Technical Report 1411

Implications of Mindset on Professional Development of Army Soldiers

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Noncommissioned officers (NCOs) play a critical role in the professional development of junior enlisted (JE) Soldiers. Although the Army provides NCOs with tools and resources to help them effectively develop JE Soldiers, challenges in this area persist. To help the Army better understand and address these challenges, this report reviews research on "mindset," defined as the beliefs that people hold about the fixedness or malleability of people's traits and abilities. Mindset has been shown to have important implications for professional development outside of military contexts and may offer a novel solution for improving Soldier professional development outcomes. We detail findings from academic publications that describe how mindset has been conceptualized and measured in previous research, the effects of mindset on important individual and group-level outcomes, and how mindsets can be changed through targeted interventions. We also include findings from military-specific publications describing how mindset has been discussed in military contexts. We conclude with how insights from mindset theory and research could be applied to the Army context to create an Army-specific mindset measure, to inform the development of an intervention to foster growth mindset among NCOs, and to improve professional development in the Army more broadly.

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IMPLICATIONS OF MINDSET ON PROFESSIONAL DEVELOPMENT OF ARMY SOLDIERS

EXECUTIVE SUMMARY

Research Requirement:

To ensure the readiness of its force, the U.S. Army has positioned itself as a learning organization that prioritizes the professional development of its junior enlisted (JE) Soldiers. Noncommissioned officers (NCO) in particular play a critical role in the professional development of the JE Soldiers that they lead through activities like training, counseling, non-punitive corrective measures, mentoring, and coaching. Although the Army provides NCOs with a wide array of tools and resources to help them effectively develop their JE Soldiers, they may still face a number of challenges in this area. To better understand and address these challenges, the United States Army Research Institute for the Behavioral and Social Sciences (ARI) seeks to apply insights from research on growth and fixed mindsets (Dweck, 1999)—a construct that has been shown to have implications for professional development outside of military contexts—to Soldier professional development. Whereas fixed mindsets are characterized by the belief that traits and abilities are unchangeable, growth mindsets are characterized by the belief that traits and abilities can grow and develop over the lifespan. Research has shown that holding a growth mindset tends to be more adaptive than holding a fixed mindset across a wide variety of settings. To this end, the research team conducted a review of the academic and military-specific literature on mindset theory and research, existing mindset interventions, and applications of mindset research in military contexts. The insights from this literature review will be used to inform the development of Army-specific mindset measures and interventions to foster a growth mindset within an Army context.

Procedure:

The research team conducted a comprehensive, multidisciplinary review of academic and military-specific literature to address three main goals: 1) review existing theory and research on growth and fixed mindsets; 2) review existing documentation on growth and fixed mindsets in military contexts; 3) inform potential interventions to enhance growth mindset in Soldiers. To do so, we entered a list of search terms into relevant academic or Army/military search engines and saved all relevant results. We then applied a list of inclusion and exclusion criteria to each of the publications. Finally, we reviewed each included publication and extracted key themes and insights relevant to this effort.

Findings:

This report summarizes key insights obtained from our review of the literature related to mindset theory and research. In general, our findings focus on how mindset has been conceptualized and measured in previous research, the effects of mindset on important individual and group-level outcomes, how mindsets can be changed through targeted interventions, and how mindset has been discussed in military contexts. We found that a person's mindset has been shown to impact a variety of outcomes in the domains of motivation and self-regulation;

perceptions, attributions, and judgments; resilience and coping; performance and achievement; and organizational outcomes. Moreover, we found that the mindset of teachers, mentors, and managers can influence the outcomes of the students and employees with whom they interact. Finally, we found evidence that growth mindset interventions can shape people's motivation, behavior, and performance; however, the effects of such interventions may be limited to specific contexts and populations. In general, the findings from this review support the notion that fostering a growth mindset among NCOs may indeed facilitate improved professional development processes and outcomes among the JE Soldiers that they lead.

Utilization and Dissemination of Findings:

This report may be used to inform future applications of mindset theory and research to the Army context. For example, this report could be used to inform the development of a measure of mindset that is tailored for use in an Army context. Insights may also be used to develop an intervention designed to foster growth mindset among NCOs and, ultimately, to improve professional development outcomes among the JE Soldiers they lead.

IMPLICATIONS OF MINDSET ON PROFESSIONAL DEVELOPMENT OF ARMY SOLDIERS

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IMPLICATIONS OF MINDSET ON PROFESSIONAL DEVELOPMENT OF ARMY SOLDIERS

To help ensure the readiness of its force to defeat all enemies, the U.S. Army has positioned itself as a learning organization that emphasizes the professional development of Soldiers at all levels (Department of the Army, 2015, 2017b, 2021; King, 2017; TRADOC, 2017). As a result, professional development opportunities and tools are embedded throughout the Soldier Life Cycle—from a junior enlisted (JE) Soldier's enlistment through their transition back to civilian life (Department of the Army, 2017a). Professional development includes, but is not limited to, participating in activities such as training, counseling, mentoring, and coaching (each of these activities is described in more detail below) to help each Soldier develop the skills they need to fulfill the duties of their Military Occupational Specialty (MOS).

Professional development is critical among the JE ranks, in which Soldiers are expected to "keep the Army running" by performing essential duties (Irving, 2018). Junior enlisted Soldiers are expected to rapidly develop not only the technical competencies required of their positions, but also the core characteristics of the professional Soldier, such as discipline, leadership, and Army virtues (Daugherty et al., 2017). Army leaders, and particularly noncommissioned officers (NCOs), assume principal roles in developing JE Soldiers because they are primarily responsible for the day-to-day activities within a unit (Department of the Army, 2015, 2017a, 2019a; Desinor, 2013; Wenger et al., 2018). However, NCOs at different echelon levels and duty positions contribute to JE Soldier professional development in different ways. For example, junior NCOs in duty positions like team or squad leader typically interact directly with JE Soldiers during daily operations, whereas mid-level and senior NCOs, such as those at the platoon, company, and battalion levels, are responsible for setting the developmental tone and culture of their units. Furthermore, NCOs are influential in establishing the unit's command climate, which is indicative of the unit's values and is potentially predictive of its success (Adis et al., 2020; Murray, 2003). Mid-level and senior NCOs are also responsible for directly developing their subordinate junior NCOs, ensuring that they translate intent into action (Department of the Army, 2008).

The Army equips its NCOs with a wide range of developmental tools and techniques to aid them in developing their Soldiers (e.g., *The Leader's Guide to Soldier Development*; U.S. Army Forces Command, n.d.; *The Army Leader Development Program*, Department of the Army, 2013). In addition, the Army has recently implemented the People First Initiative to enhance Army-wide developmental techniques and ensure that the United States sustains its globally superior force. These Army-wide directives are translated by NCOs and applied during their day-to-day interactions with JE Soldiers. Although NCOs are, as a whole, well equipped to develop the Soldiers they lead, they still face challenges in this area.

First, the nature of NCOs' interactions with their Soldiers and the extent to which they incorporate Army-wide developmental techniques and doctrinal guidance into professional development activities with their Soldiers may be affected by each NCO's own philosophy of learning and training. Second, JE Soldiers have their own perspectives regarding what effective learning and training looks like and about both their own and their peers' capacity to benefit from various developmental activities. Finally, it should be acknowledged that Soldier development takes place within the unique Army environment, which is likely to influence

Soldiers' beliefs regarding development, and may in turn create either opportunities or barriers for NCOs who strive to foster and sustain a command climate that is maximally supportive of the development of those in their charge.

A concept with potential to help the Army better understand and address these challenges is "mindset," which is defined as the beliefs that individuals hold about the fixedness or malleability of people's traits and abilities (Dweck, 1999). Those who believe that people's traits and abilities are unchangeable fall on one end of the continuum and are described as holding a "fixed" mindset. In contrast, people who believe that traits and abilities are malleable fall on the other end of the continuum and are described as holding a "growth" mindset.

Research has shown that individuals' developmental outcomes and performance are enhanced when both they and the organizational contexts in which they are situated demonstrate higher levels of growth mindset (See Dweck 1999, 2008; Murphy & Reeves, 2020). In recent years, it has been suggested that fostering a growth mindset could be a means to increase training efficacy among members of the military (e.g., Alessio & March, 2021; Schomaker, 2020; Schwarz, n.d.). However, a large-scale examination of what mindset "looks like" in the Army has yet to be conducted. An understanding of how mindset manifests in Soldiers and is influenced by the various aspects of the Army environment is expected to inform how a growth mindset can be more successfully fostered and sustained among NCOs and their Soldiers.

Here, we examine the extant literature on mindset to inform the next steps of assessing mindset within the Army, with a particular focus on the JE Soldier and NCO relationship; and, developing methods that may help foster a growth mindset in the dynamic Army environment. In this report we will provide a background understanding of the purpose, function, and state of JE Soldier professional development in the Army. A review of existing theory, research, and other relevant existing documentation (e.g., research, articles in periodicals) on growth and fixed mindsets will lay the foundation for our efforts. Specifically, we will focus on identifying and reviewing materials related to growth and fixed mindsets in military contexts. After reviewing and consolidating the information we will develop recommendations that will inform efforts to develop growth mindset interventions specific to the professional development of Soldiers.

Background: Soldier Professional Development

To inform the potential connection between JE Soldier professional development and mindset, we scanned Army doctrine, technical reports, and informal publications relevant to professional development in the Army in general, as well as key developmental activities of NCOs specifically: training, counseling, mentoring, and coaching. Doctrine relevant to nonpunitive corrective measures, a developmental tool where NCOs have specific authority, was also reviewed.

Overview of Soldier Professional Development

The Army defines professional development as "the deliberate and continuous process of education, training, and experience that prepares Soldiers and Army Civilians of character, competence, and commitment to perform present and future duty in accordance with the Army Ethic" (Department of the Army, 2017a, p. 4). Furthermore, the Army emphasizes lifelong learning, meaning that Soldiers are challenged to continually set goals and assess their progress

toward achieving them (Department of the Army, 2008). Participating in developmental activities can lead to more focused goals, greater self-awareness, greater understanding of one's potential, elimination of developmental barriers, and the development of plans of action (Department of the Army, 2020b). As the Army develops future leaders, a combination of formal training and on-the-job experience is used to both help JE Soldiers excel in their current roles, and to prepare them to advance in their careers (Department of the Army, 2008). Furthermore, Soldiers develop in three learning domains: institutional, operational, and self-development (Department of the Army, 2008, 2017b):

- The *institutional* domain includes Army centers/schools that provide initial training and subsequent functional and professional military education and training;
- The *operational* domain includes training activities scheduled by unit leaders for individuals, units, and organizations to participate in; and,
- The *self-development* domain involves planned, goal-oriented learning that reinforces and expands an individual's knowledge base and increases self-awareness.

The majority of Soldier professional development occurs within the operational domain, and, as a result, Army leaders are responsible for developing those junior to them to the fullest extent possible (Department of the Army, 2008, 2017a, 2017b). As part of the Army's Leadership Requirements Model, Army leaders are expected to possess multiple competencies for successful performance, with development of themselves, other Soldiers, and their unit being central to their role (Department of the Army, 2008). Specifically, they develop others by providing knowledge and feedback through training, counseling, coaching, and mentoring. The knowledge and feedback they provide significantly contributes to Soldier development, accelerates learning from day-to-day experiences, and translates into better Soldier performance (Department of the Army, 2019a). Army leaders inspire and influence others toward goal achievement by motivating Soldiers to take actions, focus their thinking, and make decisions that benefit the unit or organization as a whole (Department of the Army, 2015).

In general, NCOs conduct the daily operations of the Army and are relied on for mission execution and decision making (Department of the Army, 2008). A critical aspect of an NCO's job duties is to develop the Soldiers they lead. Furthermore, each echelon of NCOs are responsible for the development of more junior NCOs who, in turn, develop the JE Soldiers in the unit (Department of the Army, 2021). Given that the core roles and responsibilities that the Army has established for NCOs—to lead, train, and care for their Soldiers (Department of the Army, 2008)—focus on an NCO's role in Soldier professional development, Army doctrine sends a clear message regarding the importance of the NCO in the development of their Soldiers. Furthermore, although all Army leaders have a role in Soldier professional development, NCOs are considered the standard-bearers of training, leading, coaching, mentoring, and generally caring for Soldiers (Department of the Army, 2008). They also are responsible for administrating nonpunitive corrective measures to ensure that appropriate standards of performance are maintained. Therefore, Army doctrine suggests that NCOs' ability to train, counsel, administer nonpunitive corrective measures, mentor, and coach to develop competent Soldiers of character is critical to the Army's success. (Department of the Army, 2020).

Soldier Professional Development Activities

Training

The Army trains Soldiers to fight and win, to preserve the peace, and to decisively defeat enemies (Department of the Army, 2021). Learning through training allows the Army to prepare Soldiers for mission execution (e.g., to shape operational environments, prevent conflict, and conduct combat; Department of the Army, 2019b). The type and amount of training received varies by MOS, skill, and the needs of the unit (Department of the Army, 2017a; Wilson, 2006).

All Army activities aligning with training occur within the Army culture, which embraces values and ethics, the Warrior Ethos, standards, and enduring principles and imperatives (Department of the Army, 2017b). By design, the environments where learning occurs are as close to realistic as possible; they use challenging and relevant scenarios that are expected to be performed to the highest standards (Department of the Army, 2021). Training is conducted both individually and collectively, with individual training proficiency setting a foundation for collective training proficiency. Both forms of training involve participating in clearly defined, observable, and measurable tasks (Department of the Army, 2021).

NCOs' Role in Training. Army leaders play a key role in the success of unit training, as they have the opportunity to contribute their experiences to the body of knowledge throughout their careers (Department of the Army, 2008). Responsibility for prioritizing training, facilitating training, evaluating training proficiency, and meeting performance requirements within a unit lies with commanders and leaders at higher echelon (Department of the Army, 2021). However, NCOs are responsible for setting the foundation for training within their units and ensuring they are battle-ready. They oversee Soldier, crew, and small-team training proficiency on mission-essential tasks and advise commanders on training aspects. In sum, they ensure their unit—and its Soldiers—train on its most important tasks, sustains its strengths, and improves upon its weaknesses.

Counseling

Feedback from leaders to subordinates within a unit is provided through a standardized process known as counseling. Counseling, which is central to Soldier professional development, guides the creation of action plans that a subordinate Soldier can use to achieve their own goals as well as Army goals. Counseling is conducted with every Soldier, regardless of level or perceived Soldier potential (Department of the Army, 2017a). The types of developmental counseling include event, performance, and professional growth counseling (Department of the Army, 2020a):

- *Event-oriented counseling* involves a specific event or situation. For instance, counseling may occur to prepare for deployment, or to address exceptional or substandard performance or a personal crisis;
- *Performance counseling* is the review of a subordinate's duty performance during a specified period and is required under Army evaluation reporting systems; and,
- *Professional growth counseling* includes planning for the accomplishment of short- and long-term individual and professional goals (e.g., training opportunities, reenlistment options, potential promotion).

Although understanding these categories individually can help to focus a particular conversation, there may be times when counseling sessions incorporate elements of multiple categories (Department of the Army, 2014). Furthermore, subordinate Soldiers should be active participants in the counseling process. During counseling, leaders help subordinates identify strengths and weaknesses, and then together they create plans of action to grow and improve (Department of the Army, 2020b).

NCOs' Role in Counseling. Counseling is required at prescribed times and is considered one of a leader's most important professional development responsibilities, as it leads to Soldiers who are proficient in their mission-essential tasks, resilient, satisfied, and prepared for the future (Department of the Army, 2014). Counseling provides an opportunity for leaders to communicate interest in their subordinates' development, how their subordinates' role fits within the unit, acknowledgement for exceptional performance, resources for continued development, and how subordinates can be empowered to develop; and to correct performance (Department of the Army, 2014). Counseling also empowers subordinates to develop professionally and become more self-reliant (Department of the Army, 2014). Leaders vary in their counseling style, and it is critical for them to be aware of their own style so they can adapt it as needed to improve their counseling effectiveness (Department of the Army, 2014).

Nonpunitive Corrective Measures

Nonpunitive corrective measures are considered primary tools for teaching proper standards of Soldier conduct and performance. Nonpunitive corrective measures are exercised before leaders impose more serious "last resort" nonjudicial punishment (e.g., Article 15; Department of the Army, 2020a). Nonpunitive corrective measures include a variety of actions, such as the denial of a pass or other privileges, additional counseling, an administrative reduction in grade, administrative reprimands and admonitions, additional training, a bar to continued service, and MOS reclassification (Department of the Army, 2020a). According to Army doctrine, one of the most effective nonpunitive corrective measures is additional training or instruction related to the task performance shortcoming (Department of the Army, 2020a).

NCOs' Role in Nonpunitive Corrective Measures. As the NCO Creed states, NCOs are responsible for "[being] fair and impartial when recommending both rewards and punishments," (Onesto-Person, n.d.; U.S. Army, n.d.). To prevent incidents from escalating to ones that require more serious punishment (e.g., courts-martial or nonjudicial punishment), NCOs administer minor nonpunitive corrective actions that are appropriate for the behavior or performance deficiency they are trying to correct (Department of the Army, 2020a; Onesto-Person, 2018).

Mentoring

According to Army doctrine, mentoring is a voluntary, but encouraged, developmental relationship between a Soldier of greater experience and one of lesser experience. This relationship is characterized by mutual trust and respect, and it exists beyond the scope of the chain of command or NCO support channel. An effective mentor-mentee relationship is one where a mentor provides the mentee advice and counsel that positively affects the mentee's personal and professional development. A mentoring relationship may enhance a Soldier's skills, clarify personal or professional goals, and help the mentored Soldier develop plans of

action for improving skills (Department of the Army, 2015). Critical to the successful development that results from a mentoring relationship is the value a mentee places on assessment, feedback, and guidance received from their mentor (Department of the Army, 2017a).

NCOs' Role in Mentoring. Mentoring can occur across various levels of rank, such as between peers and between senior NCOs and junior NCOs. Successful mentoring relationships typically involve a mentor with knowledge and experience they wish to share with a mentee over time, regardless of their rank relationship (Department of the Army, 2020b). Furthermore, becoming a mentor is not reliant on a Soldier's rank or leadership status. Instead, it is determined by their success and another Soldier's desire to follow in their path. The mentee's selection of their mentor should not be based upon position, rank, or MOS (Renken, 2017).

Coaching

Coaching involves a Soldier guiding another Soldier in developing new or enhancing existing skills through practice. A coach helps the Soldier they are coaching to understand and appreciate where they are in terms of current skill level and their potential for development. Ultimately, they show them through practice how to enhance their knowledge and skills (Department of the Army, 2017a).

NCOs' Role in Coaching. Coaching is considered uncommon in the Army because of the time constraints to engage in the slow growth process through this manner (Department of the Army, 2020). However, when coaching does occur, its success may be determined by multiple factors, such as the coach's coaching style, coaching ability, and knowledge in the area in which they are coaching. Some specific guidance offered by the Army to enhance coaching success include using the phrase "try this," using soft influence tactics, and focusing on personal development (Department of the Army, 2020).

Next Steps

The scan of the relevant Army doctrine provided a foundation on which to draw connections between Soldier professional development activities and mindset. Next, we present our methodology for reviewing the academic and military-specific literature about mindset theory and research, mindset measurement, and mindset interventions. The goal of this review is to inform the development of an Army-specific mindset measure and a growth mindset intervention to be used with Soldiers.

Methodology

We conducted a multidisciplinary review of Army, military, and academic literature to address each aim of this effort, as outlined above. The search itself was broken into three phases: 1) a targeted search of non-doctrinal Army literature and Department of Defense (DoD) publications, as well as informal, non-military publications discussing mindset within military contexts; 2) a systematic search of academic literature on existing theory and research on mindsets; and 3) a systematic search of academic literature on existing growth mindset interventions.

For each of these phases, we developed a list of search terms,[1] entered them into the relevant academic or Army/military search engine, and saved all relevant results. We limited the search to peer-reviewed publications that were published in English and for which there was a full text available. In addition, we excluded articles that met one or more of the following exclusion criteria:

- Publications not relevant to mindset;
- Publications focused on children younger than middle school;
- Neuroimaging publications;
- Publications focused on populations that are too specific to generalize (e.g., clinical populations, people with substance use disorders, or people with a developmental disability);
- Publications that focus on mindsets of traits that are not relevant to the current study (i.e., traits other than intelligence, skills/abilities, personality, or moral character);
- Publications focused on genetics; and,
- Publications that were an editorial or review of a book chapter/book/other publication.

To be considered for inclusion, the article must have been determined to be relevant to one of the three primary goals of the literature review, as outlined above. The research team applied the inclusion and exclusion criteria to each of the search results. Through this process, a total of 238 publications were identified. A team of researchers then reviewed each of the identified publications and extracted key information about how each of the following categories, if applicable: how the article conceptualized mindset, the article's research methodology, the context in which the study was conducted, key empirical findings, a summary of the mindset intervention, evidence of the effectiveness of the intervention, and overall conclusions. Below, we summarize the main insights obtained from this process.

Overview of Mindset Theory

Mindsets—originally referred to as "implicit theories," "implicit person theories," or "lay theories" in published literature—are the beliefs that people hold about the fundamental nature of traits and abilities (Dweck, 1999, 2008; Dweck & Leggett, 1988). On one end of the continuum, people can hold more of a fixed mindset (also referred to as an "entity theory") about the malleability of people's traits and abilities. When people hold a more fixed mindset, they tend to believe that a person's traits and abilities are inherent qualities that cannot be changed. For instance, when people hold a fixed mindset about intelligence, they tend to believe that people have a set amount of intelligence. That is, they believe that people are simply more intelligent than others and there is little one can do to become more intelligent. On the other end of the continuum, people can hold more of a growth mindset (also referred to as an "incremental theory"), which is characterized by the belief that people's traits and abilities are malleable and can change in response to learning, effort, or experiences. For instance, when people hold a more growth mindset about intelligence, they tend to believe that intelligence can increase and grow in response to effort and learning (Dweck, 1999).

[1] See Appendix A for a full list of search terms and inclusion/exclusion criteria.

Mindsets as a Perceptual Lens

Dweck et al., (1995; see also Molden & Dweck, 2006) theorized that one's mindset acts as a "meaning system" that shapes how they interpret events they experience and the meaning they attach to these events. For instance, when a person holds a fixed mindset and fails to achieve an important personal goal, they may view this failure as a sign that they permanently lack some critical trait or ability. As a result, they are unlikely to engage in developmental or improvement-oriented responses to the failure. Instead, they are likely to engage in maladaptive responses such as downplaying the importance of the failure or attempting something easier (Molden & Dweck, 2006). In contrast, when a person holds a growth mindset, they tend to view the same event as a sign that they need to learn new skills, put forth additional effort, or try a different strategy. Through this system of beliefs and perceptions, Molden and Dweck (2006) argue that mindsets can affect a variety of basic psychological processes such as social perception and self-regulation.

Foci of Mindsets

Research has shown that people can hold mindsets about a variety of traits, abilities, and skills (Dweck, 1999, 2008). A large amount of research, for example, has examined the beliefs that people hold about the malleability of basic, broad traits such as general intelligence, personality, morality, or the general "kind of person" someone is (see Dweck, 1999 for a review). For instance, research on mindsets about intelligence shows that people tend to vary in terms of whether they believe that intelligence is innate and fixed or more malleable. Similarly, people vary in terms of whether they believe people's basic personalities are fixed or malleable. When people have a mindset about personality that is more fixed, they tend to believe there are certain "types" of people and there is little they can do to change this, whereas when people hold a more growth mindset about personality, they tend believe that people's basic personalities can change throughout their lives (Dweck, 1999, 2008). People may also hold beliefs about whether people's general attributes, including both ability *and* personal characteristics and traits, can change. Such beliefs are more general than mindsets of personality or intelligence and have been referred to in published literature as "implicit person theories" (Heslin, 2003; Heslin et al., 2005, 2006).

In addition to mindsets about general characteristics, researchers have also examined mindsets about a variety of more specific traits and abilities, such as shyness (Beer, 2002), negotiation skills (Kray & Haselhuhn, 2007), entrepreneurial abilities (Burnette, Pollack, et al., 2020), computer science ability (Burnette, Hoyt, et al., 2020), and more. These more specific mindsets have been shown to predict motivation and behavior relevant to their specific domain (see Dweck, 1999 for a review). For example, Kray and Haselhuhn (2007) found that people who held a more growth mindset about negotiating skills performed better in a negotiation situation (i.e., coming to a more preferable arrangement in an employment negotiation) than did those who held a more fixed mindset about negotiation skills.

Researchers have also begun to extend this research by examining how mindsets can manifest at the organizational level (Canning et al., 2020; Emerson & Murphy, 2015; Murphy & Dweck, 2010). These "organizational mindsets" are the shared beliefs that people in organizations hold about whether abilities are fixed or malleable, and they are communicated via an organization's policies, practices, and procedures and through messages from powerful people

in organizations (e.g., directors, executives, leaders, supervisors; Murphy & Reeves, 2019). Whereas some organizations (and groups) have shared beliefs that align more with a fixed mindset, others have shared beliefs that align more with a growth mindset (Canning et al., 2020). The shared beliefs in fixed mindset organizations suggest that people's traits and abilities are relatively fixed and unchangeable, communicating the idea that people either "have it" or they do not, and there is little they can do to change this. In contrast, the shared beliefs in growth mindset organizations suggest that people can grow and develop their traits and abilities with time, effort, and impactful professional development strategies. Just as individual-level mindsets can shape individual-level outcomes, organizational mindsets can shape organizational outcomes, and, in doing so, powerfully affect employee experiences in organizations (Canning et al., 2020). We describe the differences between growth mindset organizations and fixed mindset organizations in greater detail below.

Malleability of Mindsets

Although people are often described as holding *either* a fixed mindset *or* a growth mindset, research has shown that people's mindsets can shift in response to situational triggers or direct intervention (Aronson et al., 2002; Beer, 2002; Chiu et al., 1997; Heslin et al., 2005; Kray & Haselhuhn, 2007; Nussbaum & Dweck, 2008). Heslin, Keating and Ashford (2020) have proposed a "dual process" model of mindsets. This model posits that individuals typically possess a *dispositional* mindset that is relatively stable and is characterized by fixed- or growth-oriented assumptions about the fundamental nature of traits and abilities (Heslin et al., 2020). However, people may also be situationally triggered or primed to temporarily hold a different, *deliberate* mindset (Heslin et al., 2020). In such cases, an individual's dispositional mindset will be temporarily overridden by the deliberate mindset. For instance, if an individual who tends to hold a fixed dispositional mindset reads an article describing how traits such as intelligence or personality are malleable, they may be shifted into a deliberate growth mindset and their motivation, behaviors, and outcomes may change as a result. The dispositional mindset therefore represents the "default" mode of operating, whereas the deliberate mindset represents an effortful, temporary override of this default.

Deliberate mindsets can be cued or primed in a variety of ways. For instance, a large number of studies have successfully primed a growth or fixed mindset by asking participants to read an article about the malleability or fixedness of a trait or ability (e.g., Aronson et al., 2002; Beer, 2002; Kray & Haselhuhn, 2007; Nussbaum & Dweck, 2008). Such articles typically present real (or ostensibly real) scientific research showing that traits such as intelligence or personality are either malleable or fixed (e.g., Nussbaum & Dweck, 2008). These manipulations have been shown to be effective in changing people's mindsets in short-term laboratory experiments. Deliberate mindsets may also arise from other situational cues, including an organization's culture (e.g., as manifested in the organization's reward structure, hiring policies, or performance review process; Murphy & Dweck, 2010), task instructions (Wood & Bandura, 1989), or exposure to an individual who holds a growth or fixed mindset (Burkley et al., 2017). For instance, in one study, participants who read a vignette about a person who endorsed a growth mindset subsequently reported endorsing a more growth mindset than did those who read a vignette about a person who endorsed a fixed mindset (Burkley et al., 2017). Finally, deliberate mindsets can be cued via direct growth-mindset interventions that focus on the malleability of traits and attributes (described in more detail below; Heslin et al., 2005).

Although the longevity of such interventions on people's mindset is unclear, there is evidence that the effects may persist up to six weeks (Heslin et al., 2005). Whether the interventions lead to longer-term changes in people's mindset may depend on the continued presence of growth mindset cues in the context (Heslin et al., 2020).

Measuring Mindset

To understand the degree to which a person endorses a growth or fixed mindset, a number of measurement tools have been developed and empirically validated. One of the earliest measures of mindset was developed and validated by Dweck (1999, 2008) and assessed people's beliefs about the fixedness or malleability of general intelligence. The measure consists of an 8-item self-report scale in which participants are asked to rate their agreement with both fixed mindset statements (e.g., "You have a certain amount of intelligence and you can't really do much to change it,") and growth mindset statements (e.g., "No matter how much intelligence you have, you can always change it quite a bit,"). Given that researchers have conceptualized mindset as existing on a continuum (i.e., with fixed mindset at one end and growth mindset on the other; Dweck, 1999), a composite mindset measure is typically formed by reversing the fixed mindset items and averaging across all items. This scale has been adapted into a three-item growth mindset scale (Hong et al., 1999) and an 8-item "kind of person scale" (Dweck, 1999), both of which have been widely used throughout published literature. The 8-item kind of person scale is used to assess people's beliefs about the fixedness or malleability of the basic type of person someone is and includes items like "The kind of person someone is something very basic about them and it can't be changed much" (Dweck, 1999).

Variations of these scales have been adapted for specific populations and to assess participants' beliefs about the malleability of more-specific traits. For instance, Yeager et. al., (2016) adapted the original items to measure participants' mindsets about math ability (e.g., "Being a 'math person' or not is something that you really can't change. Some people are good at math and other people aren't"). Lottero-Perdue and Lachapelle's (2020) adaption focused on engineering ability (e.g., "You can learn new things about engineering, but you can't really change how good you are at engineering;" "You can change how good you are at engineering a lot").

Researchers have also shown that people's mindsets about different traits and abilities may be *domain specific*. That is, people may hold a more growth mindset about one trait or ability but a more fixed mindset about a different one (Dweck et al., 1995; Scott & Ghinea, 2013). For instance, one study found that people's mindset about their general intelligence and their mindset about their computer programming abilities formed two distinct factors (Scott & Ghinea, 2013). This research also found that the more targeted measure of mindsets about computer programming better predicted time spent engaging in behaviors aimed at developing computer programming aptitude than did the more general intelligence mindset measure. These results suggest that tailoring mindset measures may be particularly useful when attempting to predict targeted outcomes or behaviors. In contrast, when attempting to predict more general outcomes, general mindset measures may be more useful.

Researchers have also drawn a distinction between measures that target mindset beliefs about oneself versus mindset beliefs about other people. Measures focused on the self typically include items such as, "You have a certain amount of intelligence and you can't really do much

to change it" whereas others-focused measures include items such as, "All people can change even their most basic qualities." Self-focused mindset measures are used to predict self-focused outcomes, such as people's individual motivations, perceptions, and behaviors, and others-focused mindset measures have been shown to be more useful in predicting people's perceptions, reactions, and behaviors toward others (Dweck, 1999).

More recent research has developed measures to assess organizational mindsets (Murphy & Dweck, 2010). These measures typically assess people's perceptions of whether people in their organization, in general, believe that attributes are fixed or malleable. For example, Canning et al., (2020) assessed organizational mindsets by asking people to rate their agreement with items such as, "This company seems to believe that employees have a certain amount of talent and they can't really do much to change it" (p. 630).

Effects of Mindsets

Research has linked people's mindset beliefs to a broad range of psychological constructs. These constructs can be broadly organized into the domains of motivation and self-regulation; perceptions, attributions, and judgments; resilience and coping; performance and achievement; and organizational outcomes (e.g., Dweck, 2008; Murphy & Reeves, 2019; Rattan & Ozgumus, 2019; Yeager & Dweck, 2012). We summarize the effects of mindset across each domain below.

Motivation and Self-Regulation

Mindset has been linked to a wide variety of motivational and self-regulatory processes. A large amount of research, for instance, has shown that mindsets can broadly shape the types of goals people adopt (see Dweck & Leggett, 1988). People who hold more of a fixed mindset tend to pursue performance goals (i.e., goals that focus on high performance as a desired end result) because they are concerned demonstrating their high performance and, therefore, their high level of natural ability. In contrast, those who hold more of a growth mindset tend to pursue learning goals (i.e., goals that focus on learning a new skill or ability as an end result; Burnette et al., 2013; Dweck & Leggett, 1988). A meta-analysis of over 100 studies spanning diverse populations and domains confirmed that growth mindset is positively correlated with learning goals and negatively correlated with performance goals (Burnette et al., 2013).

In addition, several studies suggest that holding a growth mindset can meaningfully impact individuals' motivation and perseverance (Bettinger et al., 2018; Blackwell et al., 2007; Burgoyne et al., 2018; Burnette, Pollack, et al., 2020; O'Brien & Lomas, 2017). Using the "make-a-math" worksheet developed and validated by Yeager et al. (2016), in which individuals are asked to create a math worksheet by selecting from a bank of math problems that range in difficulty, both Burgoyne (2018) and Bettinger et al., (2018) found that participants in the growth mindset condition chose significantly more difficult math problems than those in the control condition. Similarly, teacher reports from Blackwell et al.,'s (2007) study demonstrated a significant difference between the intervention and control groups, with 27% of students in the experimental group showing positive changes in behavior, such as independently seeking out additional help with assignments, compared to only 9% of the control group.

Research has also linked mindsets to a variety of other motivational and self-regulatory processes, including confidence and efficacy in goal pursuit (Burnette et al., 2013; Burnette, Pollack, et al., 2020), interest and engagement (Aronson et al., 2002; Burnette, Hoyt, et al., 2020; Burnette, Pollack, et al., 2020), responses to goal-relevant feedback (Nussbaum & Dweck, 2008), and whether people use self- or other-referent criteria for evaluating their progress toward attaining their goals (Heslin, 2003). In one study, participants who were primed to hold a growth mindset of leadership ability (i.e., by reading an article that espoused a growth mindset of leadership ability) reported greater self-efficacy about their leadership abilities than did those who were primed to hold a fixed mindset about leadership ability (i.e., by reading an article that espoused a fixed mindset of leadership ability; Hoyt et al., 2012, Study 2).

Another series of studies found that when computer science students' fixed mindsets were targeted through a growth mindset intervention, they subsequently showed greater interest in computer science (Burnette, Hoyt, et al., 2020). Nussbaum and Dweck (2008) found that when participants who were primed to hold a growth mindset received negative performance feedback, they were more likely to engage in remedial or improvement-oriented behaviors than those who were primed to hold a fixed mindset. Finally, research has shown when people hold a more fixed mindset they tend to evaluate their career success relative to the attainments and expectations of others. In contrast, those who are more growth-oriented tend to focus on their personal aspirations and progress (Heslin, 2003).

Perceptions, Attributions, and Judgments

Mindsets have also been linked to a variety of perceptions, attributions, and judgments. For instance, people with a more fixed mindset tend to have more negative perceptions of effort than do those with a more growth mindset. That is, those with a more fixed mindset believe that working hard means that one does not have strong, natural ability (Blackwell et al., 2007). Similarly, research has linked mindsets to attributions for failure. Whereas those with a fixed mindset tend to attribute failures to a stable lack of ability, those with growth mindsets tend to attribute failure to insufficient effort (Blackwell et al., 2007; Hong et al., 1999). Mindsets can also affect people's perceptions and attributions of others. For instance, Levy, Stroessner, and Dweck (1998) found that people with a more fixed mindset were more likely to use stereotypes about racial and occupational groups when forming impressions of others than were those with a more growth mindset. Other work has found that when people hold a more fixed mindset, they are more likely to make internal, person-based attributions for others' behavior than those with a more growth mindset. In one illustrative study, for example, Yeager, Miu, et al., (2013) found that adolescents who endorsed a more fixed mindset were more likely to attribute experiences of social rejection to the other person's hostile intent, whereas those who endorsed a growth mindset were more likely to attribute these experiences to situational factors (e.g., a misunderstanding).

In a related line of research, Heslin, Latham, and VandeWalle (2005) examined how mindsets shape people's perceptions of others' performance (i.e., their performance appraisals) after situations in which they initially perform poorly. Managers were asked to evaluate an employee after viewing two instances in which the employee performed poorly, and then again after viewing two instances in which the employee performed well. The researchers were interested in how managers' mindsets shaped their perceptions of improvement in the employee's performance after evaluating their initial poor performance. Results indicated that

managers who held more of a growth mindset rated the employee's subsequent performance more positively, indicating that they recognized the employee's improvement more than those who held a fixed mindset. In contrast, when managers held a fixed mindset, they were reluctant to change their initial evaluations of the employee, even when subsequent evidence suggested their initial evaluations were wrong.

Finally, mindsets can shape people's judgments in response to others' moral transgressions (e.g., Chiu et al., 1997; Gervey et al., 1999). For instance, Chiu, Hong, and Dweck (1997) found that individuals who endorsed a more fixed mindset were more likely to recommend punishment for a professor who treated a student unfairly, whereas individuals who endorsed a more growth mindset were more likely to recommend additional education for the professor. Similarly, Gervey, Chiu, Hong, and Dweck (1999) found that people who endorsed a more fixed mindset were more likely to use irrelevant, disposition-based information to determine the guilt of a defendant in a fictitious murder trial, whereas those who endorsed a more growth mindset gave greater weight to direct evidence of the defendant's guilt.

Resilience and Coping

Researchers have also shown that mindsets can shape people's resilience and coping in response to negative events (e.g., Bettinger et al., 2018; Burgoyne et al., 2020; Burnette, Knouse, et al., 2020; Dweck & Leggett, 1988). For instance, a large amount of research has documented the relationship between mindsets and mastery- versus helplessness-oriented responses to failure (Blackwell et al., 2007; Dweck & Leggett, 1988). Whereas mastery-oriented responses are characterized by seeking out challenges and sustaining effort in the face of obstacles and setbacks, helplessness-oriented responses are characterized by avoiding challenges and withdrawing effort in the face of obstacles and setbacks (Dweck & Leggett, 1988). Blackwell, Trzesniewski, and Dweck (2007) found that having a growth mindset was positively correlated with the use of mastery-oriented responses in response to failure among a sample of adolescents transitioning to middle school. Growth mindset has also been shown to be positively correlated with a number of similar constructs, including grit (i.e., people's passion and perseverance in pursuit of long-term goals; Burgoyne et al., 2020), persistence in the face of challenges (Bettinger et al., 2018), and psychological distress (Burnette et al., 2020). For instance, a recent meta-analysis of 72 studies with over 17,000 participants (Burnette et al., 2020) found that growth mindset was negatively correlated with psychological distress and positively correlated with the value of psychological treatment and the use of active coping strategies.

Performance and Achievement

There has been substantial interest among researchers as to whether mindsets predict performance and achievement. Numerous studies have found a positive correlation between growth mindset and performance or achievement across a variety of populations, including middle school students (e.g., Blackwell et al., 2007), high school students (e.g., Claro et al., 2016; Yeager et al., 2019; Yeager, Romero, et al., 2016), college students (e.g., Paunesku et al., 2015; Yeager, Walton, et al., 2016), and working professionals (Zingoni & Corey, 2017).

In one seminal study, Blackwell, Trzesniewski, and Dweck (2007) found that growth mindset predicted improvements in 7th grade students' grade point averages over time, whereas fixed mindset predicted no change. Researchers have also found, through randomized control

trials, causal evidence of the impact of growth mindset interventions on academic achievement (e.g., Blackwell et al., 2007; Yeager et al., 2019). In these studies, researchers manipulated growth mindset, often by exposing participants to either a growth mindset article describing how the brain changes and forms new connections in response to learning and experience or to an analogous control article. Several studies have shown that such interventions can yield positive effects on students' academic performance and persistence (e.g., Blackwell et al., 2007; Burnette et al., 2018; Dai & Cromley, 2014; Paunesku et al., 2015; Yeager, Walton, et al., 2016; Yeager et al., 2019). Researchers have also found, through randomized control trials, causal evidence of the impact of growth mindset interventions on academic achievement (e.g., Blackwell et al., 2007; Yeager et al., 2019).

In another seminal study, Aronson, Fried, and Good (2002) administered a growth mindset intervention aimed at reducing the effects of stereotype threat (i.e., the concern among many members of marginalized groups that they may be targeted by negative stereotypes about their group; Spencer et al., 2016) on the academic achievement of Black college students. Previous research has shown that stereotype threat can hinder academic achievement among members of groups for which negative stereotypes about their intellectual ability exist (e.g., Black, Latino/a, and Native American students; students from low socioeconomic backgrounds; women in science, technology, engineering, and math fields; see Spencer et al., 2016 for a review). Aronson, Fried, and Good (2002) theorized that believing that intelligence is malleable may be particularly beneficial to members of groups whose intelligence is impugned by societal stereotypes. More specifically, they hypothesized that a growth mindset intervention would increase academic performance among Black students (Aronson et al., 2002). To test this hypothesis, Black college students were randomly assigned to a growth mindset intervention (i.e., a brief article that described how the brain grows and forms new connections in response to learning) or to an analogous control condition. Black students who received the growth mindset intervention reported greater academic enjoyment and engagement and earned higher grade point averages than did those in the control condition.

A related line of work examined whether holding a more growth mindset could mitigate the negative effects of poverty on academic achievement among a national sample of Chilean high school students (Claro et al., 2016). This work found that students from lower-income families were more likely to endorse a fixed mindset than their peers from higher-income families. Lower-income students who held a more growth mindset, however, showed higher academic performance than their fixed-mindset peers, suggesting that growth mindset may provide a buffer against the negative effects of poverty on academic achievement. Other researchers have also found a growth mindset manipulation leads to better outcomes in students. These outcomes include reduced drop-out rates among first-year college students from disadvantaged backgrounds (Yeager, Walton, et al., 2016), improved grades among low-performing students (Paunesku et al., 2015), and increased academic interest and engagement among rural, low-income adolescent girls (Burnette et al., 2018).

Several studies, however, have failed to find evidence that growth mindset predicts performance (Dixson, 2020; Dixson et al., 2017; Mendoza-Denton et al., 2008; Park & Kim, 2015). Indeed, a recent meta-analysis found only a weak correlation between growth mindset and academic performance (e.g., Sisk et al., 2018). Some researchers have suggested that growth mindset may predict academic achievement outcomes primarily among specific groups and

under certain circumstances, including among academically "at risk" student populations (Paunesku et al., 2015), among students who are targeted by negative stereotypes about their academic abilities (e.g., Black college students; Aronson et al., 2002), during important educational transitions (e.g. during the transition to middle school or college; Blackwell et al., 2007; Yeager, Walton, et al., 2016), or when one is experiencing challenges (e.g., when taking a more challenging course in college; Murphy & Reeves, 2019; see Yeager & Dweck, 2020 for a review).

As previously mentioned, in some cases, the expectation of underperformance for "at risk" student populations can be linked to stereotype threats (Aronson et al., 2002; Good et al., 2003). That is, in contexts where a negative academic stereotype about a particular group (e.g., the stereotype that Black students have lower intellectual abilities than White students or that girls are bad at math) is salient, members of that group may be expected to underperform. However, research has demonstrated that interventions aimed at increasing growth mindset may be particularly beneficial for populations with a salient stereotype threat. For example, building on the seminal work of Aronson, Fried, and Good (2002) described above, Good et al., (2003) found that although 7th graders in the growth mindset condition outperformed their peers in the control condition on standardized math tests, the benefit was particularly marked for female students. Similarly, Yeager et al., (2019) found that lower-achieving students (i.e., students who are expected to perform poorly) in the growth-mindset experimental condition earned higher grade point averages (GPAs) in their core courses by the end of the 9th grade relative to their peers in the control group. Finally, Paunesku et al. (2015) found that although GPA did not differ between the control and intervention groups in the semester prior to the intervention, after the intervention, an interaction result appeared such that at risk students in the growth mindset condition demonstrated more marked increases in GPA than non-at risk students.

Similarly, there is also evidence that growth mindset is related to student retention (Blackwell et al., 2007; Good et al., 2003; Paunesku et al., 2015). For example, Yeager et al. (2016) examined the effect of a growth mindset intervention on retention among college students, defined as continuous full-time enrollment during their first year. Although the results of the first study, which used a sample of outgoing high school seniors from a high-performing charter school, found that an intervention to increase growth mindset had no significant effect on retention, a second study using a sample of incoming freshman at a competitive four-year public university found that the growth mindset intervention significantly increased rates of full-time continuous enrollment among disadvantaged students relative to those in the control condition. The authors posit that one reason for these conflicting findings was that students attending the high-performing charter school had already been systematically exposed to growth-mindset messaging via their high school curriculum, whereas the second sample's exposure to growth-mindset messaging prior to the intervention was more heterogenous. Similarly, Paunesku (2015) found that high school students at high risk of non-completion (i.e., dropping out of high school) assigned to a growth mindset condition completed significantly more core courses than expected based on control group rates. These findings parallel those that indicate that students who are expected to underperform receive a greater benefit from mindset interventions in terms of academic performance than those who are not expected to underperform (Good et al., 2003; Paunesku et al., 2015; Yeager et al., 2019).

The positive effects of holding a growth mindset are not limited to academic contexts; a few studies have shown that holding a growth mindset may predict better performance in organizational contexts, as well. For instance, Kray and Haselhuhn (2007) found that participants who were primed to hold a growth mindset about negotiating (i.e., by reading an article about the malleability of negotiation abilities) performed better during a negotiation than did those who were primed to hold a fixed mindset of negotiation (i.e., by reading an article about the fixedness of negotiation abilities). Also, Zingoni and Corey (2017) found that holding a more growth mindset was positively correlated with the job performance of employees. Taken together, this literature suggests that growth mindset may be associated with higher performance and achievement across both educational and organizational settings. However, the magnitude of these effects varies based on contextual and population-specific factors.

Organizational Outcomes

Beyond employees' performance in organizations, mindset has been linked to a number of other organizational outcomes, including employee engagement and career sustainability (Heslin et al., 2020; Keating & Heslin, 2015), the frequency and quality of coaching behaviors managers provide to their employees (Heslin et al., 2006), procedural justice in managers' behaviors toward their direct reports, and the organizational commitment and organizational citizenship (i.e., willingness to go the extra mile) that employees exhibit in response to their managers' behaviors (Heslin & VandeWalle, 2011). This work suggests that mindset research may provide a powerful tool for shaping the quality of professional development opportunities in the workplace.

Perhaps most notably, recent research has shown that organizational mindsets predict broader cultural aspects of organizations. For instance, Canning et al., (2020) found that Fortune 500 companies that endorsed a more fixed mindset in their mission statements had more negative company cultures (as assessed via Glassdoor ratings) than did those that endorsed a more growth mindset. Moreover, employees of Fortune 1000 companies who perceived that their company endorsed a more fixed mindset reported that their company's culture was characterized by less collaboration and innovation and more unethical behavior than did those who perceived that their company endorsed a more growth mindset (Canning et al., 2020). Canning et al., (2020) found employees who perceived their company to have a more fixed mindset trusted their company less and were less committed to the company than did those who perceived their company to have a growth mindset (Canning et al., 2020). In contrast, Emerson and Murphy (2014) found that organizations that espoused a more growth mindset inspired more trust in the organization and greater commitment from prospective employees overall than did organizations that espoused a more fixed mindset. Moreover, the effects of organizational mindset on organizational trust and commitment were stronger among women, suggesting that organizational mindset might be leveraged to address disparities between men and women in the workplace.

Effects of Others' Mindsets

As previously discussed, in the workplace, managers' mindset can affect the experiences and outcomes of their supervisees. In addition, although most education-based research on mindset have focused on *students'* mindsets, researchers have begun to pay more attention to *teachers'* mindsets. Indeed, a few studies have looked at how mindsets may be linked to the behavior of those in teaching, mentoring, or coaching positions, as changes in teaching or

coaching behavior can also impact student academic outcomes (Daniels et al., 2021; Seaton, 2018). For example, one study found that college students in introductory science, technology, engineering, and math courses taught by professors with a more fixed mindset were less motivated and earned lower grades than did those in courses taught by professors with a more growth mindset, controlling for potential confounding factors such as age, tenure, teaching experience, gender, and race/ethnicity (Canning et al., 2019). Students taught by professors with a more fixed mindset were also less likely to report that their professor "emphasized learning and development" compared to students taught by professors with a more growth mindset. Moreover, the negative effects of having a professor with a more fixed mindset were particularly harmful for students from underrepresented racial minority groups (i.e., Black, Latino/a, and Native American students; Canning et al., 2019).

Researchers have also examined how teachers' mindsets shape the psychological experiences of their students (Muenks et al., 2020). Compared to students who perceive their professor as holding a more growth mindset, those who perceive their professor as endorsing a more fixed mindset report a lower sense of belonging, greater evaluative concerns, a greater sense of imposter syndrome, and higher negative affect (Muenks et al., 2020). These experiences, in turn, have been shown to predict lower academic motivation, interest, engagement, and performance (Muenks et al., 2020). These results held when factors such as perceptions of the professor's warmth and competence were controlled for. Together, research in both organizational and educational settings suggest that mindset interventions that target supervisors or teachers might be employed to create better experiences and outcomes for their supervisees or students.

Finally, a teacher's, manager's, mentor's, or coach's growth mindset has the potential to indirectly support the success of the individuals with whom they interact through enhanced teaching, supervision, mentoring, and coaching beliefs and behaviors (Heslin & VandeWalle, 2011; Seaton, 2018). In their study of managers in an executive Master of Business Administration (MBA) program, Heslin, VandeWalle, and Latham (2006) found that managers who held a dispositional fixed mindset and were given a deliberate growth mindset via a growth mindset intervention were more willing to coach a low-performing employee than were their peers in the control group. Additionally, those in the growth mindset intervention group provided significantly more suggestions for improvement that were also of better quality than those in the control group. Similarly, Seaton (2018) documented shifts in teacher behavior following an intervention to foster a deliberate growth mindset. These changes included using different language with their students in an effort to foster a more growth mindset, as well as an increased ability to recognize when a student held a more fixed mindset and greater motivation to help the student move to a growth mindset.

Mindset Interventions

A noteworthy development regarding mindset theory and research in recent years is the growing body of evidence that brief, targeted growth mindset interventions can yield meaningful improvements in a number of important outcomes including motivation, perseverance through challenges, performance, and more (see Yeager & Dweck, 2020 for a review). Below we discuss the typical content of such interventions, their implementation, and the conditions under which they are most effective.

Design and Implementation

Typical mindset interventions include the presentation of informative, evidence-based content that explains how the brain forms new connections and changes as a result of hard work in the face of a challenge, such as learning a new skill (e.g., Blackwell et al., 2007; Yeager et al., 2014, 2019; Yeager, Miu, et al., 2013; Yeager, Romero, et al., 2016). Often, this message is communicated with analogies and examples to make the content relatable to and memorable for the target audience. For example, Blackwell, Trzesniewski, and Dweck (2007) drew on a frequently used analogy by comparing the brain to muscles, which grow and become stronger with exercise. They also illustrated growth mindset through the example of babies, who begin life with little knowledge of themselves and the world but, with effort, are able to learn new skills and information over time. Some mindset interventions build on this informative approach by connecting other attributes, such as personalities, to the brain. Yeager, Miu, Powers, and Dweck (2013) used this approach in an intervention designed to reduce aggression and improve prosocial behavior in 9th and 10th grade students. The intervention explained how personalities "live" partially in the brain and, as the brain can grow and change, so too can personalities and the behaviors related to them.

In addition to informative content, some interventions contain a persuasive element to increase the impact of the mindset messaging (Aronson et al., 2002; Yeager et al., 2019; Yeager, Romero, et al., 2016). The persuasive element can come in the form of passively consumed content or an active component. Often, both are used. Examples of passively consumed persuasive content includes success stories from individuals who had previously engaged in and benefited from the intervention or quotes from individuals who offered a "tip for success" (Burnette, Hoyt, et al., 2020; Yeager, Romero, et al., 2016).

The most commonly used active persuasive element is a "pen-pal" exercise in which participants write letters to another person and offer advice based on the mindset information learned during the intervention (e.g., Aronson et al., 2002; Bettinger et al., 2018; Broda et al., 2018; Burnette et al., 2018; Burnette, Hoyt, et al., 2020; Burnette, Pollack, et al., 2020). For example, in an effort to avoid making students "…feel that they were in need of an 'intervention,'" Yeager, Trzesniewski, and Dweck (2013, p. 975) included a writing activity in which participants in the intervention group were asked to remember a time when they felt rejected or upset, and then to write a letter advising a younger student on how to handle a comparable situation. Similarly, the intervention used by Aronson, Fried, and Good (2002) included having participants write encouraging letters to younger students experiencing academic challenges. The participants were encouraged to express ideas congruent with a growth mindset, such as the fact that the brain can grow with effort, much as muscles do. Having participants write persuasive letters that personalize otherwise generic content is often referred to as the "saying-is-believing" technique, and its use has been shown to promote internalization of the mindset lesson (Aronson et al., 2002; Yeager, Walton, et al., 2016).

The informative content is often somewhat generic, particularly when the intervention is focused on mindset of intelligence, with the goal of improving academic outcomes such as performance or retention. However, it is not uncommon for modifications to be made to make the interventions more appropriate for the target population and outcome of interest, as this can improve the efficacy of the intervention (Yeager, Walton, et al., 2016). Bettinger et. al., (2018), for example, adapted materials from Blackwell (2007) to better fit the Norwegian cultural

context in which the study took place. Modifications have also focused on adapting the intervention materials to better reflect the broader context of the study. For studies using college students as research subjects, this often means having the intervention materials come from the University or a faculty member (Bostwick & Becker-Blease, 2018; Broda et al., 2018). Bostwick and Becker-Blease (2018), for example, used students taking an introductory psychology course as their sample. The intervention came in the form of a letter from the course professor and was sent to students after their first mid-term exam.

Content is also sometimes adapted to target domain-specific mindsets beyond the general concept of a mindset of intelligence, such as entrepreneurship or computer science (Burnette, Hoyt, et al., 2020; Burnette, Pollack, et al., 2020). In these cases, the generic informational mindset content may remain unchanged, but the persuasive elements may be tailored to the domain, such as having the persuasive "tip for success" targeted at computer science students come from a recent computer science graduate now working at Google (Burnette, Hoyt, et al., 2020).

Interventions can vary greatly in mode (e.g., online module, letters or hand-outs, lectures, activity), complexity (i.e., one mode or a combination of modes), and the frequency of content delivery. Classroom-based studies, with their regularly scheduled meeting times, allow for complex intervention designs where multiple modes of delivery can be used over a series of class sessions. For instance, Blackwell et al. (2007) integrated interventions into a series of classroom presentations and varied the delivery mode. The first intervention session occurred when students read an article that described how the brain changes as a result of learning. In another session, the intervention took the form of two workshop-style discussions, which also emphasized the idea that the brain could grow and get stronger with practice. Similarly, Yeager, Miu, et al., (2013) administered intervention materials over a series of six class sessions and used a combination of lectures, reading materials, and activities such as having students write and perform skits related to the growth mindset content learned previously. Multi-mode, multi-session interventions have drawbacks, however, particularly regarding the time demands it places on the individual(s) tasked with facilitating the intervention (Bostwick & Becker-Blease, 2018). The intervention itself also takes time out of regularly scheduled class sessions that would otherwise be used to teach course content.

Not all effective interventions require such complex or time-intensive designs. A number of studies have used a simple approach in which subjects are exposed to treatment content during a single session (Bostwick & Becker-Blease, 2018; Daniels et al., 2021; DeBacker et al., 2018; Paunesku et al., 2015). Paunesku et al., (2015) presented mindset-related information in a fake but empirically accurate *Psychology Today* article that participants read on a computer screen. Daniels et al., (2021) used a one-time intervention where participants were presented information about the ability of the brain to grow and change via an online module. A particularly simple approach was used by Bostwick and Becker-Blease (2018), who attached one of three letters to a mid-term exam answer key distributed to students. Students randomly received either a growth mindset letter that stressed the ability of individuals to increase knowledge and skills in areas where they might perceive themselves to be weak, a fixed mindset letter that encouraged students to utilize their strengths, or a control letter that thanked students for coming to class.

Mixed Results and Failures to Replicate

Although empirical evidence supporting the benefits of growth mindset interventions, particularly for those who previously endorsed fixed mindsets or are disadvantaged in some way, has increased greatly over the last two decades, some recent research has demonstrated that interventions do not always achieve impactful results. Mixed results and failures to replicate do not appear to be due to inadequate intervention design or implementation, as most draw upon previously used intervention materials and best practices, such as including self-persuasion exercises such as "saying-is-believing" writing tasks (Ganimian, 2020; Glerum et al., 2020; Lai et al., 2018; McCabe et al., 2020). For example, Burgoyne et al., (2018), discussed previously, found that their intervention successfully increased endorsement of a growth mindset in the experimental group and also found significant differences in challenge-approach. However, they did not find any significant differences in cognitive ability scores or grittiness, as was hypothesized based on previous studies. Failure to replicate has even occurred in contexts where, based on findings previously discussed, we might be most confident of success. Neither Mills and Mills (2018) nor McCabe et al., (2020) found significant effects of a growth mindset intervention on GPA or retention, even among underrepresented or at risk groups.

Boundary Conditions

It is important to note that mindset interventions may not benefit all people equally due to certain individual-level characteristics and contextual factors. For instance, and as previously discussed, several studies have provided evidence that individual factors, such as at risk status, may increase or decrease the efficacy of a mindset intervention on certain outcomes (Broda et al., 2018; Paunesku et al., 2015; Yeager, Walton, et al., 2016). A recent meta-analysis by Sisk et. al., (2018), however, complicates these conclusions by finding that at-risk status, whether due to previous academic achievement or situational factors such as stereotype threat, is not a significant moderator of growth mindset intervention effects. Sisk et al., (2018), however, did find that socioeconomic status, a factor that is commonly described as a risk factor for low academic achievement, was a significant moderator. Findings have also linked race and ethnicity to differential effects of mindset interventions (Aronson et al., 2002; Broda et al., 2018; Good et al., 2003). Broda et al., (2018), for example, found that a growth mindset intervention had a positive effect for Latino/a students but no significant effect for White or Black students. The authors propose several explanations for this variation, noting systematic differences between racial and ethnic subgroups in both academic preparedness and baseline endorsement of a growth mindset, but also conclude that it is not decisively clear why the effectiveness of the intervention varied across racial and ethnic subgroups.

Research has also demonstrated that an individual's baseline level of fixed or growth mindset beliefs may impact the efficacy of a mindset intervention. For example, Blackwell et al., (2007) found that students who more strongly endorsed a fixed mindset of intelligence at the beginning of 7th grade received the most benefit from the growth mindset intervention. This was demonstrated through the reversal of their declining grade trajectory post-intervention, whereas the grade trajectory of their peers in the control group continued its downward trend. Similarly, results from Broda et al.,'s (2018) study on the effectiveness of a growth mindset intervention for reducing academic inequality among incoming college students suggest that initial levels of growth mindset may moderate the effect of the intervention, as was the case for Black students in the study, who realized no significant benefit from the intervention.

Finally, context may also impact the effectiveness of an intervention, although studies that take such factors into account are few in number. One example is a study by Yeager et al., (2019), which examines whether peer norms that discourage challenge-seeking might inhibit students from engaging in behaviors associated with a growth mindset (such as seeking out increasingly challenging work). Results showed a positive significant interaction effect between intervention condition (intervention, no intervention) and behavioral challenge-seeking norms (supportive of challenge-seeking, unsupportive of challenge-seeking) on GPA among lower-achieving students, such that when peer norms supported engaging in challenging intellectual work, students received the greatest benefit from the intervention.

Mindset in the Military

Existing References to Mindset in the Military

Although the concept of mindset has been studied extensively in educational settings and is increasingly being studied in organizational settings, it has received limited empirical attention in military settings, with a few exceptions. For instance, Luning, Attoh, Gong, and Fox (2021) found that growth mindset among military officers of various branches was related to organizational grit, professional pride, team unity, resilience-determination, mission accomplishment, core values, and deliberate practice. In another example, Serota (2015) reviewed case studies and concluded that understanding mindset in the U.S. Army potentially has profound implications for cognitive performance.

Closely related to mindset, the concept of learning goal orientation[2]—and its relation to professional development—has also received some attention in the military. Key-Roberts et al., (2010) found that learning goal orientation had a significant positive effect on leader self-development behavior in Soldiers. Additionally, Boyce et al., (2008) found an interaction effect between learning goal orientation and learning environment on tacit knowledge performance among Air Force Academy students such that participants with higher learning goal orientations performed well regardless of their learning environment, whereas those with lower learning goal orientations were only able to perform well under certain learning conditions. Finally, Wisecarver et al., (2012) conducted a literature review focused on NCOs and their recommendations emphasized incorporating learning goal orientation into the development of self-learning skills.

Potential Value of Mindset for the Military

A strong case can be made for the value of applying mindset research in the Army. For instance, the Army expects all leaders to possess character, presence, and intellect to ensure competent leaders who can lead, develop, and achieve results (Department of the Army, 2019a). It is hypothesized that Army leaders with a more growth mindset will lead and develop in a way that is in opposition to those with a more fixed mindset (Trottier, 2017). In addition, as noted in Army Doctrine Publication 6-22 *Army Leadership and the Profession*, leaders are expected to encourage their Soldiers to generate ideas for improving both unit and individual performance, while also promoting a positive mindset toward the goal of increasing effectiveness and

[2] Goal orientation is related to, but separate from, the concept of mindset. A person who is seeking to increase their ability or competence sets learning goals and, therefore, has a learning goal orientation (Dweck & Leggett, 1988).

efficiencies (Schomaker, 2020). Finally, goal orientation is relevant to the Army's tenet of lifelong learning because it emphasizes that military leaders should continually strive to develop themselves (Key-Roberts et al., 2010).

Although there is limited empirical evidence about how mindset may manifest in the Army, many have conjectured it has plausible utility in the military context. For instance, Alessio and March (2021) have suggested that having people in the U.S. Army with a more growth mindset could support Army operations and may, therefore, be a valuable training and development characteristic for Soldiers. In addition, de Vries and Bazin (2018) proposed that mindset may help Soldiers develop the ability to think strategically. Finally, Citroën (2020) hypothesized that mindset could provide support to Soldiers in developing their careers, particularly when transitioning back to civilian life.

In addition to being a developmental tool, the importance of military leaders possessing a more growth mindset has been discussed. Serota (2015) suggested that a more fixed mindset may lead to the existence of "toxic leadership" or a negative command climate. Conversely, Trottier (2017) suggested that a military leader with a more growth mindset may invest more time in self-development and personal improvement. In turn, these growth mindset leaders are expected to act as positive role models for their Soldiers (Schomaker, 2020). Overall, mindset appears to be a promising means of creating more effective leaders and Soldiers and a more positive climate for all (Trottier, 2017).

Finally, several concepts relevant to military populations have been linked, or theorized to be linked, to mindset (and the closely related concept of learning goal orientation) including grit (Alessio & March, 2021; Luning et al., 2021), coping style (Delahaij & van Dam, 2016), resilience (Martin, 2016), and motivation to lead (Key-Roberts et al., 2010).

Military Mindset Intervention: Opportunities and Challenges

Despite its promise, there are challenges in increasing growth mindset in the Army, at both the individual and organizational levels. First, any intervention would need to be thoughtfully embedded within the larger military culture to increase buy in and minimize resistance among Soldiers who may be unconvinced of its potential value (Alessio & March, 2021). Second, culture takes time to change in any organization (De Vries & Bazin, 2018), but particularly in a hierarchical, highly rigid one such as the Army. To maximize effectiveness, de Vries and Bazin (2018) suggest that the implementation of a mindset intervention for service members should be kept simple, cost effective, and be included throughout professional military education at all levels to help reinforce the concept.

Discussion

This literature review examined how mindset has been 1) conceptualized and measured, 2) linked to important individual and group outcomes, 3) influenced through targeted interventions across a variety of settings, and 4) discussed in military settings. The literature review findings, especially when viewed alongside Army doctrine, reveal opportunities to use the concept of mindset to enhance aspects of professional development—in particular, training, counseling, non-punitive corrective measures, mentoring, and coaching—within units. Overall, the literature review findings support the notion that fostering a growth mindset among NCOs,

who represent the main developmental figure in a JE Soldier's career, may facilitate improved professional development processes and outcomes. Below, we present five propositions related to the central role of NCOs' mindset on JE Soldier professional development and the feasibility of implementing an intervention to enhance growth mindset in the Army.

Proposition #1: NCOs with a more growth mindset are likely to engage in positive professional development behaviors with their Soldiers.

Growth mindset leaders approach professional development with an emphasis on continual growth more than their fixed mindset counterparts do, regardless of the circumstances. Although NCOs are responsible for the professional development of the Soldiers they lead, how each approaches development may vary. Therefore, an NCO with a more growth mindset may be willing to train, mentor, or coach a low-performing Soldier—and may be more persistent when doing so. Furthermore, they may also be more willing to engage in thoughtful professional growth counseling with the Soldier, and to use nonpunitive corrective measures primarily to improve the Soldier's performance rather than primarily for discipline. Finally, in a more general sense, NCOs with a more growth mindset may be more likely to adhere to the Army's "People First" initiative. That is, growth-minded leaders are likely to create a command climate in which Soldiers are cared for and feel supported, which may in turn improve Soldiers' job satisfaction and willingness to re-enlist or otherwise stay in the Army over time.

Proposition #2: NCOs with a more growth mindset may, in turn, foster a growth mindset in the Soldiers they lead.

If mindset research findings from educational contexts extend to the Army, then NCOs with a more growth mindset might be more likely to recognize when a Soldier holds a more fixed mindset and would subsequently exhibit greater motivation and effort in helping the Soldier move to a growth mindset. Furthermore, NCOs are the standard-bearers of professional development and their subordinate Soldiers are expected to follow their lead. Therefore, NCOs holding a more growth mindset might be more likely to lead JE Soldiers with higher levels of motivation, interest, and engagement when it comes to professional development, as they would model these behaviors to their Soldiers.

Proposition #3: JE Soldiers with a more growth mindset are likely to have more success in professional development activities than JE Soldiers with a more fixed mindset.

The mindset research findings consistently demonstrate that growth mindset is associated with performance or achievement in both educational and organizational settings. It is reasonable to expect these findings will extend to the Army context with respect to JE Soldier professional development performance. Therefore, building off of Proposition #2, if NCOs are able to enhance growth mindset in the JE Soldiers they lead, and JE Soldier growth mindset is associated with increased success in professional development activities, then NCOs can have both direct and indirect positive impacts on the success of their Soldiers' professional development.

Proposition #4: A growth mindset intervention developed for the Army can leverage existing Army concepts and initiatives to generate perceptions of credibility.

The Army is a learning organization that emphasizes the professional development of Soldiers. As such, the construct of growth mindset aligns well with the Army's concept of "lifelong learning." Noncommissioned Officers who are familiar with the Army's concept of lifelong learning may already be somewhat familiar with the tenets and benefits of a growth mindset, even if the terminology and specific details of the concepts are slightly different. Therefore, the development and implementation of an intervention to enhance growth mindset among NCOs can use established concepts and vocabulary, such as lifelong learning and distributed learning, to garner perceptions of credibility and reduce resistance to intervention content among Soldiers.

Proposition #5: The format and design of existing mindset interventions may be adapted to the Army context.

In general, existing mindset interventions that have been used across contexts with a variety of populations are inexpensive to administer, short in duration, and have been shown to be successful in fostering a growth mindset. Furthermore, interventions have been developed and administered using a variety of modes (i.e., in-person, hybrid, in-person, and online). Because Soldiers develop in a variety of ways across three learning domains (institutional, operational, and self-development), this would give the Army flexibility to develop and implement an intervention that would best meet the Army's needs.

Next Steps

As evidenced above, targeting the enhancement of growth mindset among NCOs represents a way to positively influence the learning environment and overall command climate within units, with particular relevance to professional development. Although the manifestation of, and methods to promote, a growth mindset are understood in a variety of contexts (e.g., schools, universities, businesses), a one-size-fits-all approach does not necessarily exist. That is, it is unknown whether existing methods and interventions used to produce a growth mindset in students or white-collar employees will transfer to Soldiers, specifically, and in the Army context, in general. In addition, the implementation requirements (e.g., technology, time demands) may not be compatible with the resources available to Army trainers. Furthermore, the design characteristics (e.g., format, content) may not resonate with NCOs, who are ostensibly the intended audience for such an intervention within the Army.

Because the majority of published discourse about mindset in the military has been hypothetical in nature (with a few notable exceptions of empirical research), if the Army intends to incorporate mindset theory into its professional development activities, additional research is needed. Specifically, research is needed to better understand how mindset among Soldiers and, in particular, the NCOs who develop JE Soldiers, impacts professional development within units. Pairing this additional context with previous research is necessary for developing and implementing a successful intervention for NCOs to shift the developmental tone of a unit that is compatible with the Army's unique culture. Context such as how Soldiers may talk about mindset, the behaviors indicative of a growth or fixed mindset among Soldiers, and how to accurately measure Soldier mindset will be critical information for the development of an intervention. The following research activities may prove to be invaluable toward achieving that goal:

Developing a Baseline Understanding of Mindset in the Army

Collecting rich qualitative data from Soldiers that provides context and interpretation of their attitudes, behaviors, and experiences relevant to NCOs' mindset and its relation to professional development within the Army will inform the development of a future intervention.

Identifying the Army Mindset Lexicon

Although there is considerable literature that has defined, conceptualized, and operationalized mindset in multiple contexts, the Army has its own specific lexicon. The typical description of mindset that resonates with students or white-collar employees may not resonate with Soldiers. Therefore, as a first step toward the goal of developing an Army-specific measurement tool and intervention, how Soldiers talk about mindset and related concepts must be well understood and documented.

Determining how Mindset Manifests in the Army

Related to how Soldiers talk about mindset is determining whether mindset "behaves" in the Army as it does in other environments. Although growth mindset in an educational context may look one way, it may manifest in a completely different way among Soldiers. For instance, perhaps the manifestation of mindset is more situation-dependent in the Army than in other, less dynamic, environments. Or, potentially, the manifestation of mindset may be shared among units (similar to an organizational mindset). Furthermore, contextual information about the impact of mindset on how NCOs generally approach their interactions with Soldiers can help to provide a more holistic understanding of how mindset influences a unit's command climate—particularly as it relates to the Army's People First initiative and how NCOs demonstrate that they care about their Soldiers.

Understanding how Mindset Relates to Professional Development in the Army

This literature review provided substantial evidence regarding the impact of mindset on a variety of outcomes that are important for successful professional development (e.g., motivation, performance, resilience). We described how these outcomes can be linked to professional military education and the NCO professional development system in propositions 1–3 above. However, these linkages were drawn from Army doctrine, in which ideal professional development scenarios are described. It is acknowledged that professional development in operational units may not align perfectly with doctrinal guidance. Therefore, additional context regarding when and why NCOs deviate from doctrine when engaging in professional development activities with Soldiers and the role of mindset, if any, in explaining these deviations would provide additional context for developing an effective growth mindset intervention for the Army.

Adapting or Developing a Survey Instrument for the Measurement of Mindset in the Army

Tools for measuring mindset have been developed and/or adapted for a variety of environments, but not yet for the Army. Therefore, developing and validating an Army-specific measure of mindset that resonates with Soldiers will inform determinations of whether a future intervention is having its intended effect of enhancing growth mindset in NCOs.

Developing and Evaluating an Intervention for NCOs

An intervention can be developed based on findings from the foregoing research. However, in order to ensure the intervention is having its intended effect, the intervention must be evaluated in a high-fidelity training environment using operational units. Furthermore, the intervention must be refined if it is found to not have its intended effect.

Conclusion

Overall, this literature review represents the first step in systematically examining mindset in the Army. The insights gained from this review will be instrumental to developing a measurement tool to assess mindset in the Army context. It will also contribute to the subsequent creation of an intervention to enhance growth mindset among NCOs and senior NCOs. Overall, these findings provide a foundation from which to build and conduct future research activities to ensure that we successfully translate decades of extant mindset research literature to the Army context.

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Appendix A

Military/Academic Literature Search Strategy

Search	Search Terms
1A	Soldier professional development** IN DTIC OR APD DONE
1B	Training* IN APD
1C	Growth mindset OR Fixed mindset OR Performance goal orientation OR Learning goal orientation OR Mastery goal orientation OR Entity theory OR Incremental theory IN DTIC OR APD
1D	Implicit person theory OR Implicit theories of personality OR Implicit theories of intelligence OR Lay theories of intelligence OR Lay theories of personality IN DTIC OR APD
2A	Growth mindset OR Fixed mindset OR Performance goal orientation OR Learning goal orientation OR Mastery goal orientation OR Entity theory OR Incremental theory AND Army OR Military
2B	Implicit person theory OR Implicit theories of personality OR Implicit theories of intelligence OR Lay theories of intelligence OR Lay theories of personality AND Army OR Military
3A	Growth mindset OR Fixed mindset OR Performance goal orientation OR Learning goal orientation OR Mastery goal orientation OR Entity theory OR Incremental theory
3B	Implicit person theory OR Implicit theories of personality OR Implicit theories of intelligence OR Lay theories of intelligence OR Lay theories of personality
4A	Growth mindset OR Fixed mindset OR Performance goal orientation OR Learning goal orientation OR Mastery goal orientation OR Entity theory OR Incremental theory AND Intervention OR Training
4B	Implicit person theory OR Implicit theories of personality OR Implicit theories of intelligence OR Lay theories of intelligence OR Lay theories of personality AND Intervention OR Training

Note. Search terms marked with an asterisk (*) indicate searches that are limited to within the last ten (10) years. Search terms marked with two asterisks (**) indicate searches that are limited to within the last twenty (20) years. The search terms contained in 3A–3B will only be used as needed.

Inclusion Criteria:

A. Relevant to search 1 (Training and professional development in the army)
B. Relevant to search 2 (Mindset in army/military contexts)
C. Relevant to search 3 (General academic mindset research)
D. Relevant to search 4 (Mindset interventions)

Exclusion Criteria:

A. Non-English publications
B. Publications not relevant to growth or fixed mindset (i.e., not defining mindset in accordance with Dweck's definition of mindset; e.g. mindsets about whether stress is helpful or harmful for performance)
D. Outdated (inactive) Army doctrine Publications focused on children younger than middle school
E. Neuroimaging publications
F. Publications focused on populations that are too specific to generalize (e.g. clinical populations, substance abuse, and developmental disability).
G. Publications that focus on implicit theories of traits other than intelligence, skills/ abilities, personality, or moral character (e.g., exclude implicit theories of relationships)
H. Publications focused on genetics.
I. Publication is an editorial or review of a book chapter/ book/ other article.
J. Does not fit the needs of the study for reasons other than what is listed here.