Bierly & Spender, 1995; Wilson, Burke, Priest, & Salas, 2005). Wilson et al. (2005) argue that team training *itself* can create high reliability teams (HRTs), which can lead to high reliability organizations. The researchers identify six developmental training strategies for transforming non-high reliability teams into high reliability teams.

The two most notable types of HRO trainings are cross training and team self-correction. Cross training involves training all team members to understand

the roles and responsibilities of each team member. This shared understanding creates shared mental models from which team members can evaluate and critique workplace events. Sharing mental models gives team members a sense of interdependence as a basis from which they can recognize subtle changes and weakness within the group's functioning (Ingersoll & Schmitt, 2004).

Team self-correction training teaches teams to self-correct without needing explicit feedback from the instructor. In the training environment, the instructor acts as a facilitator by keeping the focus on the discussion, creating a positive learning climate, and modeling skills of effective feedback. Here, training is a vehicle to teach team members to communicate effectively and engage in feedback in order to make needed changes before error occurs. Notice that the training implemented by HROs focuses less on the future outcomes and more on the communication that occurs *during* the training process, with the ultimate goal of improving the implementation of communication on the job. In other words, the difference between effective training in HROs and ineffective training in non-HROs is the focus on processes that emerge during the training. Leedom and Simon (1995) note that traditional healthcare training (which is heavily influenced by the corporate business model) is ineffective in developing HROs. The researchers attribute this ineffectiveness to traditional healthcare training's focus on the future outcomes of the training. Spear (2005) argues that in order for training in healthcare systems to be more effective, the system must focus on organizational training communication quality.

HRO training's strong focus on communication may explain some of the difference between the effectiveness in HRO training versus effectiveness of the traditional business model of training, but the notion of *stake* provides another explanation. Members of HROs have a high stake in assuring that training results in effectiveness because a failure to implement training may result in errors with life-altering consequences (LaPorte & Consolini, 1991). For example, if a member of an HRO fails to learn resuscitation skills during training, their lack of acquired skills may result in death when the trainee is faced with the need to intervene in a life-threatening drowning. In HROs, a failure to learn from the required training may result in loss of life, in comparison to non-HROs where failure to implement training may result in a poor performance appraisal, more training, a loss of company resources, or none of these (Molinsky, 2014). Employees' stake in transferring HRO training skills seems to be enough to increase trainees' learning, therefore increasing the overall effectiveness of training. Given the high-stakes nature of HROs, it makes sense that employees would be more vigilant in applying training to the job. However, since the successful implementation of training does not equate to lives saved in non-HROs, it begs the question of what other training strategies might result in more effective learning in non-HROs? Implicit person theory provides a framework that may lead to more effective straining strategies.

Implicit Person Theory

Implicit Person Theory (IPT), studied in detail by Dweck and colleagues, explains that a person's receptiveness to learning is a function of a set of

assumptions and expectations about a person's own ability and the ability of others. According to the theory, individuals are either entity theorists or incremental theorists. As stated previously, entity theorists assume that human ability is fixed, unchanging, and rigid, while incremental theorists believe ability is malleable, changing, and subject to growth and development (Dweck, 1986). Dweck and colleagues have a long line of research that indicates implicit theories-of-the-self predict success in academics (Aronson et al., 2002; Blackwell et al., 2007; Cury et al., 2008; Duckworth & Seligman, 2005; Good et al., 2003; Good et al., 2012; Stipek & Gralinski, 1996), social relationships for adults and children (Beer, 2002; Erdley, Cain, Loomis, Dumas-Hines, & Dweck, 1997; Finkel, Burnette, & Scissors, 2007; Kammrath & Dweck, 2006; Knee, 1998; Ruvolo & Rotondo, 1998), the workplace (Heslin, Latham, & VandeWalle, 2005; Heslin & VandeWalle, 2011; Tabernero & Wood; 1999), and emotional and physical health (Biddle, Wang, Chatzisarantis, & Spray, 2003; Burnette, 2010; Burnette & Finkel, 2012; Kasimatis, Miller, & Marcussen, 1996; Tamir, John, Srivastava, & Gross, 2007). These research findings reveal a sweeping number of benefits enjoyed by incremental theorists (those with a growth mindset) in comparison to entity theorists (those with a fixed mindset; see Dweck, 2006). Many of these findings are discussed in more detail in the following paragraphs.

Dweck and colleagues divide implicit theories into three domains: intelligence, morality, and personality. A person's implicit self-theory can be domain specific. In other words, a person may have different theories for different attributes. For example, a person may believe intelligence is fixed, but moral

character and personality are malleable (Dweck, Chiu, & Hong, 1995). While it may be intuitive to label individuals as always corresponding to one category or the other, a person's mindset may change depending on the area (Dweck et al., 1995).

The next three sections highlight that (a) research on implicit theories has a strong history and continued relationship with research on achievement goals, (b) implicit theories create the meaning framework from which attributions are made, and (c) a person's implicit theory can be manipulated in various ways. These ideas are highlighted as a means of providing a frame for improving the effectiveness of training.

Achievement goals and implicit theories. Much of the achievement differences between entity and incremental theorists originate from work on achievement goals. Individuals pursue two major goals in achievement situations: performance goals or learning goals. Individuals who pursue performance goals seek to maintain positive judgments of their ability and avoid negative judgments, while individuals who pursue learning goals seek to increase their ability or mastery of new tasks (Nicholls, 1984). Achievement goals are critical determinants of individuals' perceptions of their own ability (Elliott & Dweck, 1988), and related directly to implicit theories-of-the-self. Entity theorists tend to pursue performance goals, while incremental theorists tend to pursue learning goals (Dweck, 1999; Dweck & Leggett, 1988). Since the early work on the link between performance goals and implicit theories, researchers found that implicit theories are predictive of attributions and responses more consistently than

achievement goals (Hong, Chiu, Dweck, Lin, & Wan, 1999; MacGyvers, 1992; Stipek & Gralinski, 1996), but that is not to suggest achievement goals and implicit theories are unrelated. Stone and Dweck (1998) found that students' implicit self-theories modify the *meaning* that a particular goal has for the student. In the study, students were presented with clear performance goal tasks and clear learning goal tasks. Not only did entity theorists prefer performance to learning goal tasks significantly more than incremental theorists, but students also had different ideas about what the tasks were meant to measure. Entity theorists thought the tasks measured their underlying and *future* intelligence, while incremental theorists saw the tasks as a measure of their *present* skill. Such findings reveal that implicit self-theories will tend to have more influence on the learners' sense of efficacy and expectation in mastering those knowledge bases or skills that require long periods of effort and practice. Also, entity theorists brought performance concerns to the learning goal tasks by expressing concern for appearing smart over learning new material. Similarly, Erdley et al. (1997) found that the type of achievement goals a student was given did not change the student's ability-attributions. Students were given either strong learning or strong performance goals, but, regardless of the goal condition, entity theorists made significantly stronger low-ability attributions than did incremental theorists. Together, the body of research illustrates that implicit theories are a stronger predictor of learning goals than achievement goals. In application to organizational training, this research suggests that trainees' implicit theories of

self are more important to the effectiveness of that training than the goals set forth in the training.

Attributions and implicit theories. Implicit theories create the meaning framework in which attributions occur (Hong et al., 1999). First, the following paragraphs discuss the ways implicit theories influence a person's self-judgments, including reactions to setbacks and feedback. Then, the following section explains how implicit theories influence judgments about others.

Entity theorists attribute personal performance to ability while incremental theorists attribute personal performance to effort (Henderson & Dweck, 1990). The difference in the attributions learners make about their own ability is magnified by learners' reactions to setbacks (Hong et al., 1999). In the face of setbacks, entity theorists' focus on ability can impair their motivation and performance (Martocchio, 1994; Wood & Bandura, 1989), undermine achievement (Blackwell et al., 2007), and result in disengagement (Dweck, 1986, 1999; Nicholls, 1984; Utman, 1997). Entity theorists respond to setbacks with self-handicapping behavior (Rhodewalt, 1994), helplessness, negative affect, negative self-judgments, lack of persistence, and performance decrements (Diener & Dweck, 1978, 1980). Similarly, in the face of transgressions, entity theorists are less likely to accept responsibility for the transgression than their incremental theorist counterparts (Schumann & Dweck, 2014).

For example, imagine an entity theorist is required to enroll in technology training at work. When the entity theorist does not perform well on the training, she attributes her performance to her innate inability to understand technology.

Because the trainee believes she does not have the natural ability to be technologically savvy, she loses motivation, disengages from the training, and feels helpless. On the other hand, imagine an incremental theorist in the same training class. When the incremental theorist does not perform well on the training, she attributes her poor performance to insufficient effort. Because this trainee expects she can gain the skills by working harder, she engages more vigorously in the training to improve.

Entity theorists are also more likely to voice face-saving excuses for poor performance, such as claiming the withdrawal of effort (Hong et al., 1999). Often, entity theorists view ability and effort as related inversely such that the need to exert more effort represents an innate lack of ability in the area, while high performance requires little effort. In other words, entity theorists expect success to come easily and naturally. On the other hand, incremental theorists believe that effort and ability are related, such that the more effort exerted, the higher the ability will be acquired (Dweck & Leggett, 1988; Surber, 1984). Incremental theorists expect to work hard for success. Incremental theorists tend to react to setbacks with less anxiety, more effort, increased engagement (Dweck, 1986, 1999; Nicholls, 1984; Utman, 1997), enhanced motivation, and improved performance (Grant & Dweck, 2003; Mangels, Butterfield, Lamb, Good, & Dweck, 2006). Incremental theorists are less focused on measuring and proving abilities and more focused on learning (Dweck & Leggett, 1988; Mangels et al., 2006; Robins & Pals, 2002), even if that learning means taking remedial action (Hong et al., 1999) or accepting more challenges (Hong et al., 1999; Mueller &

Dweck, 1998; Nussbaum & Dweck, 2008). In the face of setbacks, incremental theorists focus on mastery and the generation of new problem-solving strategies to improve performance in the future (Diener & Dweck, 1978, 1980) because they expect to change and grow as they continue to work.

Given the drastic differences in how lay theories of intelligence influence learning—especially in the face of setbacks—learners and organizational trainers should be aware of how messages might influence learners' lay theory of intelligence. Research supports that subtleties in the type of feedback learners receive have significant implications for learner receptiveness and actions. For example, Cimpian et al. (2007) studied how subtle linguistic differences in feedback can influence learners' ideas about their abilities and their achievement motivation. In their design, participants were praised for either ability or effort after completing a task. The researchers found that students praised for effort were less affected by subsequent negative feedback and were more likely to continue the task than students praised for ability. Such research has obvious implications for communicating feedback effectively during organizational training.

Not only do implicit theories influence personal attributions, but they also influence attributions made about others (Murphy & Dweck, 2010). Entity theorists tend to understand people and their behavior in terms of traits, while incremental theorists believe people and their behavior are not trait-based and can change over time (Chiu, Hong, & Dweck, 1997; Erdley & Dweck, 1993; Gervey, Chiu, Hong, & Dweck, 1999; Hong, 1994). In comparison to their incremental

counterparts, entity theorists make more dispositional inferences and attributions. For example, Hong (1994) asked college students to make causal attributions for positive and negative behaviors. Students were asked to complete the following scenario: "Alexis stole some bread from the bakery shop. This probably occurred because…" (p. 15). Entity theorists generated significantly more personality traits to explain the behavior than did incremental theorists. Incremental theorists, in contrast, tended to generate more process-oriented, psychological-state explanations than did entity theorists.

Entity theorists are also more likely to match evaluative labels to social generalizations. Hong, Chiu, Dweck, and Sacks (1997) presented participants with test scores of a fictitious trainee, then participants performed a task in which the test scores were used as primes. Entity theorists attached evaluative meaning to test scores, but incremental theorists did not.

Lastly, entity theorists are more likely than incremental theorists to believe that behaviors are stable and consistent over time. Erdley and Dweck (1993) asked fourth and fifth graders to watch a slide show of a protagonist displaying negative behaviors. Half of the participants saw the protagonist's behaviors continue to the end, while the other half of participants watched the protagonist's original negative behaviors change to positive behaviors at the end. Participants who were entity theorists were more likely than incremental theorists to remain consistent in their negative assessment of the protagonist, even after viewing the positive counterevidence—supporting the notion that entity theorists believe behaviors are stable and consistent over time.

Another line of research explores how entity theorists' beliefs about stable and consistent behaviors influence interactions between different groups in society. Halperin, Russell, Trzesniewski, Gross, and Dweck (2011) argued the general belief that groups have fixed traits promotes and perpetuates hatred toward particular groups. In other words, if an entity theorist has an experience with members from one group and, based on that one experience, labels the group as evil or aggressive, the entity theorist is likely to project those beliefs onto the group and label the group as being evil or aggressive. In research about bullying, Dweck (2012) found that students who were entity theorists reported a heightened desire for aggressive retaliation and heightened intention to engage in aggressive retaliation consistently and significantly. In the same line of research, Dweck found that students who were incremental theorists responded to conflict with less hatred, less shame, and less desire to take revenge on others. Why might that be? To believe another is capable of change appears to soften revenge seeking. In the context of organizational training, entity theorists' belief that others are not capable of change is likely to have detrimental effects to the training environment, including how entity theorists respond to their trainers and other trainees.

The harmful role entity theories might play in the training environment is also supported by research linking entity theorists to stereotyping and prejudice. In relation to stereotyping and prejudice, Carr, Dweck, and Pauker (2012) found that participants who believed prejudice was fixed, rather than malleable, were less interested in interracial interactions and activities to reduce prejudice and more uncomfortable in interracial interactions. White participants were induced

with entity and incremental theories. Participants in the entity condition were presented with an article titled, "Prejudice, Like Plaster, Is Pretty Stable Over Time," while participants in the incremental condition read an article titled, "Prejudice Is Changeable and Can Be Reduced." The white participants who were induced with an entity theory were more anxious and unfriendly in an interaction with a black confederate participant compared with a white individual, while white participants who were induced with an incremental theory were not. Also, Hoyt and Burnette (2013) found that entity and incremental theorists make different evaluations based on gender. In two studies, the researchers found that people's attitudes regarding women in authority and their subsequent gender-biased evaluations are significantly stronger for entity theorists relative to incremental theorists. Lastly, Plaks, Stroessner, Dweck, and Sherman (2001) found that entity theorists paid more attention to information that reinforced stereotypes than incremental theorists. For these reasons, Murphy and Dweck (2010) argue that incremental-oriented environments can protect against stereotype threat. In the organizational training environment, these stereotypes of race and gender are detrimental to fostering a comfortable learning environment among trainees and trainers.

Just as attributions of one's own behavior have implications for receiving feedback, individuals' assumptions about the malleability of others' behaviors have implications for providing feedback—implying that lay theories-of-self influence both learners *and* instructors in the training process. Chiu, Dweck, Tong, and Fu (1997) asked participating students to respond to a professor who

made a seemingly unfair last-minute change in grading policy. Entity theorists sought punishment for the professor, while incremental theorists were more likely to want to educate the professor. In a study with managers, Heslin et al. (2006) found that an incremental theory induction resulted in managers holding more frequent and longer coaching sessions with their employees. Rattan et al. (2012) manipulated instructors' implicit theories and found that participants in the entity theory condition agreed significantly more that their student was "not smart enough in math" and attributed performance significantly more to a "lack of math intelligence" as opposed to a "lack of hard work" (p. 732). Those instructors in the entity theory condition were significantly more likely to endorse both consoling their student for poor performance and using teaching strategies that reduce engagement and achievement—however well-intentioned they may be. Heyman and Dweck (1998) found that incremental theorists were more likely to provide a struggling fellow student with more extensive and helpful suggestions about precisely what the person should do to improve. Similarly, Levine and Ames (2006) asked entity theorists and incremental theorists to rate the same performance. The researchers found that entity theorists had less intent to provide coaching to remedy a critical weakness and gave less frequent and lower quality feedback to clarify performance standards than offered by the incremental theorists.

Recent research by Kam, Risavy, Perunovic, and Plant (2014) moves research from exploring the effects of individuals' IPT on attributions to examining how individuals draw conclusions about others' implicit theories.

Specifically, the researchers found that subordinates formulate an impression of their manager's IPT, which is consistent with other subordinates' impressions of that same manager. Kam and colleagues also found that subordinates' impressions of their manager's incrementalism has numerous benefits including, perceptions that their manager notices changes in their work, subordinates' motivation to improve their work, lower levels of subordinates' turnover intention, and higher reports of subordinates' job satisfaction. It stands to reason that these benefits of subordinates' impressions of manager's incrementalism in work teams also translate to the relationship between organizational trainers and trainees, illustrating the importance of the trainer using messages to influence trainees' perceptions of trainee incrementalism.

The vast collection of findings illustrate that incremental theorists provide more detailed and developmental feedback than their entity theorist counterparts, and that such feedback can lead to a more positive learning climate. That insight provides strong rationale for developing organizational trainers with incremental self-theories, who, themselves are able to develop trainees with incremental self-theories. As the existing research suggests, trainers with incremental self-theories are likely to provide more quality feedback, and trainees with incremental self-theories are more equipped to receive feedback. This overall quality of and receptiveness to feedback are major contributors to learning sophisticated topics and skillsets.

IPT manipulations *as* communication strategies. While some research indicates that implicit person theories cannot be shifted (Tabernero & Wood,

1999) and are stable over time (Robins & Pals, 2002), a significant body of research reveals that implicit theories can be manipulated experimentally. Researchers induced changes in implicit theories by having participants read scientific testimonials (Bergen, 1991; Chiu, Hong, & Dweck, 1997; Dweck, 2012; Levy, Stroessner, & Dweck, 1998; Yeager, Trzesniewski, Tirri, Nokelainen, & Dweck, 2011) or watch a video about the brain's ability to grow like a muscle (Aronson et al., 2002; Heslin et al., 2005). Notice that these interventions are communicative in that they are performed via messaging, even while the interventions are not labeled as such.

Implicit theories have also been manipulated using task framing. For example, Wood and Bandura (1989) manipulated participants' implicit person theories in the instructions to a managerial simulation task. In order to induce incremental theories, participants were told that decision-making skills are developed through practice. Participants who were induced with an entity theory were told that decision making reflects the basic cognitive capabilities individuals' possess.

Other research manipulated participants' implicit theories of intelligence by changing the type of feedback participants received. Entity theorists were induced with trait-oriented feedback after a successful performance (e.g., "Wow. You must be smart!"), while incremental theorists were induced with process-oriented feedback (e.g., "Wow. You must have worked hard!"; Cimpian et al., 2007; Dweck & Leggett, 1988; Mueller & Dweck, 1998).

Other scholars argue for the importance and effectiveness of self-persuasion as it applies to inducing implicit theories of the self. Aronson and colleagues explain how change in the beliefs and attitudes induced by direct persuasion from others are often small and temporary, while self-persuasion gives participants a chance to reflect on their own experiences (see Aronson, 1999; Pratkanis & Aronson, 2001). In order to get participants to persuade themselves into the thought-processes of an incremental theorist, participants have been asked to engage in reflection questions (e.g., "What is an area in which you once had low ability, but now perform well?"), counterattitudinal idea generation (e.g., "As a manager, what are at least three reasons why it is important to realize that people can develop their abilities"), counterattitudinal advocacy (e.g., participants act like a mentor by writing an email offering advice), and cognitive dissonance induction (e.g., participants identify when they had observed another person learn to do something that they had been convinced that this person could never do; Aronson et al., 2002; Devloo, Anseel, & De Beuckalaer, 2011; Heslin et al., 2005). Even while most of these studies have been conducted by psychology scholars and are published in psychology journals, the manipulations draw attention to the communicative nature of implicit theories and their activation. More specifically, the manipulations are each communicative in that they draw on strategically-persuasive messaging to intervene and shape learners' implicit self-theories as a means of framing subsequent messages. The communicative nature of these manipulations provides opportunities for trainers to influence learners' lay theories of self through strategic messaging.

Over time, due to the negative consequences caused by entity inductions, researchers excluded entity inductions from research designs. In addition to the negative consequences discussed previously, the entity inductions cause other harmful outcomes. Wood and Bandura (1989) found participants who were induced—through strategic messaging—to have an entity conception of ability suffered a loss in perceived self-efficacy, lowered their organizational goals, and became less efficient in their analytic strategies. Entity theorist inductions also have negative consequences for intimate relationships. Knee, Nanayakkara, Vietor, Neighbors, and Patrick (2001) found that entity theorists were more likely to be less satisfied with their romantic partner than incremental theorists. Finally, Levy et al. (1998) found that participants induced to have an entity theory reported higher levels of stereotyping than those participants induced with an incremental theory. Previous studies (Chiu et al., 1997; Levy et al., 1998; Tabernero & Wood, 1999) avoided this ethical issue by debriefing all participants regarding the nature and prevalence of both entity and incremental beliefs immediately after the experimental sessions. In keeping with ethical standards of research to do no harm to participants, this research avoids inducing entity theories.

Taken together, the dizzying number of studies described above regarding the advantages afforded to incremental theorists and the communicative nature of these lay theories illustrates the promising potential of implementing incremental messaging in the training environment. The ability to manipulate lay theories with strong and consistent messaging (Dweck, 1986) demonstrates communication's

significant role in generating learning expectations. According to Good et al. (2012), "It is particularly important to better understand how entity and incremental *messages* may be *communicated* in the classroom" (p. 714, emphasis added)—and in the organizational-training setting. Thus, the state of the art in psychology of IPT identified the way forward is to continue to articulate the role that communication and messaging play in the shaping of learners' self-theories.

The Communicative Origins of Self-Theories and Identity

IPT research demonstrates that mindset shapes learning. This strong link calls into question the origin of mindsets themselves. Technically, mindsets are self-construals. Self-construals answer for the individual, "Who am I?" In doing so, self-construals represent an important part of our identities. Communication offers significant insights into understanding the origin of identity, which include self-construals. The topics of identity and identity formation are perennial concerns of communication theory and research (e.g., Burke, 1969; Goffman, 1959; Mead, 1934). From this literature, the notions that identity emerges in communication performances and dialogic positioning are particularly useful in explaining the communicative origins of self-construals, such as implicit theories. As the following paragraphs explain, identity is constructed and reinforced in communication. Understanding how communication performances and dialogic positioning elicits identity formation should provide key insights into how implicit theories of the self are generated and go on to have implications for trainers and trainees throughout the organizational training process.

Performing. For much of the twentieth century, social theorists noted the communicatively performative nature of identity such that identities form, in large part, from within social experiences (Goffman, 1959; Mead, 1934). Through communication, individuals engage in performances. During these performances, individuals become both performers and audiences. Goffman (1959, 1967) argued every conceivable interaction has a performative aspect such that when we speak, in mundane or extraordinary circumstances, we project a public image to the world. In doing so, identities do not necessarily pre-exist interaction, but come to be constituted through interaction. Performers convey certain qualities and attributes of themselves to audiences. In those moments, performers present a version of themselves, which often reflects the values of society. Performers rely on the audience to accept such impressions as reality (Goffman, 1959). In these performances, performers and audiences work together to create social experiences. Social experiences shape the way individuals think about themselves and others (i.e., identities). This social process is responsible for the appearance of the self; the self cannot be distinguished from the social experience (Mead, 1934).

Face and facework. The social process works, in large part, due to the fact that individuals in society expend significant effort attempting to validate and maintain performers' presentations of themselves (Brown & Levinson, 1987; Goffman, 1967). This phenomenon has been theorized and researched under the label of *face*. Face refers to "the socially situated identities people claim or attribute to others" (Tracy, 1990, p. 210). Brown and Levinson (1987) and

Goffman (1967) argue that the need to have one's face esteemed, while also remaining autonomous, is a universal attribute. Moreover, it is also a universal attribute of societies to help others claim an esteemed and autonomous status (Goffman, 1999). But, does the process of learning contradict this basic building block of social order (cf. Bisel, Messersmith, & Kelley, 2012)?

Take, for example, the following scenario. A call center's management identifies an employee as needing extra one-on-one training to improve soft skills. The training agenda includes topics such as establishing good rapport, empathizing, and building trust with customers. The mere directive given to the employee to take the training class implies the employee is deficient, and therefore violates the social norm and expectation that others will protect the employee's public image. In short, the need for training threatens the employee's face. An important note is such violations are somewhat expected in an organization, as an employee forfeits some autonomy when aligning with an organization (Powell, 2003). However, that understanding aside, the interactions within that organizational-training environment may still have implications for learning. Imagine, for example, the trainer realizes that training may be perceived by the trainee as a violation of the basic agreements of face: The trainer may then start the training with facework comments such as, "I know this information is not new to you" and "I'm sure you already know a lot of the information we'll be talking about, but . . ." The trainee responds with her own facework strategy in saying, "I'm just not a touchy-feely person."

This example contains a face-threatening action, as well as facework. A face-threatening action is any act that could be interpreted as damaging the societal expectation of helping others claim an image that is esteemed and autonomous. In order to counter, mend, or mitigate the influence of face-threatening actions, individuals engage in facework (Brown & Levinson, 1987; Goffman, 1967). Returning to the example, mandating that an employee must complete additional soft-skill training violates the trainee's desire to remain autonomous and esteemed, and therefore produces a face-threat. In realization of the violation and in order to help the trainee preserve a desirable public image, the trainer engages in facework by beginning the training with comments that reestablish a positive image for the trainee, all the while potentially discrediting the need for or possibility of change. The trainee also engages in self-protection, which is another example of facework. In taking up an entity theory, the trainee protects her face and shifts responsibility to an unchangeable personal characteristic (i.e., "I'm just not a touchy-feely person"). Of course, such facework and self-protection may influence the receptiveness to change through learning.

Considering that the trainer is working to mitigate the face-threatening act at the introduction of the organizational training, how much more countering must be required as the trainer continues to engage the trainee in learning? Imagine the organizational trainee experiences a setback during the training process. The trainer recognizes the mistake and how it should be corrected. However, due to the delicate dance of facework, will the trainer take the chance to give corrective

feedback? If so, will the trainee be able to move beyond the perception of face threat in order to accept the feedback and learn the needed skills? Or, will the motivation to defend the ego prevent receptiveness to feedback? Pinpointing an area where an employee is deficient (e.g., a needs assessment; Beebe et al., 2013) and needs additional (or even initial) training is a face-threatening action in that it may damage the other's desire to remain esteemed. Thus, it stands to reason that face and facework are central dynamics at play in communication about learning.

Positioning. Recall that Goffman (1967) argued communicators perform their identities in interactions. During performances, the performers also position themselves relative to their own and others' identities in dialogue. As such, identities are discursively constructed. More recently, Davies and Harré (1999) argue that performers' identities can only be expressed and understood through the categories available to them in discourse. Performers understand themselves in terms of categories (i.e., what they are and what they are not). Examples of such categories include male/female, father/daughter, artistic/calculated, learner/nonlearner. These categories are bound historically in conversations and interactions that occur over time. As performers experience new conversations, they continue to position themselves and others in terms of the categories which social histories created and recreate. Based on their interactions, performers locate themselves in numerous categories, all of which influence their identity and self-construals. Relating to the previous example, the trainee's self-categorization as "not a touchy-feely person" results from a history of conversations where the trainee positioned herself and was positioned by others as deficient in

communication skills. Notice that the trainee made a categorical distinction between those who can express trust, empathy, and the ability to build rapport, and those who cannot. Not addressed explicitly in the example is the fact that the trainee also positions herself with many other categories. For example, it is possible that the organizational trainee could position herself within the category of being a hardworker and a good employee. As such, she could try her hardest to position herself as a good employee by attempting to improve her soft skills.

During conversations, performers (re)position not only themselves, but also each other, as they make sense of their dynamic role within interactions (Davies & Harré, 1999). In these interactions, individuals give each other positions to enact or challenge (implicitly and explicitly). Returning to the example, the trainee's statement of not being a "touchy-feely person" makes available a specific subject position for the organizational trainer to assume. The trainee positions the trainer as a person who believes that communication skills are rooted in fixed traits and, therefore, cannot be changed easily. This assumption positions the trainer's response, which, in turn, will position the trainee's subsequent contribution to the interaction, and so on. This constant fluidity of positions within conversation demonstrates that one turn in an interaction influences how the interaction unfolds, which influences the categories people use to label themselves, therefore influencing their identity. Hence, communication constitutes identity.

Communication's Role in Reshaping Identity to Prepare for Learning During Organizational Training

The preceding section explained how identity originates from within communication dynamics. Also, the earlier review of the IPT literature demonstrated that identity influences learning outcomes. These arguments beg the question: What, therefore, do we know about communication, which can be used to shape identities to improve organizational trainees' receptiveness to learning? In order to address this question, the next section discusses the relationship among social construction, self-construals, mental models, and framing as they relate to the organizational training process.

Social construction. The idea that communication constitutes identity is rooted in social constructionism. A central idea of social construction is that individuals create and recreate their social worlds as they attribute meaning to circumstances (Berger & Luckman, 1966). Individuals draw from social interactions to make sense of their social realities (Hacking, 1999). These interactions result in the creation and recreation of meaning. As such, social construction is a constant iterative process of making meaning from interactions, interpreting the meaning, then re-creating meaning based on subsequent interactions. This process of social construction illustrates that identities are shaped through talk. In turn, identities help us to make sense of our world (Cheney, 1983) and to generate broader social structures like organizations (McPhee & Zaug, 2000), which in turn shape future interactions (Giddens, 1984).

Self-construals as frames. Through performance and positioning, communication across the lifespan generates identities and self-construals. Self-construals are aspects of identity that give us mental models from which to understand who we are and what we think of our ability. Self construals are mental models or frames. Fairhurst (2011) defines a *frame* as "a structured way of thinking" (p. 1). Ability-related mindset is a frame of the self from which learners draw in order to understand themselves and their abilities. The frame not only helps learners make sense of their own ability, but learners also use these frames to speak back into their social environment, performatively, and in terms of positioning. This communication works to stabilize and reinforce the mental model of the self (i.e., the self-construal). In this process of understanding learners' identities through their mental models (i.e., frame), learners work to make sense of actions. Learners do this by engaging in sensemaking. Sensemaking is defined by Weick (1995, 2001) as the process by which individuals give meaning to experience. In giving meaning to experience, individuals consider two main questions: "What's the story here? and "What should we do next?" (Weick, 2001). In doing so, sensemaking shapes action, often in patterned ways (see Bisel & Arterburn, 2013).

Mental models. Learners' mental model of their abilities evokes frames from which they understand their identity and, therefore, helps them make sense of learning and achievement. For example, entity theorists understand their identity in terms of ability. *I'm really smart. I am not artistic. I am not a math person.* When this ability is questioned in the course of communication with

another, or jeopardized in any way, learners' fixed frames influence the way they make sense of the interaction. The learners' very identity is therefore threatened arousing anxiety, emotion, and defensiveness. Conversely, learners with an incremental theory, or fluid, frame understand identity in terms of effort. Therefore, when incremental theorists' performances are met with criticism, the learners' growth-mindset frames influence their sensemaking. As a result, incremental theorists may be more likely to work to conform to their identity as a "hard worker."

Training the Organizational Trainer

Shifting mental models through framing. Communication research and theory offer insights about not just how these self-construals (i.e., identities, mental models, frames, mindsets) are solidified and sedimented, but also how mindsets are shifted. Identities are solidified, sedimented, and shifted through fram*ing*. According to Fairhurst (2011), *framing* is shaping the meaning of a subject to encourage the selection of one meaning over alternatives. Hill and Levenhagen (1995) refer to this shaping of meaning through messaging as sensegiving. As exemplified with existing literature, incremental theorists enjoy many more benefits than entity theorists, which calls for strategies for encouraging such advantageous self-construals. A primary communicative means of changing self-construal is to shape the mental model communicatively through framing. Such framing is performed rhetorically through tropes (e.g., contrast, story, spin, narrative, jargon, metaphor, among others; Fairhurst & Sarr, 1996). Framing devices are messaging tools for teachers and organizational trainers

alike. By supplementing learners' actions with verbal messages that frame the learning process itself as an opportunity to grow and develop, teachers and trainers can potentially shift learners' mental models away from a focus on ability and toward a focus on effort. By giving learners a mental model of learning that positions identity in terms of effort, learners are likely to be more receptive to alternative performances and positionings that they would have been defensive against previously. This shift in mental models due to framing may result in learners being more likely to be receptive to learning, less likely to experience ego-defensiveness, and less likely to perceive face threat throughout the training process. In sum, it stands to reason that effective organizational trainers can use this ability of communication to shift individuals' mental models of themselves to overcome the problems experienced by entity theorists during learning. In short, the foregoing argument leads to the idea that identity moderates the relationship between communication and learning.

As mentioned, trainers with incremental theories are more interested in correcting trainees' errors (Chiu, Dweck, Tong, & Fu, 1997), engage in longer feedback sessions (Heslin et al., 2006), provide more extensive suggestions for improvement (Heyman & Dweck, 1998; Levine & Ames, 2006), and are less likely to console trainees for poor performance (Rattan et al., 2012). Also, subtle linguistic differences in trainers' feedback influences trainees' receptiveness to feedback (Cimpian et al., 2007) and, arguably, their perceptions of their own affective learning. According to Kearney (1994), affective learning is the emotional tone that the content or subject matter evokes for the student. Research

demonstrated that a student's positive affect toward school or a subject area influences motivation to learn (Christophel, 1990; Frymier, 1994; Richmond, 1990).

Since implicit theories are mental models that can be shaped through social interactions, feedback framed to emphasize the role of effort in the learning process rather than ability will shape organizational trainees' mental models, and influence how trainees perceive feedback. Thus, this study examines the following hypothesis:

H1: Participants who receive feedback from trainers in the growth mindset treatment group perceive their own affective learning, learner motivation, and quality of feedback to be higher than control group participants.

The trainers' strategies for framing feedback may also influence trainees' perceptions of face-threat. Trainers who have been trained to employ language that positions trainees' identities as malleable, changeable, and subject to development may evoke in trainees a mental model of themselves that expects continued improvement through increased effort rather than a mental model that expects to rely on natural ability with no need for development. Trainers with mental models that focus on effort rather than ability will be able to shape trainees' mental models with the same belief, therefore encouraging trainees to perceive feedback as a chance to grow rather than as a face-threat. Thus, this study explores the following hypothesis:

H2: Participants who receive feedback from trainers in the growth mindset treatment group perceive their own face-threat to be lower than control group participants.

In order to explore the effects of training-the-trainer, it is also important to measure the frequency with which trainers implement the messaging strategies taught to them for framing feedback. Frequency of growth-mindset oriented framing will be measured by counting the frequency with which the trainer implements the lessons learned in the training session to the feedback provided to the trainee. According to Dweck (2012), the frequency of incremental messaging predicts the stability of the induction. Therefore, this suggests the following two hypotheses:

H3: The frequency of growth-mindset oriented framing of feedback is positively associated with perceptions of affective learning, learner motivation, quality of feedback, performance, and performance over time.

H4: The frequency of growth-mindset oriented framing of feedback is negatively associated with trainees' perceived face-threat.

While frequency of growth-mindset oriented framing of feedback may be negatively associated with trainees' perceived face-threat, trainees' perceived face-threat may also moderate the relationship between frequency of growth-mindset oriented framing and positive outcomes. From a politeness theory perspective, learners who experience a face-threat from their instructor are likely to mitigate this face-threat by becoming defensive against the feedback (Brown &

Levinson, 1987). A higher degree of perceived face-threat should cause organizational trainees to defend their egos against any type of change, no matter how the suggested change is framed. Therefore, the following hypothesis is proposed:

H5: The degree of trainees' face-threat perceptions moderates the association between the frequency of growth-mindset oriented framing used during feedback session and trainees' perception of their own affective learning, learner motivation, and quality of feedback.

Several studies revealed that strong incremental-theory interventions are sustainable over time. Dweck (2012) argued that "some of these changes in 'mindset' may last as long as you are in the situation that is delivering the message, but long-term changes may also be induced by a *compelling or continuing message*" (p. 133, emphasis added). Notice that Dweck herself highlighted the importance of messages in inductions of implicit theories, which points to the inherently communicative nature of this work. Existing research demonstrated that induced incremental beliefs can be sustained at least six weeks after an experimental session (Aronson et al., 2002; Heslin et al., 2005). Thus, the study examines the following hypothesis:

H6: Participants who receive feedback from growth mindset trainers perform better immediately following and one month after the mindset manipulation than control group participants.

As previously discussed, due to the inherent stake in HROs' successful implementation of training (i.e., the potential for saving lives and avoiding the loss of life), the foregoing hypotheses are expected to be supported in the HRO context. If the hypotheses are supported in an HRO setting, an additional and significant challenge will be to determine if the hypotheses are also supported in the non-HRO setting, where stakes are lower, as with the example of students participating in extra credit.

Study 1 Method: Training HRO Anesthesiology Department Trainees

Participants

Participants included 25 attending anesthesiologists and 25 residents in an anesthesiology department at a large academic hospital in the Southwestern U.S. Attending anesthesiologists included 20 males and four females (one participant did not identify sex), ranging in age from 31 to 76 (M = 48.71, SD = 12.42). Attending anesthesiologists varied in their experience as an instructor of anesthesiology, ranging from one to 37 years (M = 11.92, SD = 10.58). The residents of anesthesiology who participated included 21 males and four females, ranging in age from 27 to 35 years of age (M = 30.50, SD = 2.13). Residents ranged from having completed one to seven years of anesthesiology residency (M = 3.21, SD = 1.57). Participation was voluntary. Each attending anesthesiologist was paired with a resident. Pairs were assigned randomly to either the treatment or control group. Attending anesthesiologists assigned to the treatment group received a 30-minute, implicit person theory-based training on framing effective

feedback to induce a growth mindset (described below). Attending anesthesiologists in the control group did not receive training.

Procedures

Participants were notified of the opportunity to participate in the experiment through email and/or personal communication from the lead anesthesiologist on the project. Participants indicated their availability, and research assistants scheduled participants based on the availability of the participants, researchers, laboratory staff, and laboratory space. Pairs were assigned based on availability and scheduling. Because participant availability influenced pairing and condition, assignment was as close-to-random as could be realistically achieved given the circumstances imposed by the partnering organization.

Upon arriving at the training laboratory, a research assistant greeted potential participants and provided them with an informed consent form. If potential participants agreed to participate, attending anesthesiologists and residents were paired. Each pair was randomly assigned as either treatment or control. For the pairs randomly assigned to the treatment conditions, the attending anesthesiologist was directed to another room in the laboratory where a research assistant asked the attending anesthesiologist to complete the Implicit Person Theory Measure (Dweck et al., 1995) and trained the attending anesthesiologist with a 30-minute training on framing effective feedback to induce a growth mindset (see Appendix B for the complete training; see Manipulation Section below for a description of the training). At the completion

of the induction, the attending anesthesiologist completed the IPT measure again as a manipulation check and also answered demographic questions (see Appendix C). For those pairs assigned randomly to the control group, the attending anesthesiologist was asked to complete an informed consent form. While researchers considered having attending anesthesiologists in the control group participate in a time-equivalent task, researchers decided against the task due to time constraints created by participants' ordinary work pressures. In an effort to avoid the confounding effects of instrument reactivity (de Vaus, 2001), control-group attending anesthesiologists did not complete the IPT measure until the end of the experiment. Completing the IPT measure prior to participation could have affected control-group participants' thinking and communication behavior while giving feedback to residents.

Next, the attending anesthesiologist and resident were directed to the simulation room, where the attending anesthesiologist observed the resident's performance on a crisis simulation using a human patient simulator (HPS; see Appendix D for an image of an HPS). Simulations ranged in time from about nine to 15 minutes. At the completion of the simulation, the attending anesthesiologist and the resident were directed to another room where the attending anesthesiologist provided feedback to the resident about the performance on the simulation. These feedback sessions were audio recorded, transcribed, and content analyzed for frequency of growth-mindset oriented framing of feedback. Feedback sessions ranged in time from about four to 27 minutes (M = 12.48, SD = 6.81). Once feedback sessions were finished, attending

anesthesiologists in the treatment group were given a $50 gift card to Target, and were then dismissed. The attending anesthesiologists in the control group completed the IPT measure, answered basic demographic questions (see Appendix C), were given a $50 gift card to Target, and then dismissed. Meanwhile, the resident completed the following measures using pen and paper: affective learning (McCroskey, 1994), learner motivation (Richmond, 1990), perceived face threat (Cupach & Carson, 2002), and quality of feedback (Steelman et al., 2004), implicit person theory measure (Dweck et al., 1995), and demographic questions (Appendix E), which are described below in detail.

During feedback sessions and completion of the measures, the simulation laboratory was prepared by a human patient simulator (HPS) expert for a second simulation. Once measures were completed, residents were directed—one by one—to the simulation laboratory to engage in a second simulation. The second simulation was a different scenario than the first simulation, but the two simulations shared similarities in terms of the application of knowledge and techniques. The second simulation was selected by the HPS expert and a consulting anesthesiologist for its similarity in terms of transferable skills and techniques, which should have been improved upon during the first scenario. The resident's performance on the second simulation was video recorded. At completion of the second simulation, residents were asked to respond to a short survey they would receive in an email in about one month, given a $25 gift card, and dismissed. A separate panel of physicians scored the residents' performances on the second simulation for comparison between the treatment and control

groups. From beginning to end, participation in the experiment took approximately two hours to complete.

Human patient simulator (HPS). The HPS is a full-body, computer-based mannequin with human physiology emulation capability (see Appendix D for image). The life-sized simulator is wired to a remote computer behind a one-way mirror of an adjacent room. The computer houses the software that generates physiological events of the HPS, including, but not limited to blood pressure, heart beat, pupil dilation, eyelid movement, swelling of the tongue, and bodily bleeding. HPS provides leading-edge training technology in healthcare education that gives medical students an opportunity to develop higher-level cognition and critical thinking that are necessary for the ability to perform and manage patient care (Beyer, 2012; Hyatt & Hurst, 2010; Johnson, Flagg, & Dremsa, 2010).

Measures

Scale reliabilities are listed in Table 1 and in the following paragraphs.

Implicit person theories. The training's effectiveness in shifting attending physicians' implicit theory of intelligence was tested by having participants complete the Implicit Person Theory Measure (Dweck et al., 1995; see Appendix F). The scale consists of three items of intelligence, three items of morality, and three items of the overall entity versus incremental theory held by the participant. Each item is measured on a 6-point Likert-type scale (1 = *strongly disagree* to 6 = *strongly agree*). Sample items include: "Your intelligence is something about you that you can't change very much" and "People can do things differently, but the important parts of who they are can't

really be changed." High scores represent an incremental IPT. Heslin et al. (2006) demonstrate that the validity and reliability of the scale is well-established. Cronbach's α for this portion of the study was .89 (*all* attending anesthesiologists Time 1), .92 (treatment condition attending anesthesiologists *after* training), and .90 (*all* residents).

Frequency of growth-mindset oriented framing of feedback. A codebook was created in order to tally physicians' utterances that affirmed explicitly the connection between residents' process improvement and future acquisition of skill (i.e., frequency of growth-mindset oriented framing of feedback). Two coders used the codebook to code the frequency of growth-mindset oriented framing used by the physicians in each feedback session. Coders were blind to the treatment and control condition in order to enhance coding validity. Coders began by reading and rereading the transcripts of each physician's feedback session. The connection between improving process and acquiring skill is essential in the context of growth-mindset oriented framing of feedback because it emphasizes the importance of the expectations that effort results in change over time. Examples of such utterances include: "continue to work… and you can grow over time," "that's the whole point of this–to learn something. If it was easy, you wouldn't have to work that hard," and "that posed some challenges that I hope will help you learn and grow." At the completion of each feedback session, the coder counted the frequency of these utterances, and that summed tally became the frequency of growth-mindset language for that feedback session. Thus, at the end of coding, each feedback session was assigned

two summed tallies (one per coder). Krippendorff's α was computed for interrater reliability. Interrater coding reliability was sufficiently high (α = .96). Given that Krippendorf's alpha yielded sufficient reliability between coders, the scores were averaged to create a mean index for each feedback session. The mean index for frequency of IPT language did not violate assumptions of normality (M = .74, SD = 1.06, kurtosis = .66, skewness = 1.26) according to Tabachnik and Fidell's (2007) kurtosis and skewness significance test methods for small to moderate sample sizes.

Affective learning. Residents' perceptions of affective learning were operationalized using the Affective Learning Measure (McCroskey, 1994; see Appendix G). The scale consists of measurement of three general areas of affect: (a) affect toward the content/subject matter, (b) affect toward the instructor, and (c) affect toward the behaviors taught in the class. The scale also measures three belief constructs: (a) probability of taking another course in the subject matter, (b) probability of taking another course with the instructor, and (c) probability of using the behaviors taught in the class. Four 7-step semantic differential scales follow each type of affect. Sample items ask participants to rate their "attitude about the content of this feedback session" and "the likelihood of taking another course in this subject matter." The scale was modified slightly to reflect the feedback session rather than the class or course. The validity and reliability of the 6-item self-report scale is well-established (e.g., Kearney, 1994). To score this measure, answers to the negative responses were reverse coded such that higher

scores indicated more positive responses. In this portion of the study, Cronbach's α for the use of the measure was .92.

Learner motivation. Learner motivation is operationalized using the Student Motivation Scale (Beatty, Behnke, & Froelich, 1980; Beatty, Forst, & Stewart, 1986; Richmond, 1990; Christophel, 1990; see Appendix H). The Student Motivation Scale captures the degree of attention and concentration a student has toward the competent completion of an academic task. The original scale consisted of a single-item semantic differential scale, but has been expanded to include as many as 16 sets of bipolar, semantic differential items. Sample items include the following semantic differentials: "interested/not interested," "inspired/uninspired," and "challenged/unchallenged." In previous research, Christophel (1990) observed reliability coefficients ranging from .95 to .96 for a 12-item measure. Considerable evidence for the construct validity of the scale is available (e.g., Beatty et al., 1980; Beatty & Payne, 1985; Christophel, 1990; Richmond, 1990). During analysis, negatively worded items were recoded so that higher scores reflected higher levels of motivation. Cronbach's α for the use of the measure in this portion of the study was .87.

Perceived face threat. The perceived face-threatening nature of the feedback was operationalized using Cupach and Carson's (2002) face threat measure (see Appendix I). The measure consists of 14 items measured on a 7-point Likert-type scale (1 = *strongly agree* to 7 = *strongly disagree*). Ten of the items measure positive face threat, while the remaining four items measure negative face threat. Sample items include: "the instructor's feedback showed

disrespect toward me" and "the instructor's feedback was insensitive." Positive face threat scale reliabilities range from α = .71 (Willer & Soliz, 2010) to α = .88 (Cupach & Carson, 2002). Negative face threat was measured in the remaining four items, and included items such as: "the instructor's feedback constrained my choices" and "the instructor's feedback took away some of my independence." Negative face threat scale reliability is α = .68 (Cupach & Carson, 2002). Negatively worded items were reverse coded so that higher scores on the measure indicate lower levels of face threat. Carson and Cupach (2002) indicated the unidimensionality of the items make it acceptable to sum both subparts into a global measure, and reported a global scale reliability of α = .94. For this portion of the study, Cronbach's α for the use of the measure was .80.

Quality of feedback environment: Source credibility, feedback quality and feedback delivery. Feedback was assessed using three dimensions of the Feedback Environment Scale (FES) developed by Steelman et al. (2004; see Appendix J). The FES was developed to help understand the formal and informal feedback process in organizations. The original measure includes seven facets of feedback: source credibility, feedback quality, feedback delivery, favorable feedback, unfavorable feedback, source availability, and promotion of feedback seeking. Previous studies used a selection of the facets of FES rather than all seven facets (cf. Hartmann & Slapnicar, 2009; Steelman & Rutkowski, 2004). The three facets used in this study include source credibility, feedback quality, and feedback delivery. Each facet includes four to five items, each of which is measured on a 7-point Likert-type scale (1 = *strongly agree* to 7 = *strongly*

disagree). Sample items include: "I respect my instructor's opinions about my performance" and "my instructor gave me useful feedback about my performance." Previous results indicate that FES has adequate internal consistency, test-retest reliability, and convergent and discriminant validity (e.g., Steelman et al., 2004). Negatively worded items were recoded so that higher scores represent more positive responses. For this study, Cronbach's α = .84.

Performance. Performance on the second simulation was measured by the professional assessments of two anesthesiologists. The anesthesiologist coders were asked to begin by watching and then rewatching each simulation performance. As a means of facilitating their evaluation, coders were directed to create three stacks of six simulations and one stack of seven simulations (N = 25). Each stack represented increasing effectiveness of the resident's performance such that 1 represented the least effective performances and 4 represented the most effective performances. In order to calibrate their measure of effective performance, the coders created a checklist of expectations for the residents' performance. The initial coding strategy resulted in insufficient reliability between coders (α = .18).

Because the strategy did not yield sufficient reliability between coders, the researcher worked with anesthesiology coders to create a new coding strategy. In the new strategy, coders were directed to measure residents' *decisional requisite variety*. Decision requisite variety is conceptually important because if anesthesiology coders could see that residents had many and creative options to draw on as the HPS kept crashing, it implied that residents developed more

elaborate understanding of critical events and their potential remedy in the operating theater. Decision requisite variety was operationalized in terms of the coding scheme as the frequency of attempts at solving the simulation scenario. Then, coders were asked to rate the quality of each attempt at solving the simulation scenario. To do this, coders indicated how sophisticated the repertoire of options the resident executed. The HPS scenarios posed challenges in coding because usual remedies or bodily functions go wrong. As such, "effectiveness at solving the simulation scenario" was not a sufficient code because the simulation scenario could not be solved. A focus on the resident's tenacity in solving the problem in frequency and quality of attempts was directly related to the goals of the mindset training and feasible given the constraints of the HPS. Coders used a 1 to 4 ranking where 1 represented *"Despite much prompting, the resident does NOT execute thoughtful, intelligent, creative, appropriate options with confidence"* and 4 represented *"With no prompting, the resident executes very thoughtful, very intelligent, very creative, very appropriate options with high confidence."* Thus, at the end of the coding, each simulation had two measurements (one per coder). Coders were sufficiently reliable (α = .77) with the co-created coding scheme. Given that Krippendorf's alpha yielded sufficient reliability between coders, scores were averaged to create a mean index for each feedback session. According to Tabachnik and Fidell (2007), the mean index for performance did not violate assumptions of normality (M = 2.63, SD = .81, kurtosis = -1.33, skewness = .28).

Longitudinal performance. One month after the experiment, residents received a short follow-up survey via email. The survey asked residents to report their general status in the program (see Appendix K), and asked them to repeat the Implicit Person Theory scale (see Appendix F). After two reminder emails of the follow-up surveys, a total of four surveys were completed. Due to the low response rate, residents' longitudinal performance was omitted as a variable.

Train-the-Trainer Manipulation

The physicians in the treatment group received a 30-minute training to frame feedback with a growth mindset (see Appendix B). Of the physicians in the treatment group, nine engaged in one-on-one training with the trainer, and four physicians were trained in pairs of two. Dweck's (2006) research on IPT was the foundation for the organizational training. The purpose of the training was to offer physicians insights into the ways in which assumptions about intelligence influence motivation and effort, to explore how a physician's feedback framing influences resident learning, and to give physicians communicative tools to maximize the learning potential of their residents.

After a general explanation of fixed and growth mindsets, physicians learned three ways mindset influences learning: First, physicians learned that residents who have fixed mindsets are likely to focus on appearing smart while residents with growth mindsets are likely to focus on learning. Once physicians were presented with applicable scientific evidence (see Figures 1-4), physicians were asked to think about a time when they were in a fixed mindset and chose to be a non-learner. The physicians were asked what they could do differently next

time they find themselves choosing to appear smart rather than learn. Physicians were asked to discuss their responses with the trainer. The trainer asked questions of the physicians to illicit their own stories and to highlight the points of those autobiographical stories that were most applicable to the training. The trainer also provided personal examples.

Second, physicians learned that praising a resident's effort has more positive learning effects than praising their intelligence. After presenting research that demonstrated these differences, physicians were asked to engage in a message-production exercise where they wrote statements, words, and phrases praising residents for effort, rather than for intelligence. Physicians were asked to share their statements with the trainer. The trainer added to the lists, corrected lists if needed, and oriented physicians toward their most intensely growth-mindset statements.

Third, physicians learned how residents with predominantly fixed or growth mindsets respond differently to setbacks. The trainer presented copious scientific evidence to support this point; then physicians engaged in two different role-playing scenarios. For those physicians trained in pairs, the second role-playing scenario was played twice, giving each physician a chance to practice giving feedback. Instructions for the first role-playing scenario read as follows:

> The trainer will act as the physician, and you will act as the resident. Imagine the resident just completed an HPS scenario that lacked most of the necessary elements of a successful performance. First, communicate to the resident your values and beliefs about learning. Second, provide

them with feedback on their scenario. Use the lists of words and phrases you developed in the previous activities.

In the second role-playing scenario, physicians were asked to engage in the scenario by providing feedback to a resident (i.e., the trainer) who just completed an excellent HPS scenario. Physicians were encouraged to use the lists of words, phrases, and statements they had created earlier in the training to facilitate the type of feedback they provided. At the completion of role-play, the trainer discussed the physician's feedback by pointing out strong points and areas for improvement. After analyzing the feedback given by the physician, the trainer would engage in the role-play again as the physician to provide more examples of language-use that supports a growth-mindset. Before finalizing the role-playing scenario, the physicians gave feedback to a hypothetical resident once again. At the completion of the role-playing activity, each physician heard an example of feedback at least twice, and had a chance to practice twice. Before concluding the training, physicians were reminded to consider the plasticity of the brain, to praise effort, challenge, struggle, mistakes and work, and to focus on the process of learning rather than the outcomes when giving feedback to residents.

Manipulation check. As mentioned in the procedures section, attending anesthesiologists in the treatment condition completed the Implicit Person Theory scale before and after they engaged in the experimental training. These two scores were used to measure differences in reported IPT before and after the training. A paired-samples *t*-test was conducted to compare the IPT of attending anesthesiologists before and after training. Results indicated a significant

difference in the attending anesthesiologists' scores before the training (M = 4.04, SD = .88) and after the training (M = 4.48, SD = .78), $t(12) = -3.41$, $p = .006$, d = .53. An independent-samples t-test was conducted to compare the reported IPT at the time of feedback for the treatment and control groups. Results indicated no significant difference in the IPT of attending anesthesiologists in the treatment group at the time of feedback (M = 4.48, SD = .78) and attending anesthesiologists in the control group at the time of feedback (M = 4.41, SD = 1.07), $t(21) = -.17$, $p = .864$. In other words, attending anesthesiologists in the treatment group were not significantly more incremental (i.e., growth mindset) in their assumptions about intelligence *after receiving training* than attending physicians who did not receive the experimental training.

The main goal of the training was to encourage and train attending anesthesiologists to implement growth-mindset language in their feedback messages. Due to the focus of the training, attending anesthesiologists in the treatment condition were expected to use more growth-mindset oriented framing than attending anesthesiologists in the control condition. An independent-samples t-test was conducted to compare frequency of growth-mindset oriented framing in treatment and control conditions. Results indicated a significant difference in the frequency of growth-mindset oriented framing for the treatment (M = 1.35, SD = 1.16) and control (M = .08, SD = .29) conditions, $t(13.59) = -3.80$, $p = .002$, d = 1.50.

Study 1: Results

Table 2 provides descriptive statistics and correlations of study 1 variables.

Train-the-Trainer Condition as Predictor of Trainee Learning Outcomes

The first hypothesis predicted residents who receive feedback from attending anesthesiologists in the growth mindset treatment group would perceive their own affective learning, learner motivation, and quality of feedback to be higher than control group participants. Three independent samples *t*-tests were performed to determine the differences between the treatment and control groups with regard to these outcomes. The first *t*-test explored if residents who received feedback from the attending anesthesiologists in the growth mindset treatment group perceived their own *affective learning* to be higher than control group participants. Results indicated no significant difference in the affective learning reported by participants in the treatment ($M = 6.37$, $SD = .39$) and control groups ($M = 6.45$, $SD = .44$), $t(22) = .44$, $p = .662$. A second *t*-test examined if residents who received feedback from the attending anesthesiologists in the growth mindset treatment group perceived their own *motivation* to be higher than control group participants. Results indicated no significant difference in the learner motivation reported by participants in the treatment ($M = 5.97$, $SD = .68$) and control groups ($M = 5.88$, $SD = .96$), $t(23) = -.28$, $p = .784$. A third *t*-test explored if residents who received feedback from attending anesthesiologists in the treatment group perceived the *quality of feedback* they received as higher than their control group counterparts. Results indicated no significant difference in the quality of feedback

perceived by residents in the treatment group (M = 6.67, SD = .41) and the control group (M = 6.58, SD = .50), $t(20) = -.49$, $p = .634$.

The second hypothesis predicted that residents who received feedback from attending anesthesiologists in the growth mindset treatment group perceived their own face threat to be lower than control group residents. An independent samples t-test was performed to test the hypothesis. Results indicated no significant difference between the reported face threat perceived by residents with attending anesthesiologists in the treatment group (M = 6.47, SD = .45) and residents with attending anesthesiologists in the control group (M = 6.45, SD = .93), $t(23) = -.07$, $p = .944$.

Frequency of Growth-Mindset Framing of Feedback as Predictor of Learning Outcomes

The third hypothesis predicted that frequency of growth-mindset oriented framing of feedback was positively associated with residents' perceptions of affective learning, learner motivation, quality of feedback, and performance. Four bivariate regression analyses were conducted to predict how well frequency of growth-mindset oriented framing predicted each outcome variable. First, the frequency of growth-mindset oriented framing of feedback was not significantly associated with residents' perception of affective learning, $R^2 = .06$, $R^2_{\text{Adjusted}} = .01$, $F(1, 22) = 1.30$, $p = .267$. Second, the frequency of growth-mindset oriented framing of feedback was not significantly associated with residents' motivation, $R^2 = .00$, $R^2_{\text{Adjusted}} = -.04$, $F(1, 23) = .00$, $p = .960$. Third, frequency of growth-mindset oriented framing of feedback was not significantly associated with

residents' perceptions of the quality of feedback, $R^2 = .13$, $R^2_{Adjusted} = .09$, $F(1, 20) = 3.08$, $p = .095$. Finally, the growth-mindset oriented framing of feedback was not significantly associated with performance immediately following feedback, $R^2 = .081$, $R^2_{Adjusted} = .041$, $F(1, 23) = 2.03$, $p = .841$. Each association was in the positive direction, as expected.

The fourth hypothesis predicted that the frequency of growth-mindset oriented framing of feedback was negatively associated with residents' perceived face-threat. A bivariate regression analysis was conducted to predict how well frequency of growth-mindset oriented framing predicted trainees' perceived face threat. The frequency of growth-mindset oriented framing was not significantly associated with residents' perceived face threat, $R^2 = .00$, $R^2_{Adjusted} = -.04$, $F(1, 23) = .00$, $p = .986$.

Face Threat as a Moderator

The fifth hypothesis predicted that the degree of trainees' face-threat perceptions moderated the association between the frequency of growth-mindset oriented framing used during the feedback session and residents' perception of their own affective learning, learner motivation, and quality of feedback. In accordance with Warner (2013), both predictor variables (i.e., frequency of growth-mindset oriented framing and degree of face threat perceptions) were centered prior to creating the product term that would represent the interaction in each hypothesis.

First, a regression analysis was computed to determine whether the degree of face threat perceived by trainees moderated the frequency of growth-mindset

oriented framing used by trainers and affective learning reported by trainees. The degree of face threat and frequency of growth-mindset oriented framing was not significantly associated with affective learning, $R^2 = .17$, $R^2_{\text{Adjusted}} = .04$, $F(3, 20) = 1.32$, $p = .297$. Following suit, neither the interaction term ($\beta = -.15$, $t(20) = -.71$, $p = .485$, $sr^2 = .021$) nor the main effects of face-threat ($\beta = .32$, $t(20) = 1.55$, $p = .136$, $sr^2 = .100$) and frequency of IPT ($\beta = .24$, $t(20) = 1.16$, $p = .257$, $sr^2 = .057$) were significant predictors of affective learning. Results did not support that the degree of the trainees' face-threat perceptions moderated the association between the frequency of growth-mindset oriented framing and affective learning.

Second, a regression analysis was computed to determine whether the degree of face threat perceived by trainees moderated the frequency of growth-mindset oriented framing used by trainers and trainee's learner motivation. The regression model accounted for significant variance in trainees' learner motivation, $R^2 = .31$, $R^2_{\text{Adjusted}} = .22$, $F(3, 21) = 3.19$, $p = .045$. Inspection of the interaction and main effects revealed that only the main effect of trainees' perceived face threat accounted for a significant amount of variance in trainees' learner motivation, $\beta = .57$, $t(20) = 2.92$, $p = .008$, $sr^2 = .280$. The interaction term did not account for a significant amount of variance in trainees' learner motivation, $\beta = -.03$, $t(20) = -.17$ $p = .866$, $sr^2 = .001$. Likewise, the main effect of frequency of IPT did not account for a significant amount of variance in trainees' learner motivation, $\beta = .02$, $t(20) = .10$, $p = .919$, $sr^2 = .000$. Results did not support the hypothesis that the degree of trainees' face-threat perceptions

moderated the relationship between the frequency of growth-mindset framing and trainee motivation.

Third, a regression analysis was computed to determine whether the degree of face threat perceived by trainees moderated the frequency of growth-mindset oriented framing used by trainers and trainees' perception of the quality of feedback. The degree of face threat and frequency of growth-mindset oriented framing was not significantly associated with trainees' perception of the quality of feedback, (R^2 = .30, R^2_{Adjusted} = .19, $F(3, 18) = 2.59$, p = .085). β = -.08, $t(18)$ = -.41, p = .687, sr^2 = .007. Additionally, the main effect of frequency of IPT did not account for a significant amount of variance in trainees' perception of the quality of feedback, β = .35, $t(21) = 1.71$, p = .105, sr^2 = .113. Results did not support that the degree of trainees' face-threat perceptions moderated the association between frequency of growth-mindset oriented framing and quality of feedback.

Train-the-Trainer Condition as Predictor of Performance

The sixth hypothesis posited that residents who received feedback from attending anesthesiologists in the treatment group would perform better immediately following the mindset manipulation than control group participants. Results of the independent samples *t*-test indicated no significant difference in the immediate performance of residents who received feedback from attending anesthesiologists in the treatment group (M = 2.54, SD = .85) and the residents who received feedback from attending anesthesiologists in the control group (M = 2.73, SD = .80), $t(23) = .58$, p = .568. The hypothesis that condition would predict performance was not supported.

Discussion of Study 1

The goal of the first experimental investigation was to better understand how the strategic framing of organizational feedback processes influence skills-based learning in HRO training. The specific objectives of this study were to show whether a training session on growth mindset would influence attending anesthesiologists' feedback messaging provided to residents, and subsequently, residents' learning outcomes as measured by affective learning, learner motivation, quality of feedback, task performance, and perceived face threat. The goals of this experiment were achieved.

Problematic Manipulation

Hypotheses 1, 2, and 6 posited changes in trainees' learning outcomes based on whether the trainers were in the growth mindset treatment group or in the control group. Because these three hypotheses predict effects of the training, they are discussed in unison.

A central expectation of each of hypotheses 1, 2, and 6 is attending anesthesiologists—who received the 30-minute training on growth mindset—would themselves report higher scores on the IPT measure than those anesthesiologists who did not engage in the training, as measured in the manipulation check. Anesthesiologists were assigned to either the treatment or control group using random assignment. Random assignment helps to ensure any differences between and within groups are not systematic at the outset of the experiment. Random assignment does not guarantee that the groups are equivalent at the beginning, but only that any differences are due to chance (Campbell &

Stanley, 1963). While trainers in the training did report significant changes in their own IPT before and after the training, their IPT at the time of feedback was not significantly different from trainers who did not receive the growth mindset training.

The ineffectiveness of the manipulation to induce anesthesiologists who reported higher IPT at the time of feedback than their control group counterparts might explain the training's ineffectiveness in producing higher reports of learning outcomes. However, this relationship cannot be known as the lack of statistical difference is not assurance of conclusive sameness. As described in detail in the opening pages, other studies found that instructors' existing IPT predicted students' positive perceptions of their instructors' feedback quality (Heslin & VandeWalle, 2011; Hong et al., 1997). While these studies do not explore the effects of language-use per se, the present findings are consistent with the notion that *all* the trainers' relatively high IPT could have influenced trainees' perceptual and affective responses. A one-sample *t*-test was computed to explore whether all participating anesthesiologists' IPT was significantly greater than the IPT measures' midpoint of 3.5. Results supported the idea that participants—as a whole—adhered to strong incremental beliefs, $M = 4.22$, $t(23) = 3.54$, $p = .002$. It is possible that trainers' IPT at the time of feedback was an important contributor to how the trainer interacted with the trainee. It stands to reason that no differences in anesthesiologists' IPT would also lead to similarities in learning outcomes between the two groups. Again, however, that interpretation needs to

be made cautiously as the absence of statistical difference cannot be interpreted as conclusive sameness.

Similar studies implemented an additional step in assigning participants to treatment or control conditions. Heslin, VandeWalle, and Latham (2005, 2006) asked all potential participants to take the implicit person theory measure before engaging in the experiment. Only the potential participants who identified as entity theorists based on ranking lower than three on the IPT measure were asked to advance in the study, and subsequently assigned randomly to receive IPT training or to the control condition. Implementing the extra step may result in marked changes between the treatment and control group.

Effects of Frequency of Growth-Mindset Oriented Framing of Feedback

The third and fourth hypotheses posited a relationship between frequency of growth-mindset oriented framing of feedback and learning outcomes. Results did not confirm these predictions. One explanation of these inconclusive results may be a lack of pragmatic difference in the frequency of growth mindset language used by attending anesthesiologists in the treatment and control group. As illustrated by the manipulation check, attending anesthesiologists who received the training used significantly more growth mindset language than attending anesthesiologists who did not receive the training. Even despite the differences in the frequency of growth mindset language used by the attending anesthesiologists, the frequency of growth mindset language used by attending anesthesiologists who engaged in the training was low (M = 1.35). In other words, even though the attending anesthesiologists who received growth mindset

training used a statistically higher frequency of growth mindset language in their feedback sessions, they framed their feedback with growth mindset language on average of 1.35 times in a four to 29 minute feedback session. A little more than a single instance of framing feedback with growth-mindset language may not generate enough of an effect to influence organizational trainees. This relatively small mean-use of growth mindset language may explain why residents who received feedback from trainers in the treatment group did not perceive their own affective learning, motivation, quality of feedback or perceived face-threat to be different than their control group counterparts.

Face-Threat as a Moderator

The fifth hypothesis examined if the relationship between frequency of growth-mindset oriented framing and trainees' perceptions of their own affective learning, motivation, and quality of feedback was moderated by the degree of trainees' face-threat perceptions. No interaction effects were found; however, two main effects were revealed. The results support the idea that the perception of face threat can reduce trainee motivation and their perceptions of the quality of feedback they receive from organizational trainers. As such, face threat should continue to be explored in relation to mindset.

The notion of implicit scripts (i.e., expectations about sequences, Abelson, 1981) may explain the relationship between face threat and mindset. Perhaps these findings suggest that trainees held implicit scripts for how feedback session communication should unfold. Residents may have expected attending anesthesiologists to provide either negative or positive summative evaluations of

their performance. When trained attending anesthesiologists began their feedback by describing their belief about the possibility of improvement, perhaps trainees interpreted the violation of the feedback script to imply that attending anesthesiologists were assessing their performance in negative terms. When residents interpreted the growth-mindset framing of feedback as an overall negative evaluation of their performance, they may have also experienced face-threat.

Fixed mindset trainees may experience the most face-threat from the growth-mindset oriented framing of feedback. For example, if a trainee believes she was born with natural ability and cannot do much to change that, a feedback statement such as "keep working in order to get better" is likely to be a direct threat to her identity as a "natural." In this scenario, the trainee's implicit beliefs of ability frame her interpretation of the feedback. As such, her IPT causes her to experience a direct face-threat, even when the overall evaluation is not negative, but instead is focused on her future development and growth. By perceiving the feedback as negative, the trainee has positioned herself as a not performing well.

As the feedback unfolds, the trainee is not only positioning herself, but she is also positioning the trainer (Davies & Harré, 1999). As the fixed mindset trainee interprets the trainer's growth mindset language as an overall negative evaluation of her performance, she is also positioning the instructor as a person who does not uphold his responsibility to ensure others feel affirmed in situations, which is a key facet in politeness theory (Brown & Levinson, 1987). The trainee expects the trainer to act politely and to position her identity as a competent

resident. When the trainer does not follow this expected script, and instead offers corrective feedback with a focus on improvement and hard work, the violation of the script could be perceived by the trainee as an identity flaw of the trainer. By positioning the trainer as a person who does not follow basic expectations of face and scripts, the trainee may be less likely to trust the trainer and to perceive them positively.

Politeness theory and face-threat (Brown and Levinson, 1987) have not been explored in detail in the IPT literature. However, the findings in this study warrant future research exploring the relationship between politeness and theory and face-threat.

Alternative Explanations for Inconclusive Results, Limitations, and Future Directions

This study, like all studies, has limitations. Such limitations offer directions for future research. First, a lack of statistical power may be a reason for inconclusive findings. Existing research on IPT gave reason to expect large effect sizes (e.g., Cohen's g = .24, Olson, Dweck, Spelke, & Banaji, 2011; partial η^2 = .22, Heslin, VandeWalle, & Latham, 2006), leading the researcher to expect that a small sample size should have been sufficient to detect such large expected effects. An a priori power analysis was conducted using the computer program G*Power (Erdfelder, Faul, & Bucher, 1996) in order to determine the appropriate sample size, given anticipated effect sizes. G*Power is a free computer program that assesses the expected power and other experimental parameters based on data entered by the user. Predicting a large effect size with an alpha level of .05,

G*Power recommended a sample size of $N = 23$ to detect a significant treatment effect. However, on further reflection, the expectation of a large effect size assumed anesthesiologists, who received training, would be *motivated* to implement the feedback messaging strategies taught during the training. Organizational training scholars noted that learners must be motivated to implement what they have learned in order for training to be effective (Baldwin & Ford, 1988; Goldstein & Ford, 2002). While the decision makers of the anesthesiology department and many of the anesthesiologists expressed a need for learning how to provide more effective feedback to residents, other issues—such as power dynamics between the researcher and participating anesthesiologists and routinized instructional communication habits—may have hampered participants' motivation to implement what they learned in the training.

The convenience of scheduling may have also hampered motivation. Out of convenience for the attending anesthesiologists and residents, many participants arrived to the laboratory at the *completion* of their shift. As such, many attending anesthesiologists and residents participated in the study after completing a 12-hour, overnight shift at the hospital. Fatigue may have influenced the attending anesthesiologists' ability to pay close attention to the training and implement lessons taught in the training session.

Another pattern that may have influenced attending anesthesiologists' motivation to implement the IPT training was the unexpected result of offering anesthesiologists a checklist to aid their evaluation process. After the attending anesthesiologists in the treatment group engaged in the IPT training and just

before they watched the resident's performance on the first simulation, attending anesthesiologists were handed an evaluation checklist by an attending doctor of anesthesiology—unbeknownst to the researcher. The purpose of the checklist was to provide some general direction from which to take notes about the resident's performance. However, during the feedback sessions, attending anesthesiologists adhered to the checklist more so than they did the thirty-minute training session in which the treatment group participated.

One reason for the strong adherence to the checklist over the new framing feedback training could be that the checklist aligned with their expertise, and provided them with a more comfortable, rehearsed, accessible platform from which to provide the resident with feedback about performance content, rather than the strategic messaging advocated in the experiments' training. Another reason for the concentration on the checklist over the training session may be the result of source credibility. An attending doctor of anesthesiology who was integral to recruiting other residents and attending physicians for participation in the study administered the checklists. He was their colleague and a mentor to residents. In the future, should a checklist be provided, it should be given as part of the feedback training, from the same person who conducted the training, and with an explanation that the checklist is an aid to the main IPT training.

A second limitation of the study was lack of longitudinal data. While the initial study design included a longitudinal variable to be measured by asking residents to report their performance 6 weeks after the completion of the initial study, the follow-up survey did not yield a sufficient response rate. Future studies

could incentivize more heavily in order to collect longitudinal data. Longitudinal data may be collected using self-report, performance on tasks over time, or student performance over the course of the semester or education. Mindset manipulations can endure up to a 6-week period (Heslin, VandeWalle, & Latham, 2005), but it is not known how feedback messaging may influence students over time. An important contribution of future research would be to test the longitudinal effects of growth-mindset oriented framing of feedback.

A third limitation of the study was the limited amount of time of the training session. The 30-minute training offered a limited amount of time for attending anesthesiologists to adopt a growth mindset frame, to understand how a growth mindset influences their own and others' learning, then to apply this frame in their feedback. While most IPT studies report manipulating mindset successfully in one session (i.e., Bergen, 1991; Dweck, 2012; Hong, et al., 1999; Rattan, Good, & Dweck, 2012; Rattan, Savani, Naidu, & Dweck, 2012), recent studies show the lasting effects of multiple sessions on implicit theories of the self (Blackwell, Trzesniewski, & Dweck, 2007; Yeager, Trzesniewski, & Dweck, 2013). In an effort to improve students' study skills, Blackwell and colleagues trained students across eight session interventions. The students in the treatment group received two sessions of IPT training and six sessions on study skills, while the students in the control group received eight sessions of training on improving their study skills. In a study published since the conception of this current study, Yeager, Trzesniewski, and Dweck (2013) implemented anti-bullying interventions over six sessions of training. Specifically, the researchers examined

how students applied the IPT training to future interactions. The researchers also make the argument that the goal of changing behavior in real life situations (in comparison to the hypothetical scenarios most often used in IPT research) requires multiple sessions to train the intervention over time.

Multiple manipulation sessions may be especially important in train-the-trainer study designs, such as this study. In this case, the mindset manipulation served two functions: First, the purpose of the training was to influence trainers to adopt a specific framework about their own and others' learning. In other words, the first goal of the training was to manipulate trainers to have a growth mindset about their own learning and the learning of their students. The second function of the training was to get trainers to use this framework in their own evaluations and strategic training messages with resident physicians. It stands to reason that this second function of the train-the-trainer design would require more sessions for the participants to practice adopting the implicit theories of learning in their own evaluations of students and the subsequent feedback they offered.

While a train-the-trainer design was not the primary goal of Yeager et al.'s (2013) aforementioned anti-bullying interventions, the researchers do write briefly about training the four facilitators who implemented the sessions. Researchers trained each facilitator for 40 hours, and reported that the facilitators "were highly enthusiastic about the treatment they administered" (Yeager, Trzesniewski, & Dweck, 2013, p. 974). After working a 12-hour overnight shift and staying an extra two hours to complete a research study, the facilitators in the

current study were likely much less able to absorb the training. Future research should implement more training sessions over time.

Study 2: Replication and Exploring the Role of Immediacy

Study one was replicated for three reasons. First, a replication allowed the researcher to investigate the potential influence of participants' fatigue on study results. Second, the replication allowed an investigation of the same design in a non-HRO setting. As discussed previously, all participating trainers reported having relatively high growth mindset at the outset of training. This growth mindset may be a product of the anesthesiologists' professional socialization in a high-reliability industry (Kramer, 2010). Because employees in HROs are expected to be adaptable and update their skills continuously, it stands to reason that the employees are professionally socialized to have growth mindsets—making control group comparison difficult to achieve. In contrast, a non-HRO is less likely to exhibit the adaptability common in HROs. As such, a non-HRO context may provide more trainer IPT variance for an experimental design. Finally, a replicated study design explored the role of teacher immediacy to influence learning outcomes. The theoretical importance of immediacy is described below.

A wealth of instructional research focuses on students' perceptions of instructor immediacy as a significant predictor of learning outcomes (Arbaugh, 2001, Freitas, Myers, & Avtgis, 1998). Teacher immediacy is defined as a communication behavior that "enhances closeness to and nonverbal interaction with one another" (Mehrabian, 1969, p. 213). In other words, certain sets of

verbal and nonverbal communication behaviors can reduce the perceived physical and psychological distance between communicators (Witt, Wheeless, & Allen, 2004), thereby producing a sense of comfort and oneness between individuals. Teacher immediacy is associated with classroom outcomes such as learning (Witt et al., 2004), motivation (Christophel & Gorham, 1995; Frymier, 1993, 1994; Jaasma & Koper, 1999), perceived instructor credibility (Schrodt & Witt, 2006), and perceived instructor effectiveness (Anderson, 1979). When teacher immediacy was paired with face-threat mitigation strategies, students attributed greater credibility to their instructor and rated their instructor more highly (Witt & Kerssen-Griep, 2011). When compared to IPT, teacher immediacy has several similar positive outcomes for learning as traditional IPT research demonstrates.

Given that research shows instructors with incremental theories are more likely to spend more time coaching students (Heslin et al., 2006) and provide more detailed feedback (Heyman & Dweck, 1998; Levine & Ames, 2006), changes in students' learning may be less a function of the way the feedback is framed and more a function of students' perceptions of feeling closer to instructors who spend more time with them and provide them with more detailed feedback.

In order to verify that trainees' improved learning outcomes are a function of the IPT manipulation and not a function of teacher immediacy alone, the following two hypotheses were proposed for the second study:

H7: The frequency of growth-mindset oriented framing of feedback is positively associated with perceptions of affective learning, learner

motivation, quality of feedback, performance, and performance over time, after controlling for perceptions of instructor immediacy.

H8: The frequency of growth-mindset oriented framing of feedback is negatively associated with trainees' perceived face-threat, after controlling for perceptions of instructor immediacy.

Study 2 Method: Communication Department

The second study sought to replicate the findings, explore the external validity, and extend the theoretical contribution of the first study. As previously mentioned, anesthesiologists may be professionally socialized to possess growth mindsets. By replicating the study in non-HRO context, the second study allows for the exploration of the train-the-trainer design in a non-HRO context. Non-HROs lack the inherent stake in needing to maintain constant adaptability like their HRO counterparts; therefore, non-HRO participants may be less likely to exhibit a growth mindset at the outset of the study. Replication also addresses whether the inconclusive findings observed in Study 1 were caused by experimental design or implementation problems. While the first experimental study explored the effects of training-the-trainer mindset-based feedback framing on residents' job-related performance, study two examines the effects of training on students' performance on an extemporaneous speech. Outside of the HRO context, will the IPT-based feedback training influence performance outcomes? As an extension of the first study, this study also explores the role that teacher immediacy may have on the results.

Participants

Participants included 25 speech teachers and 25 undergraduate students at a large Southwestern university. Participating speech teachers were graduate teaching assistants from the same university. In order to qualify for the study, teachers must have completed at least one semester of experience teaching a college-level speech class. Speech teacher participants included 11 males and 14 females, ranging in age from 23 to 57 (M = 30.72, SD = 7.31). Years of graduate work completed by the participating speech teachers ranged from .5 to 10 years (M = 3.56, SD = 2.15). Speech teacher participants varied in their *experience as an instructor*, ranging from .5 to 12 years (M = 4.18, SD = 2.78). Participating teachers also differed in their *experience as an instructor of speech and presentation skills*, ranging from .5 to 10 years (M = 3.24, SD = 2.88). Undergraduate-student participants included six males and 18 females (one participant did not identify sex), ranging in age from 18 to 29 years of age (M = 20.21, SD = 2.81). Undergraduate-student participants' year in school ranged from freshmen to senior, with freshman being the most common year in school reported (41.7%). Undergraduate-student participants ranged from having completed no communication courses to six communication courses (M = .88, SD = 1.60). Students also reported having completed between zero and three classes focused on the development of presentation skills (M = .50, SD = .88).

Participation was voluntary. Each teacher was paired randomly with a student. Pairs were assigned randomly to either a treatment (n = 12) or control (n = 13) group. Teachers assigned to the treatment group received a 30-minute,

implicit person theory-based training on framing effective feedback to induce a growth mindset (described below). The training was similar to the training in Study 1. Teachers in the control group engaged in a non-study related, time equivalent task.

Procedures

Student participants were notified of an opportunity to participate in the experiment through announcements in Communication classes made by the principal investigator. Teacher participants were notified via personal communication recruitment. Interested students and teachers were offered several time slots from which to choose to participate in the experiment. A maximum of two pairs were scheduled for each time slot due to equipment availability and laboratory space necessary to complete experimental procedures. Each time slot was assigned randomly as either treatment or control.

Upon arriving to the laboratory, a research assistant greeted potential participants and provided them with an informed consent form. If potential participants agreed to participate, students were introduced briefly to a teacher and both parties confirmed that they had not interacted before arriving at the lab, either in a previous class or otherwise. This procedure reduced the concern of unique language features that might arise in the cases of pre-existing interpersonal or professional relationships among pairs. In all but one case, the instructor and student had not interacted previously. In the one case where they had interacted, the student was paired with the other instructor who was scheduled for that time slot.

For the pairs assigned randomly to the training-treatment condition, teachers completed the Implicit Person Theory measure (Dweck et al., 1995) and the researcher trained the teachers with a 30-minute training on framing effective feedback to induce a growth mindset. Using the same format as the Study 1 training, the trainer taught participants about Implicit Person Theory, emphasized the benefits of adopting a growth mindset, discussed scientific research in support of the claims, and facilitated role-playing activities to practice growth-mindset oriented framing of feedback. Once the mindset manipulation was completed, the teacher completed the IPT measure again (as a manipulation check) and a few basic demographic questions (see Appendix L).

For the pairs assigned randomly to the control group, the teachers were asked to complete a non-study related, time-equivalent task. These participants watched a 30-minute TedTalk about the importance of sleep. In an effort to avoid the confounding effects of instrument reactivity (de Vaus, 2001), control-group teachers did not complete the IPT measure until the end of the experiment. Completing the IPT measure prior to participation could have affected control-group participants' thinking and communication behavior while giving feedback to students.

While participating teachers were in training or completing the task, participating students were taken to a classroom individually. Each classroom was equipped with a video camera, an audio recorder, a timer, and a small table with a chair on either side. The student sat down and was given a folder that included their unique student participation number, an extemporaneous speech

topic and directions (see Appendix M for speech topics/directions), the evaluation sheet that the instructor would use to evaluate their performance (see Appendix N), blank sheets of paper, and several blank notecards. The students were allotted 30 minutes to draft a speech to present to the teacher. Once teachers completed either the training session or task, they were given a folder that included the students' speech topic and directions (see Appendix M) and an evaluation form (see Appendix N). Teachers in the treatment group were encouraged to take notes and use resources from training. Participating teachers joined the student with whom they were paired in respective classrooms. Once the pairs were in the respective classrooms, the student was asked to say their unique student participation number at the beginning of their speech, present their speech, then sit at the table to receive feedback from the teacher. The students were also informed that the camera angle offered them space to move around the room, if they chose to do so. The instructors were asked to help the student remember to say their unique student participation number, and were told that the evaluation sheet and timer were there to help with evaluation. The instructor was told that there was no limit in time to the length of their feedback session. The pair was asked to notify the research assistant at the completion of the feedback session. Before leaving the room, the researcher turned on the video camera and audio recorder.

Once the pair notified the research assistant of the completion of the feedback sessions, the teacher was excused for a short period and the student was asked to complete the following measures using pen and paper: affective learning

(McCroskey, 1994), learner motivation (Richmond, 1990), perceived face threat (Cupach & Carson, 2002), quality of feedback (Steelman et al., 2004), the generalized immediacy scale (Andersen, 1979), implicit person theory measure (Dweck et al., 1995) and a few basic demographic questions (see Appendix O and the following section for validity and reliability information). Students were also asked to include their unique student participation number on questionnaires. At the completion of the measures, the student was given a different extemporaneous speech topic (see Appendix M) and another 30 minutes to draft another speech. During this time, the teachers in the control group completed the IPT measure and a few basic demographic questions (see Appendix L). During the rest of the 30 minutes that the student spent preparing a speech, the teacher was free to return to their office or complete their own work. At the end of the 30 minutes, the teacher returned to watch the student's performance on the second speech. The student's performance on the second speech was audio and video recorded in order to provide comparison against the other group (treatment or control). Also, the student identified his or her unique student participation number at the beginning of the speech. Instructors were told that they could provide the student with feedback on the second speech, if they wanted. Many instructors did provide the student with brief, overall feedback. The students were thanked for their time, told to expect an email in 4 weeks with an additional short survey, asked to complete that survey, and after doing so they would receive credit for their participation. After students were dismissed, teachers were given a $30 gift card to Target, thanked for their time, and dismissed. From beginning to end,

participation in the experiment took about two hours to complete, similar to the first experimental study procedures.

Measures

Many of the measures described in study one were also used in study two, including the following measures: implicit person theories, frequency of growth-mindset oriented framing, affective learning, learner motivation, perceived face threat, and quality of feedback. Scale reliabilities are listed in Table 3. These unique measures, along with details about the coding for frequency of growth-mindset oriented framing among instructors and the manipulation check, will be discussed in the following paragraphs.

Instructor immediacy. Instructor immediacy was assessed with the Generalized Immediacy Scale (Andersen, 1979; see Appendix P). The scale measures a general impression of an individual's overall level of immediacy. Immediacy is defined as communication behaviors that reduce the perceived distance between teacher and students. Typically used to measure students' impressions of their teachers, the scale consists of two sets of semantic differential scales on a 7-point continuum. After providing a description of immediacy, the two subsets of scales ask participants about the immediacy of their instructor's teaching style. For example, the first subset of scales states "the teaching style of your instructor is very immediate," then has respondents circle a number that represents their feelings about that statement (e.g. "agree" to "disagree"). The second subset of scales directs respondents to circle the number that corresponds to the word that best describes the teaching style of their

instructor (e.g., “cold” or “warm”). Reliability estimates for the scale are consistently high, ranging from .85 to .97 (Andersen, 1979; Kearney, Plax, & Wendt-Wasco, 1985; Plax, Kearney, McCroskey, & Richmond, 1986). The Generalized Immediacy Scale’s relationship to similar scales demonstrates its convergent validity. The measure is highly correlated with a Behavioral Indicants of Immediacy (BII) Scale, which asks students to indicate the degree to which teachers engaged in rate specific nonverbal behaviors in the classroom. The correlation between the BII and the Generalized Immediacy (GI) Scale was .67. The GI scale has been significantly and positively associated with students’ affective learning (Andersen, 1979) and students’ willingness to comply with teacher requests or demands (Kearney, Plax, Smith, & Sorensen, 1988). To score the scale, negatively worded items were reverse-coded and the responses to the nine items were summed. Cronbach’s α for this study’s use of the measure was .92.

Performance. A panel of three coders measured performance on the second speech. After watching all speeches once, coders were asked to watch the speeches again and make judgments on each student’s performance based on the following typical dimensions of speech evaluation criteria (e.g., Floyd, 2011; O’Brien, 2013): overall organization, development of introduction, development of conclusion, overall delivery, eye contact, gestures, and vocal variety (see Appendix N for the handout). Coders were provided a handout of the dimensions where they were welcomed to make notes about each speech. Based on their assessment of the dimensions of the speech, the coders ranked the speeches

globally by creating three stacks of six speeches and one stack of seven speeches ($N = 25$). Each stack represented increasing effectiveness of the speaker in meeting the aforementioned criteria. This process helped coders assign a numerical value in an internally-comparative fashion to each speech with 1 representing *poor* performance on the speech and 4 representing the *best* performance on the speech. Therefore, the six (or seven) worst speeches would be rated a 1, and the six (or seven) speeches grouped in the next stack would be rated a 2, and so on. Thus, at the end of the coding, each speech had three measurements (one per coder; cf. Bisel & Messersmith, 2012). Coders were sufficiently reliable ($\alpha = .87$). Because Krippendorff's alpha yielded sufficient reliability among coders, the scores were averaged to create a mean index for each feedback session. The mean index for performance did not violate assumptions of normality ($M = 2.49$, $SD = 1.10$, kurtosis = -1.32, skewness = .08) according to Tabachnik and Fidell's (2007) kurtosis and skewness significance tests for small to moderate sample sizes.

Longitudinal performance. One month after the experiment, students received a short follow-up survey via email. The survey asked students to report their grade point average, their general status in school (see Appendix Q), and asked them to repeat the Implicit Person Theory scale (see Appendix F). Students were awarded extra credit points for a communication class at the completion of the longitudinal survey. All 25 students responded to the longitudinal survey.

Frequency of growth-mindset oriented framing of feedback. The same codebook and coding process were used to code the frequency of growth-mindset

oriented framing of feedback between communication instructors and undergraduate students. In each feedback session, coders coded for instructors' utterances that affirmed explicitly the connection between learners' process improvement and future acquisition of skill. Examples of such utterances include: "The more you do it, the better you'll be," "Practicing and rehearsing is great. That's how you grow; that's how you develop," and "It's a process – you have that first experience and you get better from there." At the completion of each feedback session, the coder counted the number of these utterances, and that number became the coder's single code of frequency of growth-mindset language for that feedback session. Thus, at the end of coding, each feedback session had been assigned two numbers (one per coder). Interrater coding reliability was sufficiently high (α = .82). Given that Krippendorf's alpha yielded sufficient reliability between coders, the scores were averaged to create a mean index for each feedback session. According to Tabachnik and Fidell's (2007) kurtosis and skewness significance tests for small to moderate sample sizes, the mean index for frequency of IPT language did not violate assumptions of normality (M = 2.24, SD = 3.32, kurtosis = 1.29, skewness = 1.45).

Manipulation check. As mentioned, instructors in the treatment condition completed the Implicit Person Theory scale before their training and again after their training. The purpose of this repetition was to test whether the instructors in the treatment group reported a marked change in their implicit person theory after engaging in the training. A paired-samples t-test was conducted to compare the implicit person theory scores of the instructors in the

treatment group before training and after training. Results indicated a significant change in instructors' belief in incremental intelligence before (M = 4.69, SD = .57) and after the training (M = 5.14, SD = .74), $t(11) = -3.19$, $p = .009$, $d = .68$.

Since instructors in the treatment condition demonstrated a significant change between their initial IPT to their IPT after training, it would make sense that the treatment condition would report higher IPT after training than the control condition's initial and only IPT score. An independent-samples *t*-test was conducted to compare the control group's initial IPT and the treatment group's IPT after training. Results indicated no significant difference in the IPT of instructors in the treatment condition after the training (M = 5.14, SD = .74) and instructors in the control condition at the time of feedback (M = 4.98, SD = .93), $t(23) = -.46$, $p = .325$. Therefore, while instructors in the treatment group reported a change in their IPT after training, the treatment group's reported IPT after training was not significantly different from the control group's reported IPT with no training. The lack of difference between the treatment and control group's reported IPT at the time of feedback indicated that random assignment did not work.

The coding for frequency of growth-mindset oriented framing also doubled as a manipulation check. While it was expected that instructors in the treatment condition reported a marked change toward growth-based beliefs about intelligence in their IPT, another main goal of the training was to encourage instructors to use growth-mindset language in their feedback messages. As such, it was expected that instructors in the treatment condition used more growth-

mindset oriented framing than the instructors in the control condition. An independent-samples *t*-test was conducted to compare frequency of growth-mindset oriented framing in treatment and control conditions. Results indicated a significant difference in the frequency of growth-mindset oriented framing for the treatment ($M = 4.67$, $SD = 3.42$) and control ($M = .00$, $SD = .00$) conditions, $t(11) = -4.73$, $p = .001$, $d = 1.93$.

Study 2: Results

Means, standard deviations, and correlations for study 2 are reported in Table 4.

Train-the-Trainer Condition as Predictor of Trainee Learning Outcomes

The first hypothesis predicted that participants who received feedback from instructors in the growth mindset treatment group perceived their own affective learning, learner motivation, and quality of feedback to be higher than control group participants. Three independent samples *t*-tests were performed to determine the differences between the treatment and control groups. The first *t*-test explored if participants who received feedback from the instructors in the growth mindset treatment group perceived their own *affective learning* to be higher than control group participants. Results indicated no significant difference in the affective learning reported by participants in the treatment ($M = 6.24$, $SD = .70$) and control groups ($M = 6.54$, $SD = .44$), $t(23) = 1.30$, $p = .206$. A second *t*-test examined whether participants who received feedback from the instructors in the treatment group perceived their own *motivation* to be higher than participants who received feedback from the instructors in the control group. Results

indicated a significant difference between group means, $t(23) = 2.06$, $p = .05$, $d = .83$. However, group means were *in the opposite direction* than was hypothesized, with the control group ($M = 6.21$, $SD = .43$) reporting a higher perception of learner motivation than the treatment group ($M = 5.70$, $SD = .76$). Thus, results did not support the hypothesis. Results of a third *t*-test indicated no significant difference in the *quality of feedback* reported by participants who received feedback from instructors in the treatment ($M = 6.30$, $SD = .51$) and control groups ($M = 6.49$, $SD = .53$), $t(23) = .94$, $p = .358$. Thus, hypothesis 1 was not supported.

The second hypothesis predicted that participants who received feedback from instructors in the growth mindset treatment group perceived their own face threat to be lower than control group participants. An independent samples *t*-test was performed to test the hypothesis. Results indicated no significant difference between the reported face threat of participants with instructors in the treatment group ($M = 6.05$, $SD = .68$) and participants with instructors in the control group ($M = 6.23$, $SD = 1.17$), $t(23) = .47$, $p = .642$. Testing revealed no support for hypothesis 2.

Frequency of Growth-Mindset Framing of Feedback as Predictor of Learning Outcomes

The third hypothesis predicted that frequency of growth-mindset oriented framing of feedback was positively associated with perceptions of affective learning, learner motivation, quality of feedback, performance, and performance over time. Five bivariate regression analyses were conducted to predict how well

frequency of growth-mindset oriented framing predicted each outcome variable. First, the frequency of growth-mindset oriented framing of feedback was not significantly associated with trainees' perception of affective learning, $R^2 = .01$, $R^2_{Adjusted} = -.04$, $F(1, 23) = .11$, $p = .748$. Second, the frequency of growth-mindset oriented framing of feedback was not significantly associated with trainees' motivation, $R^2 = .000$, $R^2_{Adjusted} = -.04$, $F(1, 23) = .00$, $p = .957$. Third, frequency of growth-mindset oriented framing of feedback was not significantly associated with students' perceptions of the quality of feedback received, $R^2 = .00$, $R^2_{Adjusted} = -.04$, $F(1, 23) = .00$, $p = .991$. Finally, the growth-mindset oriented framing of feedback was not significantly associated with performance immediately following feedback, $R^2 = .00$, $R^2_{Adjusted} = -.04$, $F(1, 23) = .04$, $p = .841$. The growth-mindset oriented framing of feedback was not significantly associated with self-reported performance one month following the feedback, $R^2 = .16$, $R^2_{Adjusted} = -.02$, $F(1, 23) = .59$, $p = .449$.

The fourth hypothesis predicted that the frequency of growth-mindset oriented framing of feedback was negatively associated with learners' perceived face-threat. A bivariate regression analysis was conducted to predict how well frequency of growth-mindset oriented framing predicted learners' perceived face threat. The frequency of growth-mindset oriented framing was not significantly associated with trainees' perceived face threat, $R^2 = .01$, $R^2_{Adjusted} = -.03$, $F(1, 23) = .25$, $p = .621$. Thus, testing revealed no support for the relationship between frequency of growth-mindset oriented framing of feedback and learning outcomes.

Face Threat as a Moderator

The fifth hypothesis predicted that the degree of learners' face-threat perceptions moderated the association between the frequency of growth-mindset oriented framing used during the feedback session and learners' perception of their own affective learning, learner motivation, and quality of feedback. In accordance with Warner (2013), both predictor variables (i.e., frequency of growth-mindset oriented framing and degree of face threat perceptions) were centered prior to creating the product term that represents the interaction in each hypothesis.

First, a regression analysis was computed to determine whether the degree of face threat perceived by trainees moderated the frequency of growth-mindset oriented framing used by trainers and affective learning reported by trainees. The degree of face-threat perceptions and frequency of growth-mindset oriented framing was not significantly associated with affective learning, $R^2 = .27$, $R^2_{\text{Adjusted}} = .17$, $F(3, 21) = 2.58$, $p = .080$. Following suit, neither the interaction term, $\beta = .02$, $t(21) = .09$, $p = .931$, $sr^2 = .0003$, nor the main effects of face-threat, $\beta = .53$, $t(21) = 1.99$, $p = .059$, $sr^2 = .138$, and frequency of IPT, $\beta = .01$, $t(21) = .03$, $p = .976$, $sr^2 = .00004$, were significant predictors of affective learning.

Second, a regression analysis was computed to determine whether the degree of face threat perceived by trainees moderated the frequency of growth-mindset oriented framing used by trainers and trainee's learner motivation. The degree of face threat and frequency of IPT framing was not significantly

associated with trainee motivation, $R^2 = .13$, $R^2_{Adjusted} = .00$, $F(3, 21) = 1.00$, $p = .412$. The interaction term between frequency of growth-mindset oriented framing and degree of face-threat perceptions, $\beta = .09$, $t(21) = .20$, $p = .844$, $sr^2 = .0017$, was not a significant predictor of learner motivation. Also, neither main effect of frequency of IPT, $\beta = -.04$, $t(21) = -.20$, $p = .848$, $sr^2 = .0016$, and degree of face-threat, $\beta = .40$, $t(21) = 1.35$, $p = .193$, $sr^2 = .076$, were significant predictors of learner motivation.

Third, a regression analysis was computed to determine whether the degree of face-threat perceived by trainees moderated the frequency of growth-mindset oriented framing used by trainers and trainees' perception of quality of feedback. The regression model accounted for significant variance in trainees' perception of quality of feedback, $R^2 = .39$, $R^2_{Adjusted} = .30$, $F(3, 21) = 4.49$, $p = .014$. Inspection of the interaction term and main effects revealed that only the main effect of trainees' perceived face threat accounted for a significant amount of variance in trainees' perception of quality of feedback, $\beta = .69$, $t(21) = .01$, $p = .010$, $sr^2 = .233$. The interaction term did not account for a significant amount of variance in trainees' perception of quality of feedback, $\beta = .10$, $t(21) = .40$, $p = .695$, $sr^2 = .005$. Likewise, the main effect of frequency of IPT did not account for a significant amount of variance in trainees' perceptions of quality of feedback, $\beta = -.09$, $t(21) = -.50$, $p = .625$, $sr^2 = .391$. In sum, testing revealed no support for the relationship between frequency of growth-mindset oriented framing and learning outcomes when controlling for the influence of face-threat perceptions.

Train-the-Trainer Condition as Predictor of Performance

The sixth hypothesis posited that participants who received feedback from growth mindset instructors would perform better immediately following and one month after the mindset manipulation than control group participants. Results of the first independent samples *t*-test indicated no significant difference in the immediate performance of students who received feedback from instructors in the treatment group ($M = 2.19$, $SD = 1.15$) and the students who received feedback from instructors in the control group ($M = 2.77$, $SD = 1.01$), $t(23) = 1.32$, $p = .200$. Results also indicated no significant difference between the treatment ($M = 2.61$, $SD = 1.32$) and control ($M = 3.00$, $SD = 1.42$) groups in predicting longitudinal performance, $t(23) = .70$, $p = .488$. Hence, the relationship between condition and performance was not supported.

Teacher Immediacy as a Moderator

The final two hypotheses re-explored hypotheses 3 and 4, with the addition of also controlling for perceptions of instructor immediacy. The seventh hypotheses posited that the frequency of growth-mindset oriented framing of feedback was positively associated with perceptions of affective learning, learner motivation, quality of feedback, performance, and performance over time, after controlling for perceptions of instructor immediacy. Several multiple regressions were conducted in order to determine each relationship.

First, the relationship between frequency of growth-mindset oriented framing and affective learning was examined while controlling for instructor immediacy. A regression analysis was performed to assess whether teacher immediacy interacts with frequency of growth-mindset oriented framing to

predict affective learning. The regression model accounted for significant variance in affective learning, $R^2 = .63$, $R^2_{\text{Adjusted}} = .57$, $F(3, 21) = 11.78$, $p < .001$. However, examination of the interaction term and main effects indicated that only the main effect of trainees' perceived teacher immediacy accounted for a significant amount of variance in trainees' affective learning, $\beta = .85$, $t(21) = 5.79$, $p < .001$, $sr^2 = .596$. The interaction term did not account for a significant amount of variance in trainees' affective learning, $\beta = .19$, $t(21) = 1.26$, $p = .221$, $sr^2 = .028$. Likewise, the main effect of frequency of IPT did not account for a significant amount of variance in trainees' affective learning, $\beta = -.06$, $t(21) = -.45$, $p = .661$, $sr^2 = .003$.

Second, trainer immediacy was explored as a moderator of the relationship between frequency of growth-mindset oriented framing and trainee motivation. The regression model accounted for significant variance in trainees' motivation, $R^2 = .52$, $R^2_{\text{Adjusted}} = .45$, $F(3, 21) = 7.62$, $p < .001$. However, the interaction term indicated that teacher immediacy did not moderate the relationship between frequency of growth-mindset oriented framing and trainee motivation, $\beta = .25$, $t(21) = 1.43$, $p = .166$, $sr^2 = .047$. The main effect of frequency of IPT did not account for a significant amount of variance in trainees' motivation, $\beta = -.13$, $t(21) = -.81$, $p = .428$, $sr^2 = .015$, but, again, the main effect of teacher immediacy did account for a significant amount of variance in trainees' motivation, $\beta = .79$, $t(21) = 4.75$, $p < .001$, $sr^2 = .514$.

Third, a regression analysis was computed to determine whether teacher immediacy perceived by trainees moderated the frequency of growth-mindset

oriented framing used by trainers and trainees' perception of the quality of feedback. Once again, the regression model accounted for significant variance in trainees' perception of the quality of feedback, $R^2 = .59$, $R^2_{\text{Adjusted}} = .53$, $F(3, 21) = 9.91$, $p < .001$. The interaction term, $\beta = -.01$, $t(21) = -.07$, $p = .947$, $sr^2 = .0001$, was not a significant predictor of perceptions of quality of feedback. Also, the main effect of frequency of IPT, $\beta = -.06$, $t(21) = -.41$, $p = .689$, $sr^2 = .0032$, was not significant predictors of perceptions of quality of feedback. The main of trainees' perceptions of teacher immediacy accounted for a significant amount of variance in trainees' perceptions of quality of feedback, $\beta = .76$, $t(21) = .4.94$, $p < .001$, $sr^2 = .480$.

Next, student performance immediately following the feedback session was explored as the outcome variables of the frequency of growth-mindset oriented framing and teacher immediacy interaction term. The trainees' perceptions of teacher immediacy and frequency of IPT language used by the trainer was not significantly associated with student performance, $R^2 = .01$, $R^2_{\text{Adjusted}} = -.13$, $F(3, 21) = .074$, $p = .973$. Following suit, neither the interaction, $\beta = .08$, $t(21) = .33$, $p = .747$, $sr^2 = .005$, nor the effects of frequency of IPT, $\beta = .01$, $t(21) = .04$, $p = .966$, $sr^2 = .0001$, or teacher immediacy, $\beta = .09$, $t(21) = .36$, $p = .703$, $sr^2 = .007$, were significant predictors of trainee performance.

Finally, a regression analysis was computed to determine whether trainee perceptions of teacher immediacy moderated the frequency of IPT used by trainers and trainee performance over time. The trainee perceptions of teach immediacy and frequency of growth-mindset oriented framing was not

significantly associated with performance over time, R^2 = .08, R^2_{Adjusted} = -.05, $F(3, 21) = .618$, $p = .611$. As expected neither the interaction term, β = -.17, $t(21)$ = .-.69, p = .498, sr^2 = .021, nor the effect of frequency of IPT, β = -.09, $t(21)$ = -.39, p = .700, sr^2 = .007, and teacher immediacy, β = -.25, $t(21)$ = -1.10, p = .284, sr^2 = .053, were significant predictors of performance over time.

Lastly, a regression analysis was computed to determine whether trainees' perception of teacher immediacy moderated the frequency of growth-mindset framing used by trainers and trainees' perceived face-threat. The regression model accounted for significant variance in trainees' perceived face-threat, R^2 = .45, R^2_{Adjusted} = .37, $F(3, 21) = 5.77$, $p = .005$. Inspection of the interaction term and main effects revealed that only the main effect of teacher immediacy accounted for a significant amount of variance in trainees' perceived face threat, β = .56, $t(21)$ = 3.14, p = .005, sr^2 = .257. The interaction term did not account for a significant amount of variance in trainees' perceived face threat, β = -.21, $t(21)$ = -1.12, p = .274, sr^2 = .033. Likewise, the main effect of frequency of IPT did not account for a significant amount of variance in trainees' perceived face threat, β = .12, $t(21)$ = .67, p = .508, sr^2 = .012. Thus, testing revealed no support for the 3 and 4 hypotheses, when controlling for the influence of teacher immediacy on training outcomes.

Study 2: Discussion

This second experimental study sought to understand how the strategic framing of feedback influences skills-based learning in non-HRO training. The main objective of this study was to rule out the influence of factors like trainer fatigue and high initial reports of IPT due to professional socialization in an HRO on the inconclusive results of the first experiment. Also, this second study offers an opportunity to explore the potential pitfalls created by the failed random assignment in the first study, but in a non-HRO context. Training effectiveness was measure with trainee learning outcomes. Learning outcomes were measured by task performance, affective learning (McCroskey, 1994), learner motivation (Richmond, 1990), quality of feedback (Steelman, Levy, & Snell, 2004), perceived face threat (Cupach & Carson, 2002), and perceptions of instructor immediacy (Anderson, 1979). The goals of this experiment were achieved.

Problematic Manipulation

Hypotheses 1, 2, and 6 predicted trainees who received feedback from trainers in the growth mindset treatment group would report better learning outcomes than trainees who received feedback from trainers in the control group. Because these three hypotheses posit differences based on trainers' treatment or control group, they are discussed together.

Hypotheses 1, 2, and 6 relied on the assumption that trainees who received the 30-minute training on growth mindset would report higher scores on the IPT measure than the trainers who did not engaged in the training. This assumption was tested in the manipulation check. Just as occurred in Study 1, the researcher

implemented random assignment of trainers to either treatment or control group in order to account for any systematic differences at the outset of the experiment. Random assignment does not assure groups will be the same, but only that differences are due to chance (Campbell & Stanley, 1963). Even after random assignment, instructors' IPT at the time of feedback was not significantly different for the treatment and control conditions. While instructors who engaged in the IPT training did report a marked change in their IPT from before the training to after the training, their reported IPT at the time of feedback was not different from their control group counterparts. Hence, just as occurred Study 1, random assignment failed.

The ineffectiveness of the manipulation to produce trainers who reported higher IPT at the time of feedback than trainers who engaged in the time-equivalent task might explain the lack of differences in trainees' learning outcomes. Just as in Study 1, all trainers exhibited relatively high scores on the IPT at the outset of the experiment. A one-sample *t*-test was computed to explore whether *all* participating communication instructors IPT was significantly greater than the IPT measures' midpoint of 3.5. Results supported the idea that participants—as a whole—adhered to strong incremental beliefs, $M = 5.06$, $t(24) = 9.38$, $p < .001$. This finding suggests that perhaps employees in HROs are not unique in their orientation toward growth mindset, or perhaps educators in general tend to be more oriented toward a growth mindset. Generally speaking, teachers are likely to believe students can change or develop over time.

As mentioned in the previous discussion, there are options to remedy the ineffectiveness of the manipulation in future experiments. One option to produce differences in trainers' IPT at the time of feedback is to incorporate another step in participant selection in which all participants complete an IPT measure first, then only entity theorists engage in the study. Another option to help ensure difference in the two groups is to include an entity training in the design. While an entity training may produce differences in trainers' IPT at the time of feedback, such training has been deemed as unethical by other researchers due to negative consequences caused by entity inductions (e.g., Knee et al., 2001; Levy et al., 1998; Wood & Bandura, 1989). A third option for a remedy of the ineffectiveness of the training to produce differences between the treatment and control is to increase the number of training sessions. More training sessions may strengthen the IPT of trainers in the treatment group. Additional training sessions may also ensure trainees have a chance to process the information, adopt the beliefs of the training, and have time to reflect on how mindset influences interactions with trainees. Also, a larger sample may provide enough power to detect differences between groups (Lomax, 2007).

Trainee Motivation and Train-the-Trainer Condition

Overall, hypotheses 1, 2, and 6 did not find support that trainers' involvement in a 30-minute mindset training is a predictor of affective learning, quality of feedback, perceived face-threat, or performance. These results rule out fatigue as an explanation for inconclusive results in Study 1. The learning outcome of student motivation was the only difference observed between study 1

and study 2. In study 2, participants who received feedback from *un*trained instructors reported significantly different perceptions of their own motivation compared to participants who received feedback from trained instructors. Specifically, the trainees who were paired with trainers who were *not* subject to IPT training reported *higher* motivation to learn than the trainees who were paired with trainers who engaged in IPT training. Potential explanations for the significant, yet opposite, results of learner motivation are explored in the following paragraphs.

This opposite outcome of the expected hypothesis requires a reconsideration of how the IPT training may have influenced the trainers' interactions with trainees. First, consider how the trainers in the control group spoke to their trainees. Trainers who did not engage in the IPT training may have been more likely to approach the feedback session in ways that confirmed the trainees' positive self-concept. These trainers were probably more likely to compliment students on what they did correctly and draw attention to the positive aspects of their performance—according to the typical language patterns of politeness in everyday talk (Goffman, 1959). Perhaps trainers in the control condition decided to affirm learners by providing feedback that was less accurate and more positive rather than risking a direct threat to the student's identity by providing constructive feedback to help the student improve. In other words, trainers who did not engage in growth-mindset training may have acted in accordance to the common face-saving strategies that permeate everyday interactions (Brown & Levinson, 1978). Rather than threatening trainees' desired

public image of being a competent speaker by providing explicit feedback that focused on change, *un*trained trainers may have been more polite in their interactions by mitigating the expected face threat of direct, corrective feedback. As such, trainees may have felt motivated by these face-saving interactions.

Conversely, consider the difference in how trainers in the treatment group likely interacted with their trainees. Take, for example, the recommendations set forth in the training. Part of the training recommended trainers start their feedback session by explaining their own incremental approach. This short framing could have been interpreted by trainees—who were probably unaccustomed to such language—as an implication of their deficiency. Imagine, for example, a trainer sits down to provide feedback and begins by saying, "I believe all students are capable of change. In order to make significant changes, you'll need to work hard. A part of working hard is to keep learning from mistakes." Rather than hearing the intended message of growth, trainees may have perceived this framing as the trainer's efforts to critique their poor performance politely and as a violation of their expectations about how feedback communication unfolds. Therefore, the trainees may have perceived the message as a face threat.

Not only were trainees' concerned with maintaining their own face, but Goffman (1959) asserts that there is also an expectation to assist *others* in claiming an esteemed image. It is possible that the training equipped instructors with a protective frame from which to provide feedback that was more likely to threaten the trainee's face, rather than engage in the mitigation of face-threats as trainees expect from trainers (Kerssen-Griep, 2001). A look at the experimental

IPT training illustrates how this may have happened. The IPT training taught instructors three main lessons: students can change over time, effort is more important than ability, and setbacks offer an opportunity for growth. Given the lessons of the training, it makes sense that trainers who engaged in the training may have successfully adopted the frame that trainees could improve over time with hard work and by learning from their mistakes. Certainly, those ideas would have been top-of-mind for the trainers who engaged in the training. The mental model that learners can change over time may have motivated the trainers to provide the trainees with more detailed constructive feedback that, especially in a face-to-face context, had a greater potential to demotivate the student. Corrective feedback (i.e., "You made a few mistakes, and, if you work hard you can learn and grow from them") has potential to be interpreted as a direct threat to the trainee's desired face. The trainee wants to uphold the positive face of a learner who does not make mistakes and who has already worked hard. Trainers in the growth-mindset training may have disregarded the strong societal imperative toward the constant negotiation of face (Carson & Cupach, 2000). As such, the trainers in the IPT training may have provided more corrective, detailed feedback that demotivated students, while the instructors in the control group may have deemphasized most constructive feedback and emphasized positive comments and compliments about performance. This ironic outcome creates a dilemma for trainers to navigate: Specific, direct, corrective feedback might help trainees grow, but growth may be encumbered when trainees become demotivated by specific, direct, corrective feedback.

The next question is, then, how can instructors implement IPT feedback without demotivating their students? One suggestion is to supplement the growth-mindset language with an explanation of the theory. This suggestion is discussed next.

Effects of Frequency of Growth-Mindset Oriented Framing of Feedback

Hypotheses 3 and 4 predicted frequency of growth-mindset oriented framing of feedback to be a significant predictor of trainees' perceptions of affective learning, motivation, quality of feedback, performance, performance over time, and face-threat. Results did not confirm these hypotheses. These findings mirror the findings of the same hypotheses presented in Study 1. Hypotheses 7 and 8 controlled for teacher immediacy on the relationship between growth-mindset oriented framing of feedback and trainees' learning outcomes. Results did not confirm these hypotheses.

In the discussion of inconclusive results in Study 1, attention was drawn to the low average frequency of growth-mindset language implemented by treatment group trainers during feedback sessions with trainees. However, unlike Study 1, the difference between the frequency of growth-mindset oriented framing of feedback of trainers in the treatment and control groups were wider in Study 2, with instructors using growth mindset language an average of 4.67 times in comparison to the control group's mean of zero. The data in this current study suggest that more frequency of growth-mindset framing of feedback was still not a significant predictor of the learning outcomes measured.

Research in IPT reports large effect sizes of experimental manipulations consistently (e.g., Cohen's g = .24, Olson, Dweck, Spelke, & Banaji, 2011; partial η^2 = .22, Heslin, VandeWalle, & Latham, 2006). G*Power—the statistical software package—recommended a sample size of N = 23, when calcuating the large expected effect size and an alpha level of .05. Given these findings from other IPT research, there are several explanations why similarly large effect sizes were not observed in the current set of studies.

First, a shared understanding of the growth mindset theory may be fundamental in changing behavior. According to Fairhurst (2011), an important component of skillful framing is discerning how others' make sense of their world, so that attempts to shift others' mental models can be tailored to their current understanding of the world. Tailoring messages to the trainee's current mental models allows the trainer to leverage the trainee's current beliefs in an attempt to shape subsequent beliefs. The training manipulation—and subsequent attempts at trainers' framing of feedback—may have failed because the trainer was not encouraged to consider the trainee's expectations about feedback, resulting in a disconnect of shared mental models. Consider the differences between the *trainer's* mental model of intelligence at the time of training versus the *trainee's* mental model at the time of training. First, take the mental model of the treatment condition trainer who just completed the IPT manipulation. The trainer just engaged in 30 minutes of training about mindset in which the trainer was presented with research, statistics, and stories that illustrated the benefits of adopting a growth mindset. She engaged in self-reflection and listened as another

trainer also shared stories that emphasized the utility of the growth mindset mental model. Another feature of the training was that trainers were asked to reflect on their own experiences of situations when they struggled, changed, and worked hard to overcome these struggles. As the trainer reflected aloud on her own mental model of learning, the researcher guided and placed the trainer's experiences within the frame of an incremental mindset. In essence, the training functioned as a way to understand trainers' existing mental models, then shift those mental models with elements of self-persuasion. In contrast, consider the likely mental model of the trainee: The trainee prepared a speech in a room by himself for 30 minutes until the trainer arrived to watch his speech and provide feedback. Other than that limited information provided by the researcher, the trainee had to rely on his existing mental models to make sense of the feedback interaction.

Once the trainer and the trainee were introduced, the trainee was encouraged to apply the theory to the feedback in two main ways. First, instructors were trained to frame their feedback by reiterating the three main lessons learned from training: students can change and grow, effort is more important than ability, and setbacks offer opportunity for improvement. Next, the instructors were trained to continue to use this frame throughout the feedback session. For example, the trainer likely started the feedback session with "I want to tell you about my teaching philosophy. I believe you can change. You can change by working hard. You can even grow from mistakes." For the trainer, the meaning of this message is framed within the context of IPT and the recent

training. The trainee does not share this immediate context, and, therefore, is likely to draw different meaning from the message.

Without the context of the theory to make sense of the feedback, the trainee would have drawn from existing expectations of how feedback should evolve (i.e., scripts). Scripts are knowledge structures that describe the appropriate order of events in familiar situations (Abelson, 1981; Schank & Abelson, 1977). Trainees have scripts—or expectations—about how performance feedback is supposed to unfold. Two common and expected scripts for feedback might be to expect summative evaluations about performance as either being good or bad (e.g., "You did really well" or "You need to improve"). Scripts serve two purposes: to help interpret others' behavior, and to aid in generating behavior (Gioia & Manz, 1985). When others' messages do not fit within existing scripts, interpretation of the message and how to act in response to the message becomes unclear. Trainees who received feedback from trainers who participated in growth mindset training likely experienced an activation of the script that their performance did not meet expectations. As such, these students heard the rest of the feedback as a negative evaluation of their bad performance.

Consider the difference between the initial message of the trainer in the IPT treatment group and the trainer in the control group. A qualitative review of transcripts reveals many trainers in the *control* group initiated the session by introducing themselves, then following the introduction with a common script for feedback speech encounters. For example, the feedback may have started with "I thought you did really great, especially since you only had 30 minutes to prepare

your speech. I've been asked to give you some pointers on how to make this better, but it's already really good." Unlike the treatment group trainer's initial message that focused on changing, growing, and learning from mistakes, the control group trainer's message confirms the student's positive script expectations. One way the trainer's messages do this is by engaging in facework. The societal rules of face and facework act as another strong script in feedback interactions (Trees, Kerssen-Griep, & Hess, 2009) in the sense that the trainer is expected to uphold the trainee's positive public image during the feedback session. Given expectations about feedback, trainees may expect trainers to engage in facework in order to mitigate potential face-threats. Trainers risk not being seen as responsible, polite, thoughtful and caring when they violate the expectation to engage in feedback facework. The role of facework is discussed in more detail in the next section.

According to Lord and Kernan (1987), while scripts are predictable, they are also flexible. The explicit explanation of IPT may provide enough of a context to encourage trainees to shift their scripts for a feedback session. Future research on IPT should explore the effects of framing the feedback with an explicit review of the theory. By doing so, trainees may be more likely to hold a mental model of intelligence and script for the feedback session from which to make sense of the more specific feedback.

Take, for example, two published studies with similar designs to this current study: Blackwell, Trzesniewski, and Dweck (2007) sought to improve students' study habits by teaching students the values of growth mindset. The

researchers divided students into a treatment group (who received six training sessions on effective study skills and two sessions of growth mindset induction) and a control group (who received eight training sessions on effective study skills). Students in the treatment group showed marked improvement in their grades immediately following and six weeks after the training, while students in the control group did not exhibit significant changes. During the sessions on mindset, the students were taught that the brain changes with learning, which is a core tenet of the theory.

In a second research article with a similar design, Yeager, Trzesniewski, and Dweck (2013) provided students with six training sessions with a goal of changing bullying behavior. Again, the training focused on teaching students implicit person theory, and resulted in a change in bullying behavior for students in the treatment group. Note that in both studies the training intervention involved explicit discussion of theory. In the current study design, the instructor was trained to create an *environment* that mirrored the values of a growth mindset, without direction to talk explicitly about the theory.

Other studies found that subtle linguistic differences in the type of feedback students receive (i.e., praise for ability versus praise for effort) result in different performance outcomes (Mueller & Dweck, 1998). However, in these studies, students were given the same tasks, with the same feedback each time between tasks. This feedback-only design may work for experiments that use the same message, same task, and same messenger, but, to date, no evidence exists to support that the feedback-only design creates changes in behavior when applied to

more complex tasks. Likewise, existing research does not support that feedback-only designs produce lasting learner effects over time. Therefore, implementing explicit discussion of theory into the feedback sessions may help students make sense of the language used during the feedback session.

An advantageous derivative of teaching trainees the tenets of implicit person theory may arise from within the discussion of what *is* and *is not* indicative of those with a growth mindset. According to Davies and Harré (1999), identities are expressed and enacted through categories available in language-use. For example, a person may enjoy meeting new people and feel energized in groups. Once this person self-identifies as an extrovert, this category or position both aids and constrains her to see the world from that vantage point. As a result, she may find that she enjoys meeting new people and talking in crowds even more, and may enjoy one-on-one conversations less. In other words, a person comes to understand their own identity by classifying what they are and are not, and these positions serve to mute or amplify the significance of a particular category or social positioning made available in discourse (Jorgenson, 2002). Taking this into consideration, perhaps part of creating a feedback environment where the trainee comes to accept the mental models of a growth mindset is to implement an explicit discussion of what *is not* a growth mindset.

Distinguishing between what *is* and what *is not* a growth mindset may also function as a way to help trainees make sense of the feedback with a growth-oriented frame. In other words, *sensebreaking* may be necessary to ensure a successful process of sensemaking. Sensebreaking involves the destruction or

attacking of previous meaning constructions. While sensemaking addresses identity construction, sensebreaking is "the fundamental questioning of who one is when one's self is challenged" (Pratt, 2000, p. 464). Instead of trying to create an implicit environment of growth, perhaps trainers need to address trainees' identities explicitly. In other words, trainers may be more effective at influencing the trainee's mindset by discussing and praising his identity *as a learner*. By questioning the costs associated with being a fixed mindset student (i.e., a student who gives up, relies on their smarts, and believes working hard is for people who aren't smart), trainees may be more willing to accept a new identity construction from which to make sense of the feedback.

Main Effects of Face-Threat and Teacher Immediacy

While the main effects of face-threat and teacher immediacy do not relate directly to the hypotheses posited in this design, results support the need for future research linking IPT to face-threat and teacher immediacy.

The trainees' perception of face-threat predicted their perceptions of quality of feedback. As mentioned, face-threat is an important component of both feedback and implicit person theory. More research should be conducted to understand how face-threat and perceptions of quality of feedback relate to stronger manipulations of IPT.

Teacher immediacy was a significant predictor of affective learning, student motivation, quality of feedback, and perceptions of face-threat. The results of those main effects are listed in Table 5.

Teacher immediacy as a significant predictor of many learning outcomes measured in this study is consistent with existing literature on the importance of teacher immediacy (Anderson, 1979; Christophel, 1990; Witt, Wheeless, & Allen, 2004). In application to this research, the main effects of teacher immediacy on learning outcomes suggests that teacher immediacy is an important factor when assessing students' perceptions of their learning outcomes.

Alternative Explanations for Inconclusive Results, Limitations, and Future Directions

No study is without limitations. Exploring the limitations of this study offers directions for future studies. First, based on hindsight, the study may be underpowered statistically. In the future, statistical power in a similar study design could be improved in three main ways. First, increase the sample size. The sample size in this study was limited to 25. Increasing the number of participants in the study may reveal differences between groups that are undetected with the small sample size. Second, effect size could be increased by lengthening the time and increasing the frequency of the train-the-trainer mindset interventions. The current study implemented a 30-minute mindset manipulation. The two articles that attempt to change behavior in applied situations with growth mindset interventions have done so with multiple training sessions (Blackwell, Trzesniewski, & Dweck, 2007; Yeager, Trzesniewski, & Dweck, 2013). Third, explicit discussion of the theory may strengthen the learners' growth mindset frames. In future train-the-trainer designs, the trainers should equip trainees with the understanding and language of both growth and fixed mindsets. This way,

trainees may have a clearer mental model about the benefits of being hard working versus smart. A more explicit discussion of both categories may strengthen the manipulation, hence improving power.

Relatedly, a second limitation is that this study design does not offer an understanding of how such feedback strategies may influence more general feedback environments. In other words, the same feedback strategies used by teachers in the treatment group may become significant predictors of learning outcomes when linked and amplified throughout the course of a semester. For example, in the current design, students in the treatment group heard comments like, "the harder you work, the better you'll perform" and "keep learning from your mistakes." Then students were given another 30 minutes to work on their next speech. The message "keep working" may be more powerful over the course of a semester when the teacher has opportunities to repeat and reiterate mental models of what it means to be a learner. Also, the instructor would have more opportunities to create and solidify an environment where the student knows incremental learning is the expectation. Future research will explore the effects of strategic framing of feedback over time.

A third limitation to the study may be the lead trainer's relationship and proximity to the sample. At the time of training, the trainer had been a part of the communication department for over three years. The speech teachers who participated in the study were the trainer's colleagues and classmates. The trainer recruited each participant personally. Also, at least a handful of the participants had heard or read about mindset via informal conversations within the

department. The general assumption is that these students were dispersed evenly between treatment and control group during random assignment to condition. In the future, an audience without direct relationship to the trainer may offer more accurate results.

Conclusion

This dissertation attempted to expand IPT research to test the effects of a train-the-trainer design on trainee learning outcomes. Trainers who engaged in a 30-minute lesson on framing feedback with a growth mindset did not produce trainees with better learning outcomes than trainers who did not engage in the training. The design and results of this dissertation fill an important void in the IPT literature. According to Good et al. (2012), "It is particularly important to better understand how entity and incremental *messages* may be *communicated*" (p. 714, emphasis added). This research satisfies the call by offering data that explores the effects of growth mindset feedback messaging on trainees' learning outcomes. Results point to the complexity of identity-based implications created by feedback messaging in the training environment contexts. More research is needed to explore the effects of IPT messages in the organizational training context.

Planned Hypothesis Testing

Hypotheses	IVs	DVs	Statistical Analysis Proposed
H1: Participants who receive feedback from instructors in the growth mindset treatment group perceive their own affective learning, learner motivation, and quality of feedback to be higher than control group participants.	• Treatment vs. Control Group	• Affective Learning • Learner motivation • Quality of Feedback	Series of *t*-tests
H2: Participants who receive feedback from instructors in the growth mindset treatment group perceive their own face-threat to be lower than control group participants.	• Treatment vs. Control Group	• Perceived Face-Threat	*t*-test
H3: The frequency of growth-mindset oriented framing of feedback is positively associated with perceptions of affective learning, learner motivation, quality of feedback, performance, and performance over time.	• Frequency of Growth-Mindset Oriented Framing	• Affective Learning • Learner motivation • Quality of Feedback • Performance • Performance over Time	Series of Bivariate Regressions
H4: The frequency of growth-mindset oriented framing of feedback is negatively associated with learners' perceived face-threat.	• Frequency of Growth-Mindset Oriented Framing	• Perceived Face-Threat	Bivariate Regression
H5: The degree of learners' face-threat perceptions moderates the association between the frequency of growth-mindset oriented framing used during feedback session and learners' perception of their own affective learning, learner motivation, and quality of feedback.	• Frequency of Growth-Mindset Oriented Framing • Moderator: Degree of Face-Threat Perceptions	• Affective Learning • Learner motivation • Quality of Feedback	Series of Multivariate Regressions Baron and Kenny (1986) tests of moderation
H6: Participants who receive feedback from growth	• Treatment vs. Control Group	• Performance • Performance	Series of *t*-tests

mindset instructors perform better immediately following and one month after the mindset manipulation than control group participants.		over Time	
H7: The frequency of growth-mindset oriented framing of feedback is positively associated with perceptions of affective learning, learner motivation, quality of feedback, performance, and performance over time, after controlling for perceptions of instructor immediacy.	• Frequency of Growth-Mindset Oriented Framing • Teacher Immediacy	• Affective Learning • Learner motivation • Quality of Feedback • Performance • Performance over Time	Series of Multivariate Regressions
H8: The frequency of growth-mindset oriented framing of feedback is negatively associated with learners' perceived face-threat, after controlling for perceptions of instructor immediacy.	• Frequency of Growth-Mindset Oriented Framing • Teacher Immediacy	• Perceived • Face-Threat	Multivariate Regression

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Appendix A
Tables

Table 1

Study 1: Scale Reliabilities

Name of Scale	*Cronbach's α*
IPT (all trainers before training)	.89
IPT (treatment trainers after training)	.92
IPT (trainees)	.90
Affective Learning	.92
Learner Motivation	.87
Perceived Face Threat (both positive and negative)	.80
Positive Face Threat	.67
Negative Face Threat	.68
Quality of Feedback	.84

Table 2

Study 1: Means, Standard Deviations, and Correlations for Independent and Dependent Variables

Variable	*M*	*SD*	*1*	*2*	*3*	*4*	*5*	*6*
1. C (*N* = 25)	1.52	.51						
2. AL (*N* = 24)	6.41	.41	-.09					
3. LM (*N* = 25)	5.92	.81	.06	.71***				
4. QF (*N* = 22)	6.63	.44	.11	.85***	.57**			
5. FT (*N* = 25)	6.46	.70	.02	.31	.56**	.44*		
6. P (*N = 25)*	2.63	.81	-.12	.10	.32	-.02	.20	
7. fIPT (*N = 25)*	.74	1.06	.61**	.24	.01	.37	-.00	-.29

Note. *$p < .05$, **$p < .01$, ***$p < .001$. C (condition); AL (affective learning); LM (learner motivation); QF (quality of feedback); FT (face threat); P (performance); fIPT (frequency of IPT).

Table 3

Study 2: Scale Reliabilities

Name of Scale	*Cronbach's α*
IPT (all trainers before training)	.92
IPT (treatment trainers after training)	.98
IPT (trainees)	.82
IPT (trainees after 1 month)	.91
Affective Learning	.93
Learner Motivation	.89
Perceived Face Threat (both positive and negative)	.86
Positive Face Threat	.76
Negative Face Threat	.87
Quality of Feedback	.73
Instructor Immediacy	.92

Table 4

Study 2: Means, Standard Deviations, and Correlations for Independent and Dependent Variables

Variable	*M*	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1. C	1.48	.51								
2. AL	6.40	.59	-.26							
3. LM	5.97	.65	-.40*	.80***						
4. QF	6.40	.52	-.19	.71***	.68***					
5. FT	6.14	.95	-.10	.52**	.35	.62**				
6. P	2.49	1.10	-.27	.33	.38	.30	.19			
7. PoT	2.81	1.36	-.15	-.18	.00	-.01	-.05	.32		
8. fIPT	2.24	3.32	.72***	.07	.01	.00	.10	.04	-.16	
9. TI	6.26	.88	-.03	.77***	.69***	.76***	.65***	.06	-.20	.09

Note. *$p < .05$, **$p < .01$, ***$p < .001$. C (condition); AL (affective learning); LM (learner motivation); QF (quality of feedback); FT (face threat); P (performance); PoT (performance over time); fIPT (frequency of IPT); TI (teacher immediacy).

Table 5

Regression Analysis—Study 2, Significant Main Effects of Teacher Immediacy on Dependent Variables

Dependent Variable	R^2	R^2_{Adjusted}	B	SE	β	*t*	*p*
Affective Learning	.60	.58	.52	.09	.77	34.35	< .001
Learner Motivation	.47	.45	.51	.11	.69	20.57	< .001
Quality of Feedback	.58	.56	.45	.08	.76	31.98	< .001
Face Threat	.42	.39	.70	.17	.65	16.43	< .001

Note. $N = 23$

Appendix B
Mindset Manipulation

Time Allotted	Topic	Trainer Notes
1 minute	Introduction	Benjamin Barber, a prominent political scientist said, "I don't divide the world into the weak and the strong, or the successes and failures, those who make it or those who don't. I divide the world into the learners and non-learners" • Learners are confident students. • Learners are responsible citizens who make contributions to society. • Yet, the US does a number of things that we thought were helping students, but, in reality, are making students non-learners. • We created a generation of students who are "talented" and cannot make mistakes. • As instructors, we play a crucial role in ensuring our students remain learners.
1 minute	Purpose & Objectives	• To offer insights into the ways in which assumptions about the brain influence motivation and effort. • To explore how instructor's messages influence student learning. • To give instructors communicative tools to maximize the learning potential of their students.
2 minutes	Explanation of Mindset	How do we make sure our students remain learners? • Carol Dweck's research about mindset offers a strong foundation from which to understand learners. • 2 mindsets about intelligence: o Fixed mindset: intelligence is a fixed trait; students have a certain amount, and that's it ▪ Students worry about how smart they are. ▪ Students don't want to take challenges or make mistakes. ▪ Students want to stay in their comfort zone. o Growth Mindset: intelligence is a

		malleable quality; a potential that can be developed ▪ Students believe intelligence can be developed, can be cultivated through instruction and education. ▪ Students understand that even Einstein wasn't Einstein before he spend years and years of dedicated, passionate labor. ▪ Students believe talent is just a starting point – you jump off from there. • Which mindset is correct? o More and more research from cognitive psychology and neuroscience is producing evidence for the benefits of a growth mindset on learning. • Can mindsets be changed? Taught? o YES! o Even the most fundamental aspects of intelligence can be trained – not just in young children, but in older individuals as well. o When you leave mindsets alone, they are pretty stable; but now that we know what a mindset is, we can change it. Now that we can change mindsets, we can transform individuals' motivation to learn. • How do mindsets work? o Create an entire psychological world for students where everything has a new meaning.

1 minute	Rule 1: Looking Smart versus Learning	• Fixed mindset: look smart at all costs (if you don't look smart, don't engage in the activity)
		  o Students with a fixed mindset may say, "Am I right? Am I clever? Tell me how smart I am."
		• Growth mindset: learn, learn, learn
		  o Students with a growth mindset may say, "Tell me when I'm wrong, because I want to learn."

3 minutes	Rule 1: Research Support	• Dweck and colleagues researched students' transition to 7th grade. 7th grade tends to be a place where learning becomes less personal and a lot of students turn off from learning at this grade. Dweck and colleagues asked: Would a growth mindset get across the transition to 7th grade more smoothly. The researchers measured students' mindsets at the beginning of 7th grade and monitored their grades over 2 years.
		  o Fixed mindset student said: "The main thing I want when I do my school work is to show how good I am at it."
		  o Growth mindset student said: "It's much more important for me to learn things in my classes than it is to get the best grades."
		  o When the researchers looked at the students' grades, they entered 7th grade with the exact same achievement. By the end of their first term, their grades jumped apart dramatically, and continued to diverge over the next 2 years
		  o See figure 1
		• Researchers found the same results with pre-med students at the college level.
		  o Everyone cares about grades at this point, but students with a growth mindset indicated that they cared even more about learning.
		  o At the end of their term, the students with a growth mindset

		had actually earned higher grades, even controlling for past achievement. o When students with a fixed mindset got a poor initial grade on an assignment, they thought "I guess I'm not good at this" and they didn't change the way they studied, resources they gathered, or strategies they used. o When students with a growth mindset got a poor initial grade on an assignment, they made sure to pull it up. o See figure 2
2 minutes	Rule 1: Reflection	• Think about a time you were in a fixed mindset and chose to be a non-learner o What could you do differently next time? • Have participants turn to a neighbor and discuss their responses.
3 minutes	Rule 2: Effort	• Fixed mindset: It should come naturally o Fixed mindset students may say, "To tell the truth, when I work hard at my school work it makes me feel like I'm not very smart." o Whenever students have to apply effort, they feel stupid. o If students were really smart, it should just come to them. o Low effort = brilliant ▪ At some point, school gets harder and requires more effort. At this point, students have to make a decision whether to continue working or to retire. The fixed mindset students tend to retire while they are ahead rather than exert more effort, accept challenge, and risk failure (because effort does not equal brilliance). • Growth mindset: Work hard, effort is key

		○ Students with growth mindset may say, "The harder you work at something, the better you'll be at it." ○ Growth mindset students think that even geniuses have to work hard for their discoveries. ○ These students do not just work on their strengths, but address their weaknesses. ○ Psychology work is showing that there is one thing that distinguishes geniuses from their peers – how much they work. ▪ Yes, they may be talented, but so were many other people and they are the ones who took their talent to the finish line
1 minute	Rule 2: Research Support	Dweck and colleagues did a study with college students. Researchers brought students into the lab, one at a time. Students were given a difficult test, on which they did poorly. At the completion of the test, researchers told students they had the results from other students' test which they could review. Researchers asked students if they would like to look at students' result who did much better than them or much worse than them. Overwhelmingly, the researchers found that students in a fixed mindset wanted to look at the exams of students' who did much worse than they did. Afterwards, these students said, " I feel good about my abilities." Whereas the students with a growth mindset overwhelmingly chose to look at the exams of the students who did substantially better than they had.
3 minutes	Rule 2: Praise for effort versus intelligence	Dweck and colleagues brought 5th graders into a testing room one at a time and gave students 10 questions from a nonverbal IQ test. Each student got one form of praise: • Intelligence Praise: "Wow, that's a really good score. You must be good at this." • Effort (Process) Praise: "Wow, that's a really good score. You must have tried

		really hard."
		• Results:
		  o Researchers found that praising intelligence made them believe in a fixed mindset more than praising their effort.
		  o The students were asked what they wanted to work on next. The students praised for intelligence wanted to work on a task they were sure would not cause them to make mistakes or struggle. These students became non-learners. The students praised for effort wanted a difficult task, where they might make mistakes but could also stretch themselves. These students became learners.
		  o Later, the researchers gave everyone very difficult problems on which to work. The students praised for intelligence, lost their confidence. Because if success meant they were clever, failure means they are not. The students praised for effort, kept their confidence. They saw that the problems were harder, but remained confident, motivated, and engaged.
		  o Students were given a third set of problems. Researchers found that students praised for effort showed a marked increase in their performance from the first to the third trial. The students praised for their intelligence showed a marked decline in their performance. They got worse on this IQ test. The control group was only told "Wow. That's a really good score."
		  ▪ See figure 3
		  o Next, the researchers told the students that they were going to

		this research at another school and the students there would love to hear about their experience. Students were given a piece of paper and were asked to write about their experience. Students were also given room to report their scores. Researchers found that almost 40% of students praised for intelligence lied about their score, and only in one direction. This means that in a fixed mindset, you are so invested in being smart. Your ego is so wrapped up in your score, they could not even anonymously report how they did on the problems. ▪ See figure 4
1 minute	Rule 2: Messages about Effort	• Low Effort Success: Yesterday o "Look, you got an A on that speech without working. You must be a natural at speaking in front of a group." o "You made that speech look so easy. That's impressive." o Notice what we are saying here – we are saying, you are clever when you don't have to work at something • Low Effort Success: Tomorrow o "You got an A on that speech without working. You must not be learning much." o "You did that so quickly and easily. I'm sorry I wasted your time. Let's do something you can learn from."
1 minute	Rule 3: Response to Setbacks	• Fixed mindset: Hide mistakes; conceal deficiencies o Mistakes and deficiencies are permanent o A failure means you don't have it, and if you don't have it, you'll never have it

		• Fixed mindset provides no recipe for recovering from failures:
		  o Giving up, retreating to comfort zone
		  o Blaming others
		  o Trying to feel superior
		• Growth mindset: capitalize on mistakes; confront deficiencies
		  o Mistakes are part of learning – you work harder to learn

1 minute	Rule 3: Research Support	• In the study of 7th graders, students were asked how they intend to move on from a disappointing score on an assignment (after a setback)
		  o Fixed mindset:
		  ▪ "I would spend less time on the assignment from now on."
		  ▪ "I would try not to take this subject ever again."
		  ▪ "I would try to cheat on the next test."
		  o Growth mindset:
		  ▪ "I would work harder in this class from now on."
		  ▪ "I would spend more time studying for the tests."

2 minutes	Rule 2 & 3: Language Production	It is important for educators to communicate that we value and admire effort, challenge-seeking, hard work, learning from mistakes, struggles – and that we do not value easy, low effort success. • Students must be taught to enjoy challenges, effort, and mistakes. • With a partner, draft a list of statements directed to students that encourages effort, struggle, challenges – and devalues low-effort successes. • Examples: "Let's do something hard that we can learn from, not something easy and boring." "This is hard. This is what I call fun." "Did you have a good struggle? Would you share what you struggled with today?" "Get ready for a terrific struggle!" "That was a lot of hard work. Can you imagine the way your brain

		grew with all that work?" "Did you feel like you made any interesting/terrific mistakes?" "That was hard and it didn't stop you." "Wow, you chose a difficult path. You are going to learn and benefit from that."
2 minutes	Application	With a partner, draft a list of words/phrases that represent a fixed mindset. • Smarts, intelligence, talent, failure, naturally gifted With a partner, draft a list of words/phrases that represent a growth mindset. • Growth, change, challenge, struggle, development, learn, effort, work
2 minutes	Role-playing (Scenario 1)	With your partner, choose one person to be the instructor, and the other to be the student. Imagine that the student just completed a speech that lacked most of the necessary elements of an effective speech (content, structure, organization, verbal and nonverbal delivery). First, communicate to the student your values and beliefs about learning. Second, provide them with feedback on their speech. Use the lists of words/phrases you developed in the previous activities.
2 minutes	Role-playing (Scenario 2)	With your partner, trade roles of instructor and learner. Imagine that the student just completed an excellent speech that met all of the requirements for an effective presentation. First, communicate to the student your values and beliefs about learning. Second, provide them with feedback on their speech. Use the lists of words/phrases you developed in the previous activities.
1 minute	Conclusion	• Consider the plasticity of the brain • Praise effort, challenge, struggle, mistakes, work • Focus on the process of learning, rather than the outcomes

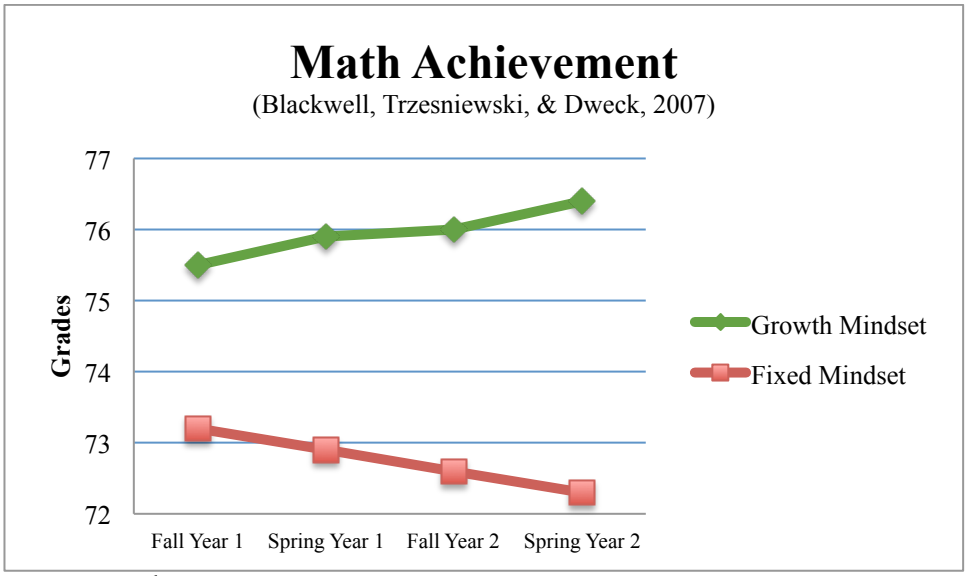


Figure 1. 7th graders' mindset and achievement changes over two years. Adapted from "Implicit theories of intelligence predict achievement across an adolescent transition: A longitudinal study and an intervention," by L. S. Blackwell, K. H. Trzesniewski, and C. S. Dweck, 2007, *Child Development, 78,* 246-263.

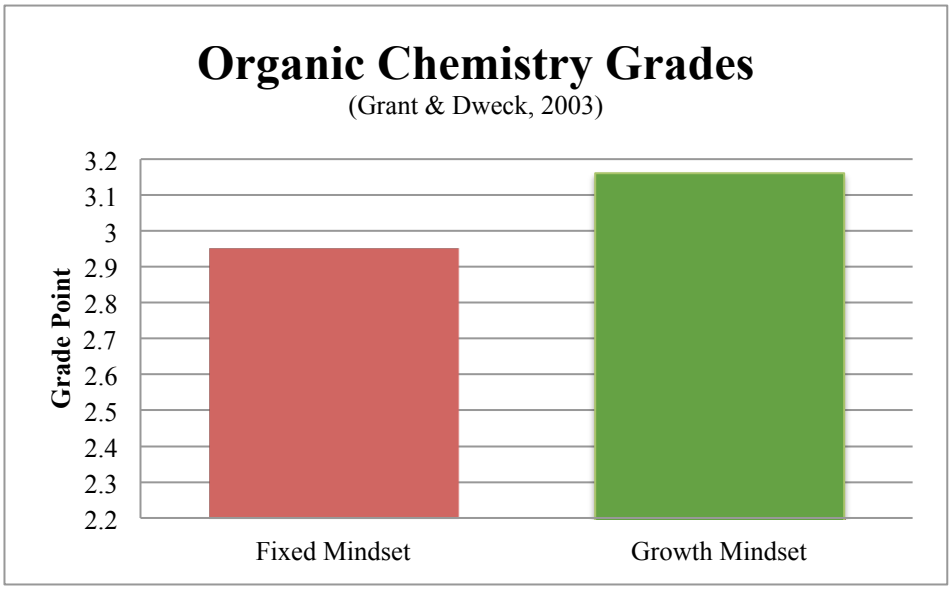


Figure 2. Pre-med students' mindset and grades at the end of a term. Adapted from "Clarifying achievement goals and their impact," by H. Grant and C. S. Dweck, 2003, *Journal of Personality and Social Psychology.*

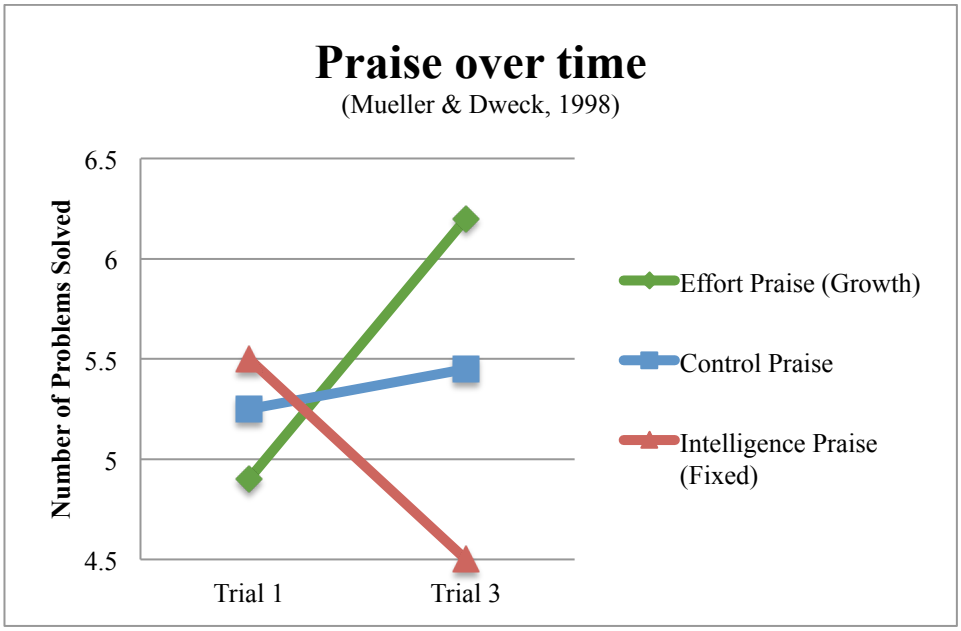


Figure 3. The role of praise on motivation and performance. Adapted from "Praise for intelligence can undermine children's motivation and performance," by C. M. Mueller and C. S. Dweck, 1998, *Journal of Personality and Social Psychology, 75.*

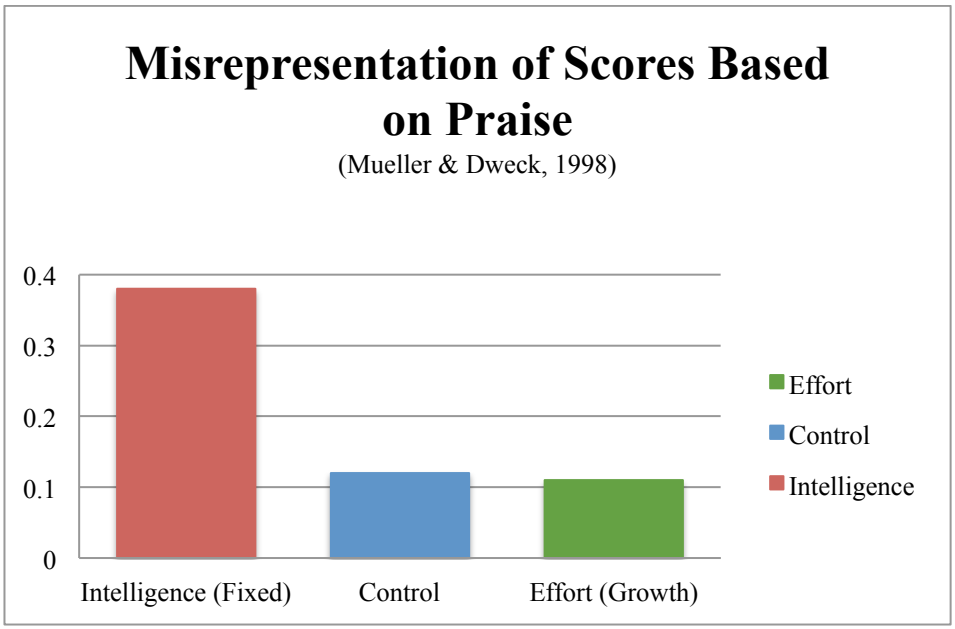


Figure 4: Misrepresentation of scores based on praise. Adapted from "Praise for intelligence can undermine children's motivation and performance," by C. M. Mueller and C. S. Dweck, 1998, *Journal of Personality and Social Psychology, 75.*

Appendix C
Demographic Questions (Attending Anesthesiologists)

What is your gender?

- Male
- Female

What is your age?

How many years of experience do you have as a practicing anesthesiologist?

How many years of experience do you have as an instructor of anesthesiology?

Appendix D
Image of Human Patient Simulator



Appendix E
Demographic Questions (Residents)

What is your gender?

- Male
- Female

What is your age?

How many years of residency have you completed?

Appendix F
Implicit Person Theory Scale (Dweck, 1995)

Instructions: Please circle the number that best represents your agreement to the statement, where 1 means strongly agree and 6 means strongly disagree.

You have a certain amount of intelligence and you really can't do much to change it. Strongly agree 1 2 3 4 5 6 Strongly disagree
Your intelligence is something about you that you can't change very much. Strongly agree 1 2 3 4 5 6 Strongly disagree
You can learn new things, but you can't really change your basic intelligence. Strongly agree 1 2 3 4 5 6 Strongly disagree
A person's moral character is something very basic about them and it can't be changed very much. Strongly agree 1 2 3 4 5 6 Strongly disagree
Whether a person is responsible and sincere or not is deeply ingrained in their personality. It cannot be changed very much. Strongly agree 1 2 3 4 5 6 Strongly disagree
There is not much that can be done to change a person's traits (e.g., conscientiousness, uprightness and honesty). Strongly agree 1 2 3 4 5 6 Strongly disagree
The kind of person someone is is something very basic about them and it can't be changed very much. Strongly agree 1 2 3 4 5 6 Strongly disagree
People can do things differently, but the important parts of who they are can't really be changed. Strongly agree 1 2 3 4 5 6 Strongly disagree
Everyone is a certain kind of person and there is not much that can be done to really change that. Strongly agree 1 2 3 4 5 6 Strongly disagree

Appendix G
Affective Learning (McCroskey, 1994)

Instructions: Please respond to the following scales in terms of the feedback you just received. Choose one number on each set of bipolar scales to indicate your judgment or evaluation of the concept/idea about that particular session. Note that in some cases the most positive number is a "1" while in other cases it is a "7."

My attitude about the content of this feedback session:								
Bad	1	2	3	4	5	6	7	Good
Valuable	1	2	3	4	5	6	7	Worthless
Unfair	1	2	3	4	5	6	7	Fair
Negative	1	2	3	4	5	6	7	Positive

My attitude about the instructor of this feedback session:								
Bad	1	2	3	4	5	6	7	Good
Valuable	1	2	3	4	5	6	7	Worthless
Unfair	1	2	3	4	5	6	7	Fair
Negative	1	2	3	4	5	6	7	Positive

My attitude toward the behaviors taught in the feedback session:								
Bad	1	2	3	4	5	6	7	Good
Valuable	1	2	3	4	5	6	7	Worthless
Unfair	1	2	3	4	5	6	7	Fair
Negative	1	2	3	4	5	6	7	Positive

The likelihood of me taking another course in this subject matter:								
Likely	1	2	3	4	5	6	7	Unlikely
Impossible	1	2	3	4	5	6	7	Possible
Probable	1	2	3	4	5	6	7	Improbable
Would not	1	2	3	4	5	6	7	Would

My attitude toward learning from this instructor again:								
Bad	1	2	3	4	5	6	7	Good
Valuable	1	2	3	4	5	6	7	Worthless
Unfair	1	2	3	4	5	6	7	Fair
Negative	1	2	3	4	5	6	7	Positive

The likelihood of me using the behaviors taught in this session:								
Likely	1	2	3	4	5	6	7	Unlikely
Impossible	1	2	3	4	5	6	7	Possible
Probable	1	2	3	4	5	6	7	Improbable
Would not	1	2	3	4	5	6	7	Would

Appendix H

Student Motivation Scale (Richmond, 1990; Christophel, 1990)

Instructions: Please circle the number toward either word which best represents how you feel about this specific feedback session.

Motivated	1	2	3	4	5	6	7	Unmotivated
Interested	1	2	3	4	5	6	7	Uninterested
Involved	1	2	3	4	5	6	7	Uninvolved
Not stimulated	1	2	3	4	5	6	7	Stimulated
Don't want to study	1	2	3	4	5	6	7	Want to study
Inspired	1	2	3	4	5	6	7	Uninspired
Unchallenged	1	2	3	4	5	6	7	Challenged
Uninvigorated	1	2	3	4	5	6	7	Invigorated
Unenthused	1	2	3	4	5	6	7	Enthused
Excited	1	2	3	4	5	6	7	Not excited
Aroused	1	2	3	4	5	6	7	Not aroused
Not fascinated	1	2	3	4	5	6	7	Fascinated
Dreading it	1	2	3	4	5	6	7	Looking forward to it
Important	1	2	3	4	5	6	7	Unimportant
Useful	1	2	3	4	5	6	7	Useless
Helpful	1	2	3	4	5	6	7	Harmful

Appendix I
Face-threat measure (Cupach & Carson, 2002)

Instructions: Please respond to the following items regarding your instructor's actions. Circle the number that best represents your degree of agreement, where 1 is strongly disagree and 7 is strongly agree.

My instructor's actions:
Were polite Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree
Were rude Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree
Were insensitive Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree
Showed disrespect toward me Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree
Were justified Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree
Were hostile Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree
Strengthened the relationship between us Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree
Showed contempt toward me Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree
Damaged the relationship between us Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree
Were tactful Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree
Constrained my choices Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree
Took away some of my independence Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree
Made me look bad Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree
Invaded my privacy Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

Appendix J

Feedback Environment Scale (Steelman, Levy, & Snell, 2004)

Instructions: Please respond to the following items regarding your instructor's feedback. Circle the number that best represents your degree of agreement, where 1 is strongly disagree and 7 is strongly agree.

My instructor is familiar with my performance. Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree
I respect my instructor's opinions about my performance. Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree
With respect to performance feedback, I do not trust my instructor. Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree
My instructor was fair when evaluating my performance. Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree
My instructor gave me useful feedback about my performance. Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree
The performance feedback I received from my instructor was helpful. Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree
I value the feedback I received from my instructor. Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree
The feedback I received from my instructor will help me do my job. Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree
The performance information I received from my instructor was not very meaningful. Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree
My instructor was supportive when giving me feedback about my performance. Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

When my instructor gave me performance feedback, he or she was considerate of my feelings. Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree
My instructor provided feedback in a thoughtless manner. Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree
My instructor does not treat people very well when providing performance feedback. Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree
My instructor was tactful when giving me performance feedback. Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

Appendix K
Resident Longitudinal Survey

Survey is to be completed by residents 6 weeks after participation in experiment.

Compared to about 2 months ago, how would you categorize your current performance overall? Circle the number that best represents your assessment of your performance.

Better	1	2	3	4	5	6	7	Worse
Improved	1	2	3	4	5	6	7	Declined
Higher	1	2	3	4	5	6	7	Lower

Students will also complete the mindset measure again.

Appendix L
Demographic Questions (Teachers)

What is your gender?

- Male
- Female

What is your age?

How many years of graduate work have you completed?

In general, how many years of experience do you have as an instructor?

How many years of experience do you have as an instructor of speech/presentation skills?

Appendix M
Instructions for Student Speeches

Instructions for 1st speech:

- You will be given the next 30 minutes to draft an extemporaneous speech.
- You will be evaluated based on the attached evaluation sheet, so please reference the document as you draft your speech.
- You are **not** permitted to use online resources to assist with your speech.
- Your speech should be between 3 to 5 minutes in length.
- You may use notes as you present your speech.
- Your topic is: *Explain 3 uses for a pencil besides writing*.

Instructions for 2nd speech:

- You will be given the next 30 minutes to draft another extemporaneous speech.
- You will be evaluated using the same evaluation sheet.
- Please also consider your instructor's feedback on your first speech to improve your second speech.
- You are **not** permitted to use online resources to assist with your speech.
- Your speech should be between 3 to 5 minutes in length.
- You may use notes as you present your speech.
- Your topic is: *Explain the best 3 ways to teach an old dog a new trick.*

Appendix N
Handout to Help Assess Performance on 2nd Speech

Note: A panel of 3 coders who have experience teaching presentation skills will rate the students' performance on the 2nd speech.

Instructions: Please use the following categories to help assess each student's overall performance on their speech.

Content (i.e., strength of argument, audience adaptation techniques):				
Excellent	Very Good	Good	Fair	Poor
Overall organization:				
Excellent	Very Good	Good	Fair	Poor
Introduction (i.e., attention getter, thesis, main points):				
Excellent	Very Good	Good	Fair	Poor
Body:				
Excellent	Very Good	Good	Fair	Poor
Conclusion (i.e., restate thesis and main points, link back to attention getter):				
Excellent	Very Good	Good	Fair	Poor
Internal previews, reviews, transitions:				
Excellent	Very Good	Good	Fair	Poor
Overall delivery:				
Excellent	Very Good	Good	Fair	Poor
Vocal delivery:				
Excellent	Very Good	Good	Fair	Poor
Physical delivery:				
Excellent	Very Good	Good	Fair	Poor

Appendix O
Demographic Questions (Students)

What is your gender?

- Male
- Female

What is your age?

What year in school are you?

How many communication classes have you completed?

How many classes have you completed that focused on the development of presentation/speech skills?

Appendix P
Generalized Immediacy Scale (Andersen, 1979)

Instructions: Immediate behaviors are those communication behaviors that reduce distance between people. Immediate behaviors may actually decrease the physical distance, or they may decrease the psychological distance. The more immediate a person is, the more likely he/she is to communicate at close distances, smile, engage in eye contact, use direct body orientations, use overall body movement and gestures, touch others, relax, and be vocally expressive. In other words, we might say that an immediate person is perceived as overtly friendly and warm.

Please circle the number that corresponds to the word that best describes your agreement with the following statement:

In your opinion, the teaching style of your instructor is very immediate (that is, creates a feeling of closeness between us).								
Agree	1	2	3	4	5	6	7	Disagree
False	1	2	3	4	5	6	7	True
Incorrect	1	2	3	4	5	6	7	Correct
Wrong	1	2	3	4	5	6	7	Right
Yes	1	2	3	4	5	6	7	No

Please circle the number that corresponds to the word that best describes the teaching style of your instructor:								
Immediate	1	2	3	4	5	6	7	Not Immediate
Cold	1	2	3	4	5	6	7	Warm
Unfriendly	1	2	3	4	5	6	7	Friendly
Close	1	2	3	4	5	6	7	Distant

Appendix Q
Student Longitudinal Survey

Survey is to be completed by students 6 weeks after participation in experiment.

What is your GPA?

Compared to the beginning of the semester, how would you categorize your current grades overall? Circle the number that best represents your assessment of your performance.

Better	1	2	3	4	5	6	7	Worse
Improved	1	2	3	4	5	6	7	Declined
Higher	1	2	3	4	5	6	7	Lower

Students will also complete the mindset measure again.