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**Embedding Mindsets in Context:
Theoretical Considerations and Opportunities for Studying Fixed-Growth Lay Theories in
the Workplace**

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Abstract

The goal of the current manuscript is to embed the theory of mindsets about malleability in workplace contexts. We first define fixed-growth mindsets and the methods that have to date been used to study them. We then briefly review the domains in which mindsets have been documented to shape outcomes meaningfully, linking each to exciting research questions that we hope will soon be studied in workplace contexts. We also highlight some of the fascinating, new questions scholars can study by considering how mindsets might shape outcomes across a diversity of workplaces (e.g., the workforce of low wage and vulnerable populations). We further propose that studying mindsets in workplace contexts can develop mindset theory. We first ask whether workplace contexts provide opportunities to test for moderation on mindset expression. Second, we see opportunity for studying moderation of mindset processes – evaluating whether the psychological processes through which mindsets shape outcomes may differ based on contextual factors that vary across workplaces. We argue that investigating these possibilities will advance both the theory of mindsets about malleability and the study of human flourishing in the workplace. We invite scholars to join us in this endeavour.

Keywords: fixed-growth; lay theories; mindsets; self-theories; workplace

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Introduction

Mindsets (or lay theories, terms that will be used interchangeably), are a psychological construct that have been studied extensively in schools and among student populations. As scholars of mindsets, we have observed increasing interest from organizations seeking to apply insights from this research in the workplace¹. We anticipate that this trend of organizational interest in mindsets will continue both because of the documented link between mindsets and academic performance and because many organizations increasingly need employees and leaders who are oriented toward learning even when under extreme challenge (e.g., the sudden demand for agility and innovation during the 2020 COVID-19 pandemic). We believe that researchers in social psychology and organizational behavior must seize upon this moment of engagement to accelerate the development of a substantial body of rigorous research on mindsets in organizations. A deep understanding of the theory of mindsets defined by Carol S. Dweck (see Dweck, 1986; 1999; Dweck & Leggett, 1988) will set scholars up ideally to extend existing mindset research into workplace contexts, and then perhaps most excitingly to further develop mindset theory. To this end, in the sections that follow, we first describe the theory and methods of mindset research (see Figure 1, solid lines). We then highlight the different domains of mindset beliefs where we think established findings directly relate to questions at the heart of

¹ We use the term “workplace” in addition to “organization” to recognize that schools are a type of organization (Bidwell, 2001; Schultz, 1975).

organizational behavior (see Haimovitz & Dweck 2016 regarding mindsets in children). We offer starting points for this new way of thinking about mindsets in the workplace (see Figure 1, dashed lines). We share some of the fascinating new questions that we see arising from considering mindsets across a diversity of workplaces (e.g., service industries versus corporate jobs; see Figure 1 “previously unstudied outcomes”). We then propose two questions which may help generate new ideas and hypotheses about the core theory of mindsets. First, we ask whether some workplaces may constrain the degree to which mindsets shape behavior (moderation on mindset expression). Second, we propose that studying mindsets in workplace contexts might offer chances to refine and add to our understanding of the processes by which mindsets shape outcomes (moderation on mindset processes). By testing these possibilities, we hope future research embedding mindsets in workplace contexts will foster deeper understandings of the boundary conditions and foundational assumptions of this theory. We hope that this manuscript will begin to provide a roadmap for future research extending the study of mindsets in organizations and, in so doing, invite scholars to partner with companies to build the evidence base for how and when mindsets shape workplace outcomes, in the interest of maximizing individual’s achievement and flourishing, and thus benefitting organizations.

Embedding Mindsets in Workplace Contexts

Our goal is to reveal the many exciting ways in which embedding mindsets in workplace contexts offers opportunities to gain new insights into pressing questions about organizational life, to further develop the basic theory of mindsets, and to enrich our understanding of human psychology. The conceptual framework we approach this goal through is the socio-cultural

psychological perspective of mutual constitution, or the idea that psychological phenomena and the cultural contexts in which they arise are inseparable, each contributing to the other (Markus & Kitayama, 2010; Shweder, 2003; Shweder & Bourne, 1984). From this perspective, we can see that academic contexts gave rise to the questions researchers asked and the outcome variables they studied, and thus our conceptualization of how mindsets shape psychology. Dweck and Leggett (1988, p. 264) emphasize this very point as they call for research testing the generalizability of their model of lay theories, caveating that, “achievement situations are particularly suitable for developing and testing motivational models” because “[they] allow for standardization of tasks and feedback across individuals. They also allow one to separate ability or skill factors from motivational factors — to control for the former and investigate the latter. Finally, the moment-to-moment impact of motivational factors on cognitive performance can be precisely monitored.”

Recognizing this mutual constitution, we believe, awakens curiosity about what research questions could be asked and what outcomes could be studied once we embed mindsets in workplace contexts. As a starting point, think about all the diverse ways in which work and workplaces are varied, and distinct from the schooling contexts in which most mindset research has to date been conducted: Much work is team (not individual) based, performance evaluations often include subjective and interdependent components, change and unexpected events are the status quo, and in certain execution-focused jobs one could avoid learning new skills for years (Edmondson et al., 2001; Gersick & Hackman, 1990). Think of non-corporate workplaces – not-for-profits, start-ups, freelance work, minimum wage jobs, service sector work, and the gig economy. For some of these industries, work is hard physical labour, for others it could be constant change and adaptation behind a computer. For some, the challenge might be the work

itself, for others it might be managing difficult customers, whereas for others it might be getting enough work hours to make ends meet. Do mindsets play a role in performance and social interactions for all of these job types, and if so would they play a similar role across them? Do mindsets predict engagement or performance across industries and career stages (e.g., job seeking, Heslin & Keating, 2016; advancement up the hierarchy, Heslin & Keating, 2017; Heslin et al., 2020)? Are there outcomes that we might consider studying in these industry contexts that could not have been studied to date (e.g., networking; Kuwabara et al., 2018)? Are there workplace issues that are under-researched within social psychology and organizational behavior that could be better understood from a mindset perspective (e.g., low wage workers, Madan et al., 2020)? These are just a few of the exciting questions that come to mind when we start thinking about how, when, and why mindsets might matter in the workplace.

What are Fixed-Growth Mindsets?

Definition. The lineage of mindset research is grounded in the study of student's motivation in response to difficulty, challenge, and failure (for a review, see Dweck & Yeager, 2019). What makes some students respond to difficulty or failure with helplessness, while others respond with engagement and come to develop mastery? The social-cognitive revolution in the study of motivation shifted the field toward considering how people viewed and interpreted situations, and sought to illuminate the complex cognitive processes that occur 'inside the head' of an individual to ultimately drive their behavior (Dweck, 1986). In taking this social-cognitive approach, the theory of mindsets described by Dweck and colleagues was always grounded in people's interpretations of their contexts. Thus, embedding mindsets in organizational contexts,

as we hope to do in this manuscript, naturally follows from the original theory and we believe offers exciting opportunities for theoretical innovation, as we will describe.

Mindsets, or lay beliefs, describe people's fundamental assumptions about human characteristics. The fixed-growth mindsets defined and studied extensively by Dweck and colleagues, which are the sole focus of this manuscript, describe people's lay beliefs about whether human characteristics such as intelligence, personality, or morality are fixed and cannot be developed over time (referred to as the fixed mindset or entity theory) versus malleable and can be developed over time (referred to as the growth mindset or incremental theory)². As people are normally distributed across this unidimensional construct ranging from fixedness to malleability, the terms fixed and growth mindset refer to people who fall more on one side of the scale versus the other on this single continuum of beliefs.

When describing or studying fixed and growth mindsets, it is important to remember that these are domain-specific beliefs (Dweck et al., 1995; Schroeder et al., 2016). While someone might hold a fixed mindset in one domain (e.g., intelligence), they could hold a growth mindset about other domains (e.g., personality, prejudice; Dweck, 1999). To be sure, Dweck and Leggett (1988, page 266) speculated about the possibility of a generalized mindset governing the whole self: "Within a generalized entity theory, the self would be conceptualized as a collection of

² People often ask us why the terminology for mindsets seems to have transitioned over time. Manuscripts earlier than the mid-2000s typically use the language of implicit theories, and entity versus incremental beliefs. Manuscripts mid-2000s onward typically use the language of fixed versus growth mindsets. To the best of our knowledge, this transition was not a conceptual one but rather a rhetorical one. A preference for the term mindset coincides with the publication of Carol Dweck's 2006 book which uses the same term. Simultaneously, the term "implicit" gained popularity in social and personality psychology with specific reference to nonconscious associations (e.g., the Implicit Association Task), and thus the use of the term "implicit theories" to refer to people's lay beliefs became conceptually confusing. The language of entity and incremental is less precise in describing the fundamental beliefs of interest compared to fixed and growth, which we assume accounts for the shift in how the two endpoints of the scale are described. Notably, the definition of this construct as describing people's lay theories about the malleability of fundamental human characteristics has been consistent across these changes in terminology.

fixed traits that can be measured and evaluated. Within an incremental theory, the self would be seen as a system of malleable qualities that is evolving over time through the individual's efforts.” However, empirical research documenting the consequences of mindsets has to our knowledge only focused on the effects of domain-specific beliefs. Because careers are such a fundamental part of people’s self-concepts (Ashforth & Mael, 1989; Becker & Carper, 1956; Ibarra, 1999; Swann & Bosson, 2010), research embedding mindsets in workplace contexts might return to the question of domain-specificity versus generality and empirically test which level of mindsets (i.e., a generalized mindset versus the domain-specific mindsets we detail below) are most predictive of individual outcomes.

Mechanisms and Consequences. While mindsets can come across as seemingly simple – people’s beliefs about whether an attribute is fixed or malleable – they can have important psychological consequences because they are the core of people’s systems for making meaning of the world (Hong et al., 1999; for an updated and expanded theoretical perspective see Dweck & Yeager, 2019). When tasks or situations involve challenge, the belief that a human characteristic is fixed or malleable can organize people’s attention and perception (on mindset-confirmatory information; Plaks et al, 2005; Plaks et al., 2001), goal priorities (validation versus learning; Robins & Pals, 2002), effort beliefs (a signal of ‘not having it,’ versus a signal of where work is needed; Blackwell et al., 2007), attributions (internal, stable versus external and changeable; Chiu et al., 1997; Erdley & Dweck, 1993), and affect (less versus more distress; Burnette, Knouse et al., 2020). By virtue of shaping perceptions, effort beliefs, goals, attributions, and affect, mindsets can come to affect outcomes including persistence, engagement and belonging, performance, and behavior and reactions (see Figure 1, solid lines). All of these

mechanisms are relevant to the way people think, interact, and perform in organizations and therefore we would expect that research extending current findings into workplace contexts ought to replicate established patterns. At the same time, as we will describe in the relevant section below, we think the study of mindsets in workplace contexts might uncover new insights into the mechanisms by which mindsets shape outcomes.

If nothing happens to disrupt the belief, mindsets can be relatively stable over time (Dweck, 1999). They can create patterns of perceptions and behavior that are self-reinforcing by focusing people on confirmatory evidence, which then reinforces the belief. This can create trajectories toward greater or lesser success, engagement, and pursuit over time in a challenging domain (Good et al., 2012; Robins & Pals, 2002; Yeager, Romero, et al., 2016; Yeager, Walton, et al., 2016; Yeager et al., 2019). Anecdotally, when leaders or workplaces communicate a “believe it and it will happen” myth about mindsets – an emphasis on the belief alone without acknowledging the thoughts and behaviors that should change as a function of the belief – they may increase “niceness” but fail to produce the benefits they seek. This is why we see it as so important for both scholars and practitioners to avoid mistakenly representing the beliefs as ‘magical’ or “automatic” rather than as the rich psychological processes they represent. This misperception may similarly account for misguided efforts to imbue growth mindsets in schools using encouragement alone, without changing support structures or policies (Dweck, 2015), which this manuscript will hopefully help to avoid in scholarship on the workplace.

Methods: Measuring, Manipulating, and Intervening

Measurement. The majority of research on mindsets makes use of relatively straightforward, validated measurement scales (for a review, see Dweck, 1999). People are asked to indicate their level of agreement or disagreement with statements that endorse the fixedness or malleability of the focal characteristic. For example, in the domain of intelligence, how much do you agree that, “People have a certain amount of intelligence, and they can’t really do much to change it.”? Someone who falls on the side of agreeing with this and similar statements would be characterized as holding a more fixed mindset (or entity theory) of intelligence, while someone who falls on the side of disagreeing with this and similar statements would be characterized as holding a more growth mindset (or incremental theory) of intelligence. Mindset research generally follows this original measure, replacing “intelligence” with the domain of interest, such as personality, prejudice, etc. This measure has been used to assess individual’s mindsets, perceptions of others’ mindsets, and organizational mindsets, though we do not yet know of research using this measure to study team mindsets (we return to this question below). The terms “fixed” and “growth” mindsets generally refer to people who represent one standard deviation below and above the sample mean on this unidimensional, continuous measure.

As the concept of mindsets has become popularized, concerns about the face validity of this measure have emerged. For example, when teachers, parents, or students know that there is a more socially describable mindset, they might adjust their responding on the intelligence measure away from their true beliefs and toward the growth mindset. In the context of teachers’ mindsets (Dweck, 2016), some scholars have both measured mindsets and assessed behaviors that would align with the mindset (Park et al., 2016) to address concerns such as these. More recently, we have anecdotally noticed a trend toward including only the fixed-oriented items in mindset measures (cf. Haimovitz & Dweck, 2016). The fixed-oriented items exhibit high

reliability and seem to avoid some of the social desirability or agreeableness biases that may come into play with the growth-oriented items. In the case of such measures, scores that fall toward disagreement would be characterized as the growth mindset, and scores that fall toward agreement would be characterized as the fixed mindset.

The small but burgeoning body of research directly studying mindsets in workplaces has used the classic measure of mindsets with success (Canning et al., 2020; Heslin et al., 2005; Heslin, & VandeWalle, 2008; Heslin et al., 2006; Rattan & Dweck, 2018). Of course, similar considerations around motivated responding on the mindset measure might arise. In organizations, this could either be related to the concern described above – a social consensus around what is the more preferred or valued mindset – or it could instead have to do with how such field surveys are often shared, that is, by liked leaders in the organization who encourage (or request) employees' participation. It is possible that liking of an individual can anchor responding on mindset measures (Leith et al., 2014), a consideration worth evaluating empirically when organizational scholars do large company-wide surveys.

Translating the study of mindsets into workplace contexts also raises new opportunities for integrating methodological approaches that are more prevalent in organizational behavior than in social or developmental psychology where most mindset research has been conducted. Research on mindsets in the workplace might take observational, ethnographic, qualitative, and case study approaches to measure mindsets, identify meaningful domains for the study of mindsets, evaluate workplace predictors of mindsets, and study psychological and behavioural consequences of mindsets in organizations. While these approaches cannot offer the generalizability or causal inferences typical of past research on mindsets, they can be followed with experimental research. For example, through public materials and interviews, Ibarra et al's

(2018) teaching case study of how Microsoft implemented a growth-mindset culture change program offers ideas for key points of influence within everyday organizational practices (e.g., post-meeting reflections on how fixed versus growth mindset the discussion had been). Experimental research could evaluate what the key ingredient in this intervention was (e.g., discussing mindsets versus planning how to be more growth mindset in the future) and whether these points of influence are generalizable, insofar as they might reliably generate shifts in mindsets and behaviors either in laboratory contexts or in other organizations. Comparative analyses that evaluate the mindsets of different companies (e.g., Canning et al., 2020) might also allow scholars to take a deep dive into the procedures and practices of organizations that differ on the mindset dimension, which could illuminate the more subtle pathways through which mindsets get communicated in organizations. These diverse measurement methods are just one of the many ways in which embedding mindsets in workplace contexts can benefit the basic theory and study of this construct.

Experimental Manipulation. People who hold one mindset in a given domain are typically nonetheless aware of the alternate mindset. That is, if you believe that intelligence is fixed and cannot be changed, you are aware that the alternative would be believing that intelligence is malleable and can develop. Capitalizing on the fact that people tend to be aware of both endpoints on the spectrum of beliefs, past work has been able to experimentally manipulate mindsets in laboratory studies. Experimental manipulations of mindsets in laboratory studies typically randomly assign participants to read a short news article, which has been crafted by the researchers to communicate scientific evidence and examples in support of either the fixed or the growth mindset (Aronson et al., 2002; Chiu et al., 1997; Hong et al., 1999). By drawing people's

attention to the belief, and then putting the weight of scientific research and compelling examples in view, research has shifted people's mindsets for the space of a research study, and thus been able to draw causal conclusions about the effects of lay theories on both outcomes of interest (e.g., persistence and performance) and the mechanisms by which they occur (e.g., goals and effort beliefs). In addition to the articles, scholarship has shifted outcomes in line with mindset predictions using vignettes that convey mindsets via statements from leaders or organizational descriptions (e.g., Murphy & Dweck, 2010; Madan et al., 2019). Research on workplaces can use similar methods to experimentally manipulate mindsets, in laboratory studies that that would take place either with employee participants or in advance of field studies (King et al., 2012). We emphasize that best practice is for experimental research which includes a manipulation of a mindset that is hypothesized to yield negative effects to last for no more than a single session and end with thorough debriefing, in order to be ethical.

Interventions. What about longer-term change in mindsets? After decades of rigorous research documenting the effects of mindsets about ability and personality in the lab, scholars investigated whether it is possible to sustainably teach the growth mindset, with benefits for performance and well-being over time. Indeed, with compelling examples and scientific information, interventions can teach students the growth mindset about intelligence and personality, with consequences that unfold on the scale of one year (the longest time interval published to date; Blackwell et al., 2007; Miu & Yeager, 2015; Yeager et al., 2019). As noted above, intervention research only ever implements a growth mindset treatment, relative to control conditions that either represent no treatment or popular alternative (non-mindset) treatments (e.g., Aronson et al., 2002). Best practice for intervention research is to exclusively

use factual statements and science (e.g., brain plasticity), real testimonials, and accurate examples (sometimes from participants themselves) to communicate a mindset that is predicted to have positive effects, given the ethical considerations that go along with not having an immediate debriefing. This difference in comparison points (growth versus fixed mindset in the lab, growth versus control condition or alternate treatment in the field) must be taken into consideration when scholarship debates the difference in effect sizes from the lab to the field (Benartzi et al., 2017; Dweck, 2019; Goldenberg et al., 2018; Hill et al., 2008).

Because interventions can allow researchers to study the consequences of mindsets over time, organizational researchers may prefer this method for testing causal hypotheses about mindsets in the workplace. Before doing so, it is essential to rigorously test and evaluate intervention materials (i.e., the experimental treatments) to ensure that they achieve the desired manipulation without unintended knock-on effects. We direct readers to Yeager, Romero, et al., (2016) and Burnette and Hoyt (2020) for guidance on the breadth and depth of preparatory work necessary in order to craft a factual and effective treatment condition in a mindset intervention (for more background on intervention research, see Walton, 2014). For example, in a pioneering undertaking, Yeager, Romero and colleagues (2016) pilot tested their intervention materials with over 3,000 participants using both quantitative and qualitative approaches (e.g., focus groups, one-on-one interviews, and other types of feedback) before proceeding to develop and test their growth mindset intervention in well-powered randomized experiments. In addition to extensively pre-testing intervention materials, scholars will benefit from evaluating the fidelity of their intervention against Burnette and Hoyt's (2020) five questions for evaluating mindset intervention effectiveness.

We emphasize to scholars who want to translate the study of mindsets into the workplace that this rigorous approach to intervention development is its own opportunity, not a hurdle or distraction from your goals. This type of work can provide invaluable theory building insights, first by better identifying the key messages necessary to communicate the desired mindset, and second because treatments that show early promise in the lab but are ineffective in the complex and dynamic real workplace offer opportunities to identify previously overlooked boundary conditions. To the former point, it is possible that the types of information shared in a school-based intervention differ from what would be effective in workplace contexts – perhaps testimonials from leaders within the organization (rather than peers) or an emphasis on policies (rather than individual behaviors) that support the mindset would be necessary to effectively shift individual mindsets. To the latter, it might be that the same interventions which work in school settings would shift mindsets, and thus performance outcomes, in workplace settings, but are bounded by factors such as career stage or style of performance evaluation (ideas we detail further in the sections below). Testing each of these possibilities would advance our practical understanding of how to support individuals in the workplace and also our theoretical understanding of mindsets. They also offer opportunities for advancing our understanding of organizations as a whole – for example would interventions that effectively shift individuals’ mindsets reshape the culture of the organization over time? Anecdotally, workplaces that we know which have engaged in mindset culture change initiatives have taken a top-down approach, using messages from leadership to encourage individuals to shift their beliefs while also changing practices and policies (also see Ibarra et al., 2018). Employee-focused interventions might offer insights as to whether an alternative path to broader culture change is possible, one that starts with the individual.

A Brief Overview of Past Research

Our goal in this section is to cite foundational papers for each domain of mindsets about malleability that we review (we acknowledge that worthy contributions are left out for the sake of brevity) and to provide our initial ideas for how each domain of mindsets directly relates to questions or outcomes of interest within the workplace. We also note that all of the domains we describe below have research supporting the influence of mindsets on outcomes using both correlational and experimental methods, so we will not detail these methods. Readers will see that across the broad literature on mindsets there are still many exciting opportunities to test whether and how employee, team, and organizational outcomes are shaped by mindsets about intelligence, personality, morality, bias and prejudice, emotions, health, groups, etc.

Intelligence. As intelligence was the foundational domain in which Dweck developed the theory of mindsets, we have already reviewed much of the theory and early findings above (Dweck, 1986, 1999, 2006; Dweck & Leggett, 1988; Dweck & Yeager, 2019). As noted, in seeking to understand why children of equal ability varied so widely in their responses to struggle and difficulty in school (Diener & Dweck, 1978; Dweck & Reppucci, 1973), Dweck and colleagues theorized that children were motivated by different goals (Elliott & Dweck, 1988) due to their beliefs about ability as fixed and stable versus malleable and thus possible to develop (M. Bandura, 1983; Dweck & Yeager, 2019). Studies of students across the schooling years found that, in the context of difficulty, growth (vs. fixed) mindsets about the malleability of intelligence

predicted endorsement of more learning than performance goals and the view of effort as useful (vs. bad; Blackwell et al., 2007; Dweck & Leggett, 1988; Robins & Pals, 2002; for a review and meta-analysis see Burnette et al., 2013), greater challenge seeking (Hong et al., 1999; Cury et al., 2006; Yeager et al., 2019), and more learning after failure through persistence (Nussbaum & Dweck, 2008) in part due to attention orientation after failure (Mangels et al., 2006; Moser et al., 2011), which all contribute to better performance over time. Across a national sample of students from Chile, a more growth mindset predicted better academic performance, especially among lower-income students (Claro et al., 2016).

The most direct translation of classic mindset research into the workplace would investigate if mindsets about the malleability of intelligence similarly predict effort, learning, persistence, and performance in workplace settings. Indeed, viewing entrepreneurial ability as malleable (vs. fixed) predicted greater self-efficacy among real business owners who faced economic threats (which also replicated among undergraduate women facing threatening gender stereotypes, Pollack et al., 2012). Because organizations define performance in diverse ways – metrics of customer or supervisor ratings, sales, revenue generated, number of tasks completed in a set time, contribution of creative ideas, effectiveness in collaborating across teams, responsiveness to others' needs and requests, or leadership, to name just a few – the question of whether mindsets predict performance in organizations demands many investigations to fully answer. Different answers could even arise for different metrics of performance. Perhaps certain aspects of performance (e.g., tasks that differentiate people based on effort) would be more well-predicted by individuals' mindsets (see Heslin et al., 2005, for related work on kind-of-person mindsets). It could also be that some types of performance are more driven by an individual's inputs, whereas other types of performance rely upon the interdependent contributions of the

team. If one team member's inputs are ineffective or if the team lacks coordination (Heath & Staudenmayer, 2000; Srikanth et al., 2016) this interdependence might limit the degree to which individual mindsets about intelligence predict performance. There is also opportunity to consider a new level of analysis that, to our knowledge, has yet to be explored in mindset research – team mindsets about intelligence as fixed or malleable – and how they relate to team dynamics and team performance (Behfar et al., 2008; Jehn et al., 1999; Simons & Peterson, 2000). These are fascinating possibilities that would dramatically expand our theory and understanding of the mindset-performance relationship. Moreover, performance is not only encapsulated through one's effectiveness at the job one is currently in. Research could delve into the question of whether mindsets shape people's performance in getting jobs, promotions, and even in moving up the leadership ladder as their careers progress and each advancement presents an even bigger challenge (Heslin & Keating, 2016, 2017).

As noted in the earlier section, much attention in the psychology of mindsets has turned toward interventions as a way of testing whether reliable performance benefits emerge in real-world schooling contexts. Early investigations stopped declining grades among middle schoolers (Blackwell et al., 2007), improved grades among negatively stereotyped African American undergraduates (Aronson et al., 2002), and improved standardized test scores among 7th grade girls and racial minority, low-income students (Good et al., 2003). Research later confirmed mindset interventions can be effective online (Paunesku et al., 2015). Evidence was mixed in subsequent replication attempts (e.g., Bahnik & Vranka, 2017; Burnette et al., 2018; Li & Bates, 2019), sometimes with mindset interventions not yielding effects on performance but producing positive shifts on psychological processes that would typically predict performance and which do predict persistence (e.g., self-efficacy in entrepreneurship, Burnette et al., 2019; intrinsic value of

computer science, Burnette, Hoyt et al., 2020). However, large-scale online growth mindset interventions (Paunesku et al., 2015) with improved intervention content increased lower achieving 9th grade students' grades (Yeager, Romero, et al., 2016), reduced racial achievement gaps by raising enrolment (Experiments 1-2) and increasing grades (Experiment 3) among socially and economically disadvantaged incoming undergraduates (Yeager, Walton, et al., 2016), improved the GPA of Latina/o students in a midwestern public university at the end of the term (Broda et al., 2018), and improved math performance among students in Norway (Bettinger et al., 2018). The National Study of Learning Mindsets, the largest growth mindset intervention to date, which was administered online to students from 56 U.S. schools, produced a standardized mean-difference effect size of 0.33 in reducing fixed mindset beliefs and, among lower-achieving students, a 0.11 in increase in grades (i.e., increased GPAs in core classes at the end of the ninth grade) in comparison to control condition (Yeager et al., 2019).

Intervention science would translate into field experiment methodology for research in organizations, and would represent the best test of whether inducing a growth mindset at the individual level increases performance (or certain aspects of performance) in the workplace. Both the in-person and online intervention methodologies could translate into organizations, in the form of workshops or online trainings. Given that interventions which teach a growth mindset to students seem to systematically benefit those who are most underserved (low income students, poorly performing students, negatively stereotyped racial minorities and women; Aronson et al., 2002; Claro et al., 2016; Good et al., 2003; Romero et al., 2014; Schleider et al., 2019; Sisk et al., 2018; Tamir et al., 2007; Yeager et al., 2014; Yeager et al., 2013), field experiments in the workplace might particularly benefit the performance of populations which are underrepresented in the workplace. This would raise the exciting possibility that field

experiments testing a growth mindset intervention might not just inform our understanding of the mindset-performance relationship but could also illuminate new pathways for improving and supporting diversity in organizations (Ely & Thomas, 2001; Jehn & Bezrukova, 2004; Leslie et al., 2015; Phillips et al., 2012; Plaut, 2010; Roberson, 2019; Triandis et al., 1994). For example, many companies increasingly use competency tests in the job interview process, and it could be that those tests show performance gaps by race, gender, social class, or other underrepresented characteristics similar to standardized academic tests. A growth mindset intervention for applicants just before they complete a competency test might close some of these gaps, allowing members of negatively stereotyped and underrepresented groups to showcase their true level of potential and performance.

Perceiving fixed-growth mindsets in the environment. Issues of diversity in the workplace could also be informed by past mindset research which points toward considering fixed-growth intelligence mindsets as perceived from the environment, rather than the mindsets individuals hold which was our focus in the section above. Good et al. (2012) theorized that a growth mindset environment in math might weaken the negatively stereotyping “culture of talent” that women in this workforce pipeline experience. Indeed, even when they rated their 1st year university math classes as highly stereotyping, women who experienced a more growth (vs. fixed) mindset about math intelligence from the environment reported higher sense of belonging during the term, which was associated with higher intent to pursue math in the future and higher course grades at the end of the term (Good et al., 2012). Although some lab research suggests that a fixed mindset environment can boost performance among positively stereotyped groups (Mendoza-Denton et al., 2008), more research suggests that all students benefit when they

perceive a growth mindset. Students, regardless of demographic background, who perceived their faculty as holding a fixed mindset reported lower sense of belonging, more feelings of impostorism, and more negative affect, which predicted lower course engagement, interest in STEM, and grades (Muenks et al., 2020; but see Rattan et al., 2018). Conversely, when science, technology, engineering, and math (STEM) students perceive their faculty to hold a growth (vs. fixed) mindset about personality, they see STEM as more supportive of their communal goals (e.g., working collaboratively with others, serving humanity) which increases their desire to pursue STEM careers (Fuesting et al., 2019).

Together, these findings suggest that perceived fixed-growth mindsets may play a role in young people's career pursuit, and thus workforce pipelines. Considering the mindsets that students perceive, particularly in the stages of their training when they are choosing majors, might be valuable to industries and organizations engaged in outreach to strengthen, and especially to diversify, their workforce pipeline (e.g., computer programming, engineering, physics; Cheryan et al., 2017). They also encourage us to think about all of the people who an individual employee might perceive mindsets from – their peers, subordinates, manager, customers or clients, other teams they collaborate and/or compete with, the top leadership of the organization. Bridging this research area into organizations opens up the opportunity to investigate whether we perceive mindsets from everybody across all of those roles in the workplace? There are aspects of interpersonal perception that we judge whenever we encounter others (e.g., warmth, competence; Bakan, 1966; Cuddy et al., 2008; Fiske et al., 1999, 2007), but research on perceptions of others' mindsets has theorized that people develop these perceptions primarily for important others (meta-lay theories, Rattan et al., 2018). It could be that in the workplace, employees develop, and therefore are influenced by, perceptions of the fixed-growth

intelligence mindsets preferentially for peers, colleagues, and clients who have a greater impact on their well-being or performance. In this way, embedding mindsets in the workplace context might both add nuance to our basic understanding of mindsets and elevate our understanding of the employee experience.

Actual fixed-growth mindsets in the environment. Given the evidence that *perceptions* of others' mindsets meaningfully impact people's outcomes, what about others' *actual* mindsets about intelligence? Again, while current research is generally restricted to how teachers' mindsets affect students, this is a perfect question for scholarship in organizations. When teachers interact with poorly performing students, they experience difficulty and their mindsets shape engagement (i.e., offering concrete strategies for improvement) and views of the student (us a single poor test performance to diagnose ability, Rattan et al., 2012). While Park et al. (2016) found no direct relationship between teacher and student mindsets, they found that teachers' performance-oriented pedagogical practices (which correlated with their mindsets) predicted student mindsets. Some past research has suggested that performance (vs. process) praise can foster fixed (vs. growth) mindsets about ability (Gunderson et al., 2018; Kamins & Dweck, 1999; Mueller & Dweck, 1998; Pomerantz & Kempner, 2013; also see Cimpian et al., 2007) and cheating (Zhao et al., 2017). It would be fascinating to examine whether similar effects would emerge as a function of both praise communicated interpersonally from managers to subordinates and praise communicated through performance ratings, rewards, and incentive systems (Gerhart & Fang, 2014; McGraw, 2016; Rynes et al., 2005).

Canning et al. (2019) revealed that faculty who hold more fixed (vs. growth) mindsets have poorer performance among students in their courses generally, larger gaps between

historically underrepresented minorities and White and Asian students, and their students report less motivation on end-of-course evaluations. The fascinating parallel question for workplaces would be whether managers' mindsets about intelligence predict their treatment of employees, employees' performance, turnover, and perhaps even gender and racial gaps in performance and advancement up the ranks of the organization (also see Heslin et al., 2005; 2006; Heslin & VandeWalle, 2008, 2011). Research could examine whether team's or managers' mindsets about intelligence as fixed versus growth relate to sense of belonging, psychological safety (Edmondson, 1999, 2003; Edmondson & Lei, 2014), leader-follower relationship quality (e.g., LMX; Dienesch & Liden, 1986; Graen & Uhl-Bien, 1995), or creativity and innovation (Amabile, 1996; Perry-Smith, 2006, 2008; Shalley & Gilson, 2004; West, 1990; Zhou & Shalley, 2003). If managers' and leaders' growth mindset increases each of these aspects of employee experience, we would wonder whether there might also be a link between mindsets and what people see as charismatic leadership (Bass, 1985, 1988; Brands et al., 2015; van Knippenberg & Sitkin, 2013)

Bridging the previous section and this one, studying both perceived and actual mindsets in subordinate-manager teams would be highly generative for the science of mindsets. A longstanding question has been what happens when people match versus mismatch (or when people perceive matches versus mismatches) to the mindset of their teacher, manager, or leader. Surveys in organizations could capture employee, team, and manager actual mindsets, and employee, team, and manager perceived mindsets, allowing for an investigation of the impact (both interpersonally and on performance) of mindset matching versus mismatching for the first time. Surveys that could assess these mindsets and perceptions of mindsets over time would also

advance the as-yet-unstudied but fascinating question of whether leader mindset comes to infiltrate and change employee mindsets over time, and how that impacts performance.

Organizational mindsets about intelligence. Murphy and Dweck (2010) theorized that mindsets at the organizational level imbue the culture of a workplace with the message that intelligence is fixed or can grow and thus shape cognition, affect, and behavior among employees. University students applying to join a tutoring club described themselves relatively more in terms of their ‘smartness’ when the club communicated a fixed mindset, but relatively more in terms of their motivation when it communicated a growth mindset (Murphy and Dweck, 2010). Real organizations whose mission statements communicated a more growth (vs. fixed) mindset were seen as having a more positive culture: People reported feeling more trust, collaboration, innovation, integrity, and commitment (Canning et al., 2020). It would be fascinating to study whether, through these mechanisms, growth mindset organizations outperform fixed mindset organizations in terms of profit, share price, competitiveness in the market, and whether this is especially the case during economic downturns or times of major disruption, as is being experienced during the 2020 COVID-19 pandemic.

When fixed mindsets characterize the entire culture of an industry they may shape workforce pipelines, maintaining historical gender and race disparities in pursuit of those fields. Leslie et al. (2015) captured the mindset of different academic disciplines by asking scholars how much they endorsed the idea of brilliance (i.e., the idea that aptitude cannot be taught, aligned with the fixed mindset, see also the universal mindset, Rattan et al., 2012). Fields where faculty endorsed the fixed-oriented belief in brilliance to a greater degree graduated fewer women and racial minority Ph.D.s in the U.S. (Leslie et al., 2015; also see Bian, Leslie, &

Cimpian, 2018; Bian, Leslie, et al., 2018; Meyer et al., 2015; Storage et al., 2016; Storage, 2020). Research which explores similar patterns across organizations within an industry, or across industries and nations, would offer fascinating insights that might inform interventions designed to improve retention and advancement for underrepresented groups. Scholars could also explore whether organizational mindsets similarly shape markers of equity more broadly across levels of the organization, such as the degree of gender and race pay gaps or even representation in top leadership.

Because organizational mindsets are conceptualized as part of an organization's culture (Murphy & Dweck, 2010), they might offer new insights for the study of person-organization fit (Chatman, 1989; O'Reilly et al., 1991; Edwards et al., 2006). Research has found that person-organization fit drives potential employees' job choice intentions (Cable & Judge, 1996), employees' experience and performance (Edwards & Cable, 2009), and shapes employee selection (Cable & Judge, 1997). Murphy and Dweck (2010) already provide initial evidence of a link between organizational mindsets and person-organization fit with their findings that people try to self-present in line with the organizational mindset they perceive (i.e., they attempt to illustrate person-organization fit); extending this link, research might investigate the degree to which the fit between employees' mindsets and organizations' mindsets similarly drive selection (also see Tsay & Banaji, 2011), performance, and retention in the workplace.

This section has summarized the extensive research on fixed-growth mindsets about intelligence. We would understand whether, coming to the end of this section, interested organizational scholars wonder which level of mindset they ought to study in their research. We believe that scholars should study the level of mindset they find most interesting, but we also encourage scholars to consider, when their study design allows it, to measure more than one

level of mindset (individual, perceived, others' actual, and organizational mindsets). In this way, over time, the field might grow our understanding of how these different types of mindsets relate and thus advance our theoretical understanding of mindsets. We would expect that individuals' own mindsets, their perceptions of others' mindsets, others' actual mindsets, and organizational mindsets would be distinct predictors of different outcomes. If this is the case, then these investigations will contribute to developing a framework to guide which is the best level of analysis for what types of outcomes, and why.

Mindsets About Personality & Kind-of-Person. If fixed (vs. growth) mindsets of *intelligence* predispose people to diagnose *ability* from test performance, would fixed (vs. growth) mindsets of *personality* predispose people to diagnose a person's *character* from just a few pieces of information about their behavior, or even from their social group memberships? To investigate interpersonal perceptions using colloquial language, scholarship in this domain focuses on measuring and manipulating people's mindsets of either personality or 'the kind of person someone is' (Dweck et al., 1995; Plaks et al., 2009). Note that personality in this context does not represent psychological theories of personality but rather lay people's generalized perceptions (e.g., "Someone's personality is something about them that they can't change very much," Erdley & Dweck, 1993). Excitingly, mindsets about personality and kind of person have already been extended into workplace, as we shortly will review below, and show great promise for developing our understanding of organizational behavior.

Interpersonal perception and judgement. Fixed mindsets predispose both children and adults to make stronger global trait inferences from initial behavior, especially negative behavior,

and to expect these traits to be more consistent across situations and in the future as compared to growth mindsets (Chiu et al., 1997; Erdley & Dweck, 1993). Even when they read information about a strong situation (e.g., an anxiety-provoking situation in which a person was being asked to discuss their most embarrassing moment publicly), people with more of a fixed (vs. growth) mindset applied relatively more trait than situational attributions for a person's nervousness (Molden et al., 2006). This body of research suggests that the types of early impressions people form about co-workers might be shaped, in part, by mindsets about personality. Research could evaluate whether hiring managers who have a more fixed mindset attribute normal job interview anxiety to an individual's character, rather than the situation, which could shape their willingness to hire the candidate (Cook et al., 2000; McCarthy & Goffin, 2004). Given that both interpersonal and performance factors drive who receives opportunities (e.g., Judge & Ferris, 1992), research could examine how leaders' mindsets shape their staffing decisions and who gets labelled as 'talented.' As a more fixed mindset predisposes people to diagnose character from behavior, early positive actions might garner liking and trust faster, and foster the view of someone as high potential, and early negative actions might garner more immediate rejection. This would be problematic in most contexts, where situational, rather than dispositional, attributes are warranted. For example, imagine a parent returning to work after their parental leave with a new manager. Managers with a fixed (vs. growth) mindset of personality might be more prone to making dispositional attributions (e.g., judging commitment to the job) than situational attributions (e.g., the strain of being up at night with a new baby) for the same behaviors (e.g., tiredness at work). While many of the work-life (Murphy, Thomas, Cobb, & Hartman, 2020) and work-family (Allen & Russell, 1999; Allen et al., 2000; Greenhaus & Beutell, 1985) challenges that exist have to do with structural factors, especially as they shape

women's career outcomes (Blau & Kahn, 2017; England, 2010; Heilman & Eagly, 2008; Morgenroth & Heilman, 2017; Williams, 2001, 2010), we see intriguing potential for exploring the possibility that mindsets play a role as well. In the context of the global COVID-19 pandemic in 2020, where millions of employees were suddenly without their normal childcare resources and needed to manage children's schooling during work hours, these types of interpersonal judgements could have unique longer-term consequences (e.g., for promotion recommendations), and it would be fascinating to know whether personality mindsets are differentially predictive when managers are judging mothers versus fathers. Interestingly, while in most everyday social interactions dispositional attributions are considered problematic, some divisions of organizations, or even industries, might prefer the pattern of interpersonal perception that arises from the fixed mindset. Consider a division or organization where it is essential to have a zero-tolerance policy for ethical transgressions (e.g., financial services, medicine) – could the strong, quick, and internal attributions for unethical behavior that arise from a fixed mindset about personality be helpful in maintaining strong norms and a culture of whistleblowing?

Personality mindsets also shape information processing (for a review, see Plaks et al., 2009). Plaks et al. (2001) found that people were predisposed to attend to information consistent with their mindset. When people read information that violated their initial impressions (e.g., someone whose initial description was at odds with their later behaviors in the case of the fixed mindset, someone whose hard work and effort did not yield improvements in learning and performance in the case of the growth mindset), they reported feeling greater discomfort and agitation (Plaks et al., 2005). This motivated cognition also applies to the self – people see their strengths as more fixed and their weaknesses as more malleable (Steimer & Mata, 2016). Eberhardt et al. (2003) replicated this preferential information processing pattern finding that

people remembered (and re-drew) racially ambiguous Black-White faces labelled with either racial label with more stereotypical features, if they held the fixed mindset, and with fewer stereotypical and more unique features if they held the growth mindset. As the increasingly large global population of biracial and multiracial individuals grow to working age and enter organizations (Gaither, 2015; Shih et al., 2019), the scholarship that develops to explain their experiences and outcomes should integrate an understanding of mindsets.

These findings about information processing have been directly extended to the workplace, showcasing how the study of mindsets can contribute to better understanding manager behavior and employee outcomes. Heslin et al. (2005) found that managers who held more growth (vs. fixed) kind-of-person mindsets were more likely to readily recognize changes (improvement or decline) in employee performance (also see Heslin & Vandewalle, 2008). This research also developed a growth mindset intervention for managers, which resulted in greater acknowledgement of employee improvement 6 weeks later, relative to a control group (Heslin et al., 2005). Going beyond information processing to behavior, Heslin et al. (2006) also showed how mindsets have the potential to create self-fulfilling prophecies (Rosenthal & Jacobson, 1968, also see Eden, 1984). Growth (vs. fixed) personality mindset managers were more willing to coach employees toward improvement, and offered more and higher quality feedback. Employees even experienced growth mindset managers' performance evaluations as more procedurally fair (Heslin & VandeWalle, 2011). A direct extension of this line of work could inform our understanding of how mindsets shape leadership effectiveness. It would be particularly fascinating to test whether leaders with growth kind-of-person mindsets outperform their peers with fixed mindsets by better aligning their leadership style to situational and task demands (Blanchard et al., 1993; Pearce et al., 2003; Sims et al., 2009).

Intergroup perception and judgement. Extending from interpersonal perception to intergroup perception (for reviews, see Carr et al., 2012; Levy et al., 2006; Rattan & Georgeac, 2017), Levy et al. (1998) investigated whether lay theories about the malleability of the kind of person someone is underlie people's propensity toward stereotyping, a phenomenon that occurs in organizations (Eagly & Karau, 2002; Ellemers, 2014; Haines et al., 2016; Heilman, 2012) with diverse detrimental effects for racial minorities (Quillian et al., 2017), LGBTQ+ individuals (Ragins & Cornwell, 2001; Ragins et al., 2007), women (Moss-Racusin et al., 2012), those who hold intersectional identities (Milkman et al., 2015; Purdie-Vaughns & Eibach, 2008), and other stigmatized and underrepresented identities. Whereas people were equally knowledgeable about prevalent stereotypes attached to social groups, those who held a more fixed (vs. growth) mindset were more likely to believe those stereotypes accurately describe the groups. Even when presented with information about novel and unknown groups, fixed (vs. growth) lay theories of personality predisposed both adults (Chiu et al., 1997; Levy et al., 1998) and children (Levy & Dweck, 1999) toward drawing more extreme trait judgements about the group and toward seeing members of the group as more similar to each other.

Kind-of-person and personality mindsets shape both attitudes (i.e., stereotypes) and behavior (i.e., prejudice) in intergroup contexts. A fixed (vs. growth) personality or kind-of-person mindset predisposed people toward social distancing from, and not helping, negatively stereotyped groups (Hoyt & Burnette, 2013; Karafantis & Levy, 2004; Levy & Dweck, 1999; Levy et al., 1998). By contrast, a growth kind-of-person mindset promoted US and UK citizens' willingness to resettle refugees in their home nation (Madan et al., 2019). A growth mindset fostered people's sense that refugees can adapt, without inducing the belief that refugees should

be obligated to shed their home customs and culture, thus explaining the increase in resettlement support (Madan et al., 2019).

The extension of these findings into the workplace has direct relevance to some of the biggest challenges organizations face. As the public outcry at the murders of George Floyd and Breonna Taylor rose in the United States and around the globe, a number of organizations rushed to take a public stand against racial injustice and police brutality. Organizations released solidarity statements to endorse the idea that Black Lives Matter (BLM; Hsu, 2020) and many took action toward developing employee attitudes, organizational practices, and customer approaches that embody anti-racism. Given that personality and kind-of-person mindsets intersect with stereotyping, prejudice, and discrimination in the lab, research could examine whether majority group member employees' openness to (vs. denial or avoidance of, Knowles et al., 2014) their employers' efforts to address racial equality depend, in part, on their mindsets. It could be that managers who take a more growth (vs. fixed) mindset are better able to learn, to control their bias, and to implement fairer practices, which advances organizations toward their antiracist goals. At the same time, research suggests that organizations' solidarity statements can backfire (Purdie-Vaughns et al., 2008) or be communicated disingenuously (Wilton et al., 2020), so research could also explore whether racial majority and racial minorities' outlook on how genuine, serious, and actionable these types of statements are vary based on their mindsets. It must also be acknowledged that police forces are one type of employer, and so intervention research that seeks to address the implicit and explicit biases of the police (Correll et al., 2014; Voigt et al., 2017) might also consider addressing the potential role that mindsets play in the biases they exhibit and their all-too-often deadly consequences (Swencionis & Goff, 2017). The

study of mindsets offer a particularly transformative lens to help organizations improve their practices on the issues of racial justice and equality.

There are many other types of groups in organizations that employees form stereotypes about – teams working on different projects, employees’ counterparts in other nations, other divisions within the company, competitors, new markets, etc (Harrison & Klein, 2007; Milliken & Martins, 1996; Williams & O’Reilly, 1998). Considering the relation between personality mindsets and stereotyping might help organizational scholars to better understand when and why stereotypes will emerge as a barrier to effective collaboration between employees or across groups, and therefore to craft interventions which might be implemented just before such a collaboration to foster more effective interpersonal interactions (Shemla et al., 2014). Similarly, might a growth mindset help facilitate the process of a merger, by undermining the sense of ‘us’ and ‘them’ that can emerge (Carter & Phillips, 2017; Terry et al., 2001)? We also note that the substantial migration of people due to war and persecution (United Nations Refugee Agency, 2020) is forecasted to increase as the climate crisis worsens (Brown, 2008; Rigaud et al., 2019). This means that, increasingly, workplaces across the world will not only have to contend with bringing together people of different backgrounds, but they will also have to integrate migrants displaced from their homelands – groups that are often subject to scrutiny and bias in their host societies (Louis et al., 2007). It would be fascinating for research to explore whether growth (vs. fixed) mindset managers have an easier time, and are more effective at, integrating employees whose personal histories involve refugee or migrant status.

Behavior after conflict. If you believe that people can change, then speaking up after a conflict might be a way to instigate better future behavior; if you believe that people cannot

change, then why bother speaking up? In both retrospective and prospective studies, partners who held a more growth (vs. fixed) personality mindset voiced their dissatisfaction more after a relationship transgression that evoked anger (Kammrath & Dweck, 2006), but if their initially greater optimism was not met with change, they exhibited greater distrust and attributed it to lack of effort (Kammrath & Peetz, 2012). While research on romantic relationships might at first seem unrelated to workplace dynamics, we draw a link between this past work and research which seeks to address one driver of gender inequality in careers – gender inequality in the home (Bureau of Labor Statistics, 2019; Croft et al., 2015; Daminger, 2019; England, 2010; England et al., 2020; Pew Research Center, 2015; Williams, 2001, 2010). We hope research can understand how mindsets about malleability shape women’s behavior, and even career ‘choices’ (Stephens & Levine, 2011) after conflict over the unequal distribution of household labour which exists in many heterosexual dual-working households, issues which have seem to be exacerbated during the 2020 COVID-19 pandemic.

Rattan and Dweck (2010) extended the theory into the context of intergroup conflict, and ultimately to workplace interactions, exploring whether personality mindsets might similarly shape speaking up when someone communicates explicit bias and there is no pre-existing relationship to motivate engagement. Despite disagreeing equally strongly with a biased comment, racial minorities and women were more likely to speak up and confront a peer who made a biased comment if they held more of a growth (rather than fixed) mindset of personality (Rattan & Dweck, 2010). In the workplace, racial minorities and women receive overtly biased comments all too often, even today (Ely et al., 2006; Hyers, 2007; Swim & Hyers, 1999; Woodzicka & LaFrance, 2001), and these alienating experiences can have negative consequences for their well-being (Branscombe et al., 1999; Major & O’Brien, 2005) and view

of the company (Gelfand et al., 2007). However, when racial minorities and women both hold a growth (vs. fixed) mindset and speak up (vs. stay silent) in response to a biased comment at work, they reported a less negative outlook on the person who expressed bias, which was associated with retaining more workplace satisfaction and belonging (Rattan & Dweck, 2018). These findings suggest that mindsets about personality as fixed or malleable can shape coping following experiences with bias in the workplace. As more effort is made toward addressing issues of diversity, inclusion, and equity in organizations (e.g., Cox & Blake, 1991, Ely & Thomas, 2001; Nishii et al., 2018) understanding the ways in which fixed-growth mindsets about personality might support underrepresented and negatively stereotyped employees' coping in organizations would be especially valuable for future research. For example, many organizations are working to raise awareness of racial issues following the #BlackLivesMatter global movement through internal conversations about issues of racial bias, white privilege, and equity. While these efforts are necessary and valuable, they also run the risk of creating spaces where people engaged in these conversations for the first time (or people unused to engaging in intergroup dialogues) will communicate stereotypes, prejudice, or otherwise ignorant and biased assumptions. Research in collaboration with organizations which are engaging in such efforts might examine how infusing such conversations with the growth mindset might productively foster more speaking out and better coping when biased comments are inevitably made.

What if you committed the wrong – whether making a biased statement or some other transgression against a co-worker – would you be willing to admit it? Fixed mindsets predispose people to feeling they must protect themselves from being labelled as bad, relative to growth mindsets which might allow people to feel less threatened and thus take responsibility. Indeed, people were more likely to take responsibility and apologize to a wronged party in an

interpersonal conflict if they held more growth (vs. fixed) mindsets, which was driven by their desire to learn from the situation (Schumann & Dweck, 2014). Mindsets may also shape how people receive apologies. People who held more growth mindsets of personality evaluated public apologies from men accused of sexual misconduct less negatively than those who held more fixed mindsets (Schumann, 2019). Extending this line of work, it would be fascinating to test whether observers with growth (vs. fixed) mindsets perceive organizations more favorably when companies accept liability and highlight their intentions to learn from their mistakes following a wrongdoing (Adams, 2016).

Well-being. When someone has a bad (good) quarter, when a project goes completely awry (perfectly), or when someone gets passed over (chosen) for a promotion, might their mindsets about the malleability of personality shape how much they feel like a loser (or winner)? Personality mindsets have been shown to predict this aspect of well-being, people's self-perceptions, although the research to date has only studied middle schoolers meaning that this is an area ready for extension into the workplace. During adolescence, teenagers face the challenge of navigating a complex and often hostile social world, which can negatively impact their well-being (Yeager, 2017; Yeager et al., 2014). Indeed, adolescents who see personality as fixed (vs. malleable) viewed an ambiguous negative interaction as more hostile, and responded with more aggression (Lee & Yeager, 2020; Yeager et al., 2013; Yeager & Miu, 2011). Growth mindset of personality (vs. control) interventions reduced aggressive behavior one month post-intervention and conduct problems reported 3 months post-intervention (Yeager et al., 2013; Yeager et al., 2011; Yeager et al., 2013), and reduced self-reported depressive symptoms in high school students 9 months later (Miu & Yeager, 2015; also see Calvete et al., 2019). In highly

competitive work environments, this type of all-or-nothing thinking might be at odds both with individual employee well-being, and with the organizational culture that leaders desire (Danna & Griffin, 1999; Day & Penney, 2017).

Would personality mindsets similarly shape social status concerns and well-being, particularly when times are tough, in such organizations? While the economic consequences of the COVID-19 pandemic are not yet fully known, it is apparent that millions have lost their jobs. Would personality mindsets similarly predict who feels like a ‘loser’ after being let go during an economic downturn, and through this impact on well-being shape subsequent job seeking behaviors, or even job interview performance (Heslin & Keating, 2016)? We wonder if this process relates to the classic threat-rigidity effect (Staw et al., 1981). Considering mindsets about personality and threat-rigidity might help scholars develop theories about when threat-rigidity would be exacerbated (e.g., when individuals, leaders, or even organizations take a fixed view of personality) versus potentially minimized (e.g., when individuals, leaders, or even organizations take a growth view of personality). We see great potential for research which extends the study of personality mindsets and well-being into the workplace to offer insights for organizations which seek to take a more human-centred approach, particularly in tough times.

Morality. People who hold more fixed (vs. growth) mindsets about morality exhibit more punitiveness (Chiu et al., 1997; Chiu et al., 1997; Gervy, Chiu, Hong & Dweck, 1999), even when they share an ingroup identity with someone who has done wrong (Hong et al., 2004; also see Hong et al., 2003), possibly because they made more internal, stable, and negative attributions about individuals who have committed a crime (Tam et al., 2013; see also Miller et al., 2007). Extending these findings to workplace contexts, future research could investigate

whether malleability beliefs about morality could similarly shape observers' reactions to organizations' trust violations (cf. Haselhuhn et al., 2010) and brand transgressions (e.g., ethical violations committed by an organization; Aaker et al., 2004; Sweetin et al., 2013). Individuals with a growth (vs. fixed) mindset of moral character might be more forgiving of an organization following integrity violations at first, but if the company fails to change they then might recommend more severe punishments. Considering the increasing interest in, and demand for, organizations to be socially responsible, it may be that employees', customers', and leaders' morality mindsets come to shape their willingness to engage with a brand.

Prejudice and Bias. People worry about their ability to perform well in interracial interactions because revealing prejudice is such a discrediting behavior (Richeson & Shelton, 2007; Shelton, 2003; Shelton et al., 2010). Two labs simultaneously investigated people's beliefs about whether prejudice can change, or are fixed and stable. White Americans who held growth (vs. fixed) mindsets about prejudice were more willing to engage in cross-race interactions, more comfortable when anticipating an interaction, opted to sit closer to a Black conversation partner, and exhibited more learning-oriented strategies during cross-race interactions (Carr et al., 2012; Neel & Shapiro, 2012), even controlling for White participants' assessed level of prejudice. Ironically, minorities perceived the avoidant and performance-oriented interaction style characteristic of those who held more fixed (vs. growth) mindsets about prejudice as indicating racial prejudice, even when their level of prejudice was not in fact higher (Simon et al., 2019). Earlier, we referenced how research on mindsets about personality might help organizations in their diversity efforts by reducing stereotyping and prejudice and by improving stigmatized group members' coping. This is also true of mindsets about prejudice. Companies that wish to

embark upon an awareness raising campaign, as many began to do after the #BlackLivesMatters protests in the summer of 2020, might imbue their communications and trainings with the growth mindset about prejudice. It would be fascinating to see whether, in this context, diversity trainings led by facilitators who broadcast a growth (vs. fixed) mindset are more effective (Bezrukova et al., 2012). Companies which have employee bases which have already engaged in de-biasing measures and educated themselves about the need for greater equity in organizations could test whether growth mindset interventions might facilitate more positive interactions generally, possibly having second-order effects such as diversifying social networks and developing better mentorship and sponsorship across group lines (Ibarra, 1992, 1993, 2019; Ibarra et al., 2010; Mollica et al., 2003; Ragins, 2016; Thomas et al., 2020).

Groups. To examine intractable social conflicts, research has considered mindsets about the malleability of groups (Dweck, 2012; Halperin et al., 2012; Halperin et al., 2011). Both Israeli Jewish and Palestinian participants who held more growth (vs. fixed) mindsets about groups exhibited more positive views toward the other and were thus more willing to support peace-related concessions on the part of their group (Halperin et al., 2011; also see Schuman et al., 2018). A growth (vs. fixed) mindset about groups facilitates productive guilt (Weiss-Klayman et al., 2019), forgiveness after collective apology (Wohl et al., 2015), and collective action (through self-efficacy, Cohen-Chen et al., 2014). Teaching people a growth (vs. fixed or control) mindset about groups reduced intergroup anxiety (Turkish-Greek Cypriot conflict, Halperin et al., 2012), increased cooperation (Israeli-Palestinian conflict, Goldenberg et al., 2017), and improved intergroup attitudes and hope 6-months post intervention (Israeli-Palestinian conflict, Goldenberg et al., 2018). Longstanding or intractable conflicts also exist in

the workplace. There is a deep history of organizational involvement in social wrongdoing (e.g., polluting in racial minority communities, Bonam et al., 2016). Research could explore whether communicating a growth mindset about the malleability of groups might help corporations which have committed such profound wrongs to have more productive negotiations with the communities they harmed.

Emotions. Some people believe that they can change their emotions while others do not (for a review, see Kneeland et al., 2016; also see Beer, 2002). Students who endorsed growth (vs. fixed) mindsets about the malleability of emotions reported better well-being (over 2 years, Romero et al., 2014) and felt more able to self-regulate their emotions, which predicted less negative emotion throughout an academic year (Tamir et al., 2007; also see King & dela Rosa, 2019). Similarly, seeing anxiety as malleable reduced psychological distress following stressful life events (Schroder et al., 2017; also see Schleider et al., 2019). Malleability beliefs in the domain of emotions reliably predicted lower psychological distress among individuals clinically diagnosed with chronic mental health issues, and was a stronger predictor than malleability beliefs in the domains of intelligence and personality (Burnette, Knouse et al., 2020). However, a growth (vs. fixed) mindset in the domains of empathy, aggression, and motivation predicted greater blame toward someone who exhibited poor behavior in the same domain, but only when the failure was repeated (Ryazanov & Christenfeld, 2018). Many types of jobs are demanding on people's emotions, from generalized stress to emotional labour to burnout (Hochschild, 1985; Morris & Feldman, 1996). For example, future research can test whether targeted mindset interventions could help combatting clinician burnout, which has been consistently showed as increasing healthcare professionals' likelihood to leave medical practice (Sinsky et al., 2017).

Health. Growth (vs. fixed) mindsets about health predicted healthier eating intentions (Thomas et al., 2019). People who believed their bodyweight could change (vs. is fixed) reported more positive expectations of dieting success, and increased optimism, which in turn predicted their sustained effort toward their goal (Burnette, 2010). Importantly, these effects remained even after controlling for known variables related to dieting success (e.g., dieting self-confidence, dispositional optimism, prior dieting history, initial body weight). A growth mindset about weight also predicted greater determination and self-efficacy, which seemed to reduce weight gain in the long term (Burnette & Finkel, 2012) and helped people to resist tempting high-calorie foods (Ehrlinger et al., 2017). While growth (vs. fixed) mindsets in the domain of health or weight can benefit health outcomes, they can also amplify self-blame (Hoyt & Burnette, 2020; cf. Ryazanov & Christenfeld, 2018) and body shame (Burnette et al., 2017) and thus can potentially impair well-being. Burnette, Hoyt, and colleagues have advanced the theory of mindsets in health domains by proposing that growth mindset messages (in the domain of weight, Burnette et al., 2017; addiction, Burnette et al., 2019) should be paired with compensatory messages that directly counteract the potential downsides of the growth mindset. A compensatory growth message explicitly states that people are not to blame for their current health challenge and that they have the potential to reach their future goals (also see Li et al., 2020). Compensatory growth mindset (vs. growth mindset) messaging reduced blame (the mechanism by which a growth mindset could have negative effects) and thus fostered the benefits of the growth mindset about health without inducing the costs (Burnette et al., 2017; Burnette et al., 2019; Hoyt & Burnette, 2020). Exploring whether these findings extend to workplaces in nations where healthcare is not nationalized may be particularly valuable, because

these are the contexts in which workplaces may engage in more aggressive health-directed messaging which could foster blame and shame cultures, particularly toward those in client-facing roles (Tomiya et al., 2018). Research could explore the potential benefits of a compensatory growth mindset message for fostering health behaviors without blame and shame in organizations such as these, as well as in the medical, health, wellness industries more broadly. In fact, industries which have historically been considered less inclusive in terms of bodyweight stigma (e.g., fashion, sports, sportswear) might be able to leverage a compensatory growth mindset message to both foster good health and to establish more inclusive cultures.

Other Domains. There are still new domains of mindsets being identified, domains which have direct relevance to meaningful workplace outcomes: willpower (Mukhopadhyay & Johar, 2005; also see, Francis & Job, 2018; Job et al., 2018; Job et al., 2015; but see Carruth et al., 2018), interests (O’Keefe et al., 2018), passion (Chen et al., 2015), age (Neel & Lassetter, 2015), and political orientation (Lassetter & Neel, 2019). Each of these offers initial investigations with exciting findings, and we look forward to seeing more scholarship of mindsets in each of these domains. For example, in the domain of networking, Kuwabara et al. (2018) theorized and found (Kuwabara et al., 2020) that individual’s beliefs about the malleability of social intelligence (as innate or learned), social relations (as naturally compatible vs. developed with effort) and social capital (as a zero-sum resource vs. variable-sum resource) shape people’s outcomes in seeking, maintaining, and leveraging new ties. In the domain of negotiation skills – a widely sought-after skill in the workplace - Kray and Haselhuhn (2007) showed that MBA students’ beliefs about the fixedness or malleability of negotiation abilities predicted their willingness to seek a challenging learning task, and led to better negotiation

performance. In the domain of gender roles, Kray and colleagues (2017) found that men's fixed (vs. growth) mindsets related to increased perceptions of existing gender system as fair and just – which could be extended to study leaders' outlook on gender inequalities in organizations. We have tremendous hope that future research will further explore how each of these domains of mindsets relate to workplace dynamics. For organizational scholars who read this review and see space for conceptualizing new domains of mindsets, best practice would be for their forthcoming scholarship to argue theoretically for why a new domain adds to our understanding, and either to show empirically that it is distinct from existing domains (e.g., see Madan et al., 2019; Rattan et al., 2012) or to evaluate their relative predictive power (Hoyt & Burnette, 2020; Burnette, Knouse, et al., 2020).

New Questions

Finally, we would be remiss if we did not acknowledge some of the exciting ways in which embedding the study of mindsets in organizational contexts offers opportunities to ask new questions, study new populations, and understand human flourishing in organizations more deeply. We have raised many ideas for future research in the preceding sections but note two further directions for future research that we personally find most exciting.

Uncertainty. Because they serve a sense-making function, mindsets offer people a sense of prediction and control. At odds with people's need for stability, prediction, and control in the world is the constantly changing nature of work life. Companies can cancel projects that have decades of investments, new CEOs can restructure longstanding teams, the departure of one team

member can change the culture of a team, gig work can dry up, and consumer preferences and interests can change overnight, sometimes meaning that previously essential technologies go out of business. As the 2020 COVID-19 pandemic showed, people can even have to completely restructure their ways of working, or transfer into new, suddenly-needed roles, overnight. We wonder about how the prevalence of uncertainty and change in people's work lives shape their mindsets, and how their mindsets might shape the way they manage uncertainty. Would these dynamics differ across span of one's career, or levels of seniority? It is possible that mindsets have a wide and diverse array of effects on these aspects of adults' working lives, and we hope future research will begin to explore them.

Low wage and vulnerable workers. Might mindsets shape people's approach to seeing their jobs become obsolete due to technological changes? What about when jobs move to other states or overseas? Could mindsets shape adults' coping when they are laid off late in their careers? The experience of unemployment is not just a financial hardship, it also affects people's psychological well-being and sense of identity (Feather, 1990; Paul & Moser, 2009). Would mindsets shape people's vulnerability during these types of employment difficulties, particularly for low wage or service work which already tends to be lower-paid? Do mindsets inform the trajectories of workers (and therefore families) as societies enter economic downturns, or as recovery begins, as is occurring across the world as the 2020 COVID-19 pandemic progresses?

How might mindsets matter for the work outcomes of the huge number of workers employed in casual, low and minimum wage work, and in exploitative employment situations (e.g., unpaid internships, underpaid farm work, prison labour)? Even more critically, could mindsets shape leaders' and managers' willingness to underpay and over-demand from their

employees (Madan et al., 2020)? Do mindsets shape the way families with dual working parents contend with women's unpaid second shift (Hochschild & Machung, 2012; Offer & Schneider, 2011), or treat the often overlooked workforces who make their lives functional by taking over domestic duties such as childcare and chores? We see great potential in bringing attention to these understudied work populations – and to those who set the policies that so often limit their life outcomes - through the study of mindsets in these workplaces. We hope that this future research on mindsets will contribute toward identifying which domains (intelligence, personality, groups) and at what level (individual, dyad, team, organizational) are most impactful, and to explore whether mindsets at different levels ever interact or compound each other to shape behavior and outcomes (Heslin et al., 2019; also see Han & Stieha, 2020).

Expanding Mindset Theory by Studying Organizations

Across all the domains of mindsets just reviewed, the basic theoretical model stayed relatively the same: mindsets represent foundational beliefs that shape people's ways of thinking and thus their behavior. The belief that a domain (intelligence, personality and kind of person, morality, prejudice, groups, emotion, health, negotiation, networking abilities, and gender roles) is fixed rather than malleable predisposed people to perceive information as more diagnostic, that is, to make more internal, stable, and global attributions, and to view effort negatively (mindset processes). As a result, people reduced their engagement, underperformed, and withdrew from situations and others that posed a threat (mindset expression). As we noted throughout the previous section, directly translating this established mindset research into the workplace – testing whether these domains of fixed-growth mindsets similarly shape important outcomes in

organizations – will produce an exciting body future scholarship. Next, we propose that the model of mindsets as we understand it might be better specified and more fully developed when embedded in workplace contexts. We propose two questions that can organize future research on mindsets in the workplace and, we hope, ultimately advance theory and understanding.

Moderation on Mindset Expression

Strong situations constrain individual differences in behavior (Mischel & Shoda, 1995). A strong situation is one in which individuals' likelihood of acting on their preferences or predispositions are muted because the norms, expectations, or constraints of the situation are clear, whereas a weak situation conversely allows preferences and predispositions to drive behavior because the norms, expectations, or constraints of the situation are absent or permissive (e.g., imagine funeral versus a subway platform in Manhattan, respectively; Mischel & Shoda, 1995; also see Meyer & Dalal, 2009; Meyer et al., 2010). Indeed, Dweck and Leggett (1986, page 269) suggest that situations can moderate mindset expression in their original theory:

“The stronger a predisposition, the less likely it is to be overridden by situational cues or the stronger will be the situational cues necessary to override it. Analogously, the weaker the predisposition, the more easily it can be altered by situational cues. Thus although we grant an important role to dispositional variables, this view of how situational cues and dispositional tendencies combine would lead one not to expect behavioural consistency across situations when the strength of the relevant situational cues varies across these situations.”

This is exactly what Murphy and Dweck (2010) found in the context of undergraduate student clubs: when the description of a club communicated either a fixed or growth mindset, students adapted their self-descriptions and application materials in order to better fit the mindset culture of the organizational context. While Murphy and Dweck (2010) examined application procedures, research should test whether similar effects emerge in workplaces across a variety of outcomes such as goal setting for performance targets, mentoring behaviors from managers to subordinates (cf. Heslin et al., 2006), and the style of written performance evaluations to name just a few possibilities. Of course, the possibility remains that organizational mindsets could over time influence individual's mindsets, such that people adapt their beliefs to match what their environment communicates (cf. Park et al., 2016; Haimovitz & Dweck, 2016) and recent research indeed provide suggestive evidence for this possibility. Yeager and colleagues (2019) found that in schools where peer norms discouraged seeking intellectual challenges, a growth mindset intervention did not substantially benefit students' academic achievement in the form of higher grades. That is, negative peer climate at these schools overrode the positive effects of adopting a growth mindset, which by contrast emerged for students with a positive peer culture (Yeager et al., 2019).

We propose that studying the effects of mindsets in the workplace offers the ideal context in which to rigorously investigate the possibility of moderation on mindset expression. That is, the mechanisms and even behavioural disposition or preference documented by past research should replicate, but whether or not people actually act in line with their preferences should depend upon aspects of the workplace context. Identifying those aspects would provide a set of boundary conditions (to date overlooked) that better specify when mindsets should yield differences in behavior or outcomes. This investigation might also speak to some of the failures

to replicate mindset effects in schools (Bahnik & Vranka, 2017; Burnette et al., 2018; Li & Bates, 2019). What might appear as a failure to replicate a basic behavioural mindset effect might instead represent a boundary condition on mindset effects, identifying a situation so strong that it constrains the differences previously documented to emerge among people who hold more fixed versus growth mindsets in a given domain.

Organizational cultures. Considering this possibility, we hypothesize that organizational cultures could moderate mindset expression. Organizational cultures are the collections of values, norms, and understandings that exist in workplaces (Chatman & O'Reilly, 2016; O'Reilly & Chatman, 1996). Organizational cultures are considered strong when they are characterized by intensity (people are energized about the content of the culture) and agreement (people agree on what the culture is; Chatman & O'Reilly, 2016). Strong cultures are believed to enhance organizational performance through motivating employees who perceive a values match (Chatman & Cha, 2003) and through facilitating collaboration and coordination amongst individuals so they can work together more effectively (Chatman & Cha, 2003; Chatman & O'Reilly, 2016; O'Reilly & Chatman, 1996). In this way, we see strong organizational cultures as inducing strong situations – in other words as contexts where individual preferences and predispositions, and thus mindsets, might be overridden by the values, expectations, and norms of the setting (Davis-Blake & Pfeffer, 1989). In addition to studying whether organizational mindsets constrain the expression of individual mindsets, as described above, scholars could investigate whether the size of any given mindset effect varies with the overall strength of organizational cultures. Recall, for example, that mindsets predict effort beliefs in challenging situations (Blackwell et al., 2007; Robins & Pals, 2002). Would the magnitude of the growth

mindset – effort belief relationship depend upon how strong (and therefore constraining) or weak (therefore not constraining) the overall culture of an organization is?

It could also be that general culture strength does not relate to mindsets, but that specific values which are seemingly unrelated to mindsets intersect in ways that either release or suppress the expression of mindsets in behaviors and outcomes. Imagine a workplace oriented toward short term financial gains. Short-term thinking has not been linked to mindsets about the malleability of intelligence. However, a short-term outlook might foster an avoidance of challenge (i.e., because there is not time to navigate difficulty or to bounce back after initial struggle), which aligns with the fixed mindset (Heslin et al., 2020; Singer & Edmondson, 2008). In the context of this example, we could predict that organizations with strong cultures where a short-term focus is a core value might constrain the effect size associated with mindset-behavior effects. It is also important to remember that while organizations can have cultures, so can teams or even dyads (Schein, 1996). Even an individual manager or leader can create a culture around themselves, which drives how people behave and engage with each other. Thus, the proposal that culture can represent a strong situation and thus moderate mindset expression refers to the whole organization as well as culture dynamics within divisions, teams, dyads, or even around an individual leader.

Incentive systems. An uncharted but rich territory for future research would be to evaluate whether financial or performance incentives (e.g., bonuses, pay raises, perks, and numerical evaluations) shape mindset expression. We hypothesize that performance reward systems might be a key situational factor that elicit behaviors associated with whichever mindset they foster. If this were to be the case, we would see evidence of moderation on mindset

expression, whereby individual differences in mindsets might not yield behavioural differences. Consider an incentive system that does not reference mindsets per se, but that has a performance rating system for evaluating managers' quality of mentoring and people development (Heslin & Keating, 2017). The rating system may not speak directly to mindsets – it might not mention that the company believes personality can change – but in evaluating how well managers develop their people the company communicates an implicit assumption not only that this is possible but also that it is desired. In this context, it is possible that even those who hold fixed mindsets personally would perform growth-mindset-style management behaviors in order to achieve under this incentive system. Interestingly, if this were to be the case, it might direct scholars to an effective point of intervention for organizations that seek to undergo a growth mindset culture change, assuming that fixed mindset managers are actually equally effective in performing those behaviors. Research might also evaluate whether behavioural alignment with performance reward systems rather than one's own mindset might be most acute in times of economic stress. If this were to be the case, it would suggest that while people's mindsets represent seemingly natural and rehearsed patterns of perceptions, feelings, and behavior, they also can be subject to motivated reasoning and strategic deployment (Kunda, 1990).

Methodologically, these possibilities point to the value of pairing quantitative measurement of mindsets (e.g., scales) and their associated behaviors (e.g., as rated by peers or subordinates, as captured on existing performance evaluations) with qualitative methods that might more effectively help us to understand how people navigate misalignments (and alignments) between their personal mindsets and the demands of the context. Anecdotally, a few major, multi-national organizations have asked us how to craft a performance incentive system in order to financially reward growth mindsets. We could only respond honestly, that there is no

research to show that it is possible, and that we would love to study this directly in an organization. It is possible financial reward systems alone (i.e., without structural or policy changes to support the incentivized belief) may not shape lay theories. The best available option may be to incentivize behavior, though we caution that an incentive on one behavior (e.g., learning) may not yield second-order shifts in other behaviors typically associated with the mindset. We are eager for future research to explore these possibilities.

Opportunity. Mindsets differentiate people's outcomes in contexts where their beliefs about the malleability of the domain are relevant and people experience challenge. Many job roles are, or over time come to be, execution focused. Think about people working in mines, fields, assembly lines, call centres, service roles (e.g., administrative assistants, flight attendants, hospitality, food services, etc.), or support roles (e.g., account services, travel agents, customer care) who after an initial training phase may complete fairly similar tasks day-to-day. This makes us wonder whether the effects of mindsets depend upon people's perceptions of how much opportunity for development they have in their work. In contexts where one's primary tasks do not offer opportunities to develop or to validate ability, would mindsets be redirected toward other activities or practices that would validate one's lay theory? Imagine that an experienced field worker's mindset is unrelated to their own performance because they have achieved expertise. Would a growth (vs. fixed) mindset promote their likelihood of helping peers meet their performance quotas to achieve their wages, toward activism to improve their working conditions, or toward innovating new ways, or tools, to optimize their core tasks? These would be fascinating avenues for research because they would show that even when mindsets seem not

to predict outcomes on one variable (e.g., performance) they find ways to be expressed in other, as yet unstudied, outcomes.

These are just a few examples of how workplace contexts might moderate the expression of mindsets. The theoretical implication that would follow, if the idea of moderation on mindset expression is borne out by empirical research, is that the strength of the situation, the systems of reward, and level of opportunity in the environment, all represent boundary conditions on mindset expression – a fascinating possibility that we hope future research will inform.

Moderation on Mindset Processes

Next, we ask whether the psychological processes that follow from mindsets might differ when we embed mindsets in workplace contexts. We also propose the possibility that studying mindsets in organizations will unveil previously overlooked mechanisms of mindset effects. We offer ideas and examples of both possibilities, and point to initial suggestive evidence.

Agency. An underlying assumption of the theory of mindsets is that people can take action to affect themselves and others. Mindsets shape the degree to which people see those actions as useful and their likelihood of engaging in them. Indeed, Chao et al. (2017) found that a growth mindset intervention only boosted performance among higher achieving South Asian Indian students when it had been implemented with an autonomy-affording incentive (Chao et al., 2017). While many workplaces offer employees a great deal of autonomy, some instead impede employees' sense that their behavior affects their outcomes (Hackman & Oldham, 1975; Lee et al., 1990; Oldham & Hackman, 1981). The lack of agency people feel in their work may

result from having an overbearing manager or from broader industry, market, governmental, or economic forces. For example, with the rise of automation, algorithms now decide when people will get shifts, order the tasks they must do, and limit the options they may choose from. In contexts such as this, why would beliefs about the malleability of intelligence, personality, or otherwise shape goals setting or effort? Goals might no longer provide opportunities to either prove one's ability or to set oneself up for learning, so there would no longer be a reason for mindsets to differentiate them. Effort would not drive greater versus lesser investment in tasks, as the tasks are being decided and doled out by a system, not even a manager. Thus, it becomes possible that workplace contexts might moderate mindset effects at an earlier stage – not just suppressing preferred behaviors but actually changing (or breaking) the relationship between the lay theory and the psychological processes that usually follow.

Rattan and Dweck (2018) offer suggestive evidence to this effect. They found that growth (vs. fixed) mindsets only improved coping among minorities and women who confronted (vs. remained silent in response to) a biased comment at work. That is, if minorities and women did not act to mark their disagreement by speaking out, which can instigate change in the person who made the biased comment, then those who held more growth mindsets exhibited an equally negative outlook on the perpetrator of bias, and thus coping, as did fixed mindset participants (Rattan & Dweck, 2018). These findings suggest that the ability to take action (i.e., agency) may be a necessary condition for subsequent mindset effects to follow, particularly for those who hold a growth mindset. Considering the modern workplace, employees could see a problem or opportunity, but not be on the “right” team or in the right moment to address it and therefore lack agency to create change. In many organizational contexts, formal or informal rules even govern who can speak up when (Edmondson, 2002, 2003; LePine & Van Dyne, 1998; Morrison, 2011,

2014; Morrison & Milliken, 2000; Singer & Edmondson, 2008). In contexts that impede action, employees' lay theories about malleability might therefore deviate from the processes that typically drive differences in outcomes. Extending these ideas, teachers who lack resources like up-to-date books and computers might come to feel a lack of agency; nurses and doctors who see citizens interacting in close quarters without masks during the 2020 COVID-19 pandemic might come to feel a lack of agency; a head of diversity and inclusion who is given a mission but no resources or power with which to implement changes might come to feel a lack of agency. Feeling that they cannot individually affect the broader societal, organizational, or interpersonal dynamics at hand, teachers might no longer make attributions about students' ability in line with their mindsets, nurses and doctors might show less persistence regardless of their mindsets, and the head of diversity and inclusion might avoid (rather than engage with) challenges no matter what their mindsets. We would love to see research that explores these fascinating and practically important possibilities.

The meaning of effort. Classic mindset theory states that people's lay beliefs about the malleability of a domain can shape how they see effort, either as indicative of a lack of ability and to be avoided in the case of the fixed mindset or as a means to improve learning in the case of the growth mindset. But what if effort was no longer indicative of whether one has/lacks ability or needs to develop in a given domain? In many companies, employees should always expend 100% effort – or at least look like it – or otherwise risk a poor evaluation or even losing their job. In workplace contexts that define effort this way, effort is not indicative of the nature of the self or others, but rather it is a standard of what it means to be a 'good worker'. This raises

the possibility that the way mindsets relate to effort may depend upon how effort is defined within a given context.

Past research offers suggestive evidence: In Asia, redoubled effort after poor performance is expected, and teachers train students that this is the appropriate response to poor performance (Stevenson & Stigler, 1994). Heine et al. (2001) found that Japanese participants were more motivated than North Americans to expend effort in domains where they performed poorly, and this was explained by their beliefs about effort. Embedding these findings in in the workplace, it is possible that employees might internalize the signal of how effort would be interpreted in a given workplace, and thus no longer view effort as indicative of either ability or learning. If that were to be the case, performance might no longer be shaped by effort, meaning that the causal chain that typically flows from people's lay theories would be disrupted. Considering these possibilities, we wonder about how national cultures set the context for people's views of effort in the workplace. For example, the American work culture in managerial and professional occupations is one of constant and unlimited effort, even on nights and weekends, and face time (Cha, 2010) which often leads to burnout (Cordes & Dougherty, 1993). By contrast, in much of Europe, the same level of unfettered effort expectation might be more readily questioned as potentially exploitative, and there might be a sense of the 'right' level of effort at work. While the effects of mindsets on effort beliefs and thus outcomes would be unlikely to vary across the schooling years in Europe and the U.S., it would be fascinating if the patterns change substantially when the context of investigation shifts to the workplace.

Business bottom line. A fundamental imperative within organizations is profit, which demands that any expense or expenditure, including employee time, be justified by offering

returns to the company (Becker, 1993; Pfeffer & Salancik, 1978). While employers might offer skills training or learning and development opportunities, particularly at the higher levels of leadership, there is an expectation that these activities pay off in terms of employee engagement, commitment, creativity, or performance. As workplaces increasingly engage in social initiatives, they consistently justify these diversity efforts, environmental activities, and mental health advocacy through the language of the business case (Georgeac, 2020). Given that employees are aware that their work time must both be justified and provide value to their employer, the goal of performance is a constant. So, is a learning goal still a learning goal if it is subordinate to a performance goal, or in that context would a learning goal be perceived as extrinsically motivated (Deci & Ryan, 1985; Ryan & Deci, 2017)? If learning is valued only because it contributes to company performance, does the appeal of learning goals for people with growth vs. fixed mindsets change? The profit imperative of business might limit the degree to which learning goals would be prioritized by employees (Cannon & Edmondson, 2005), which could in turn change the nature of the goals mindsets differentiate. The fixed (vs. growth) mindset would still be expected to orient people toward goals that allow them to validate their abilities (vs. to develop their abilities further), but these would be goals that allow mindset expression in service of company profits rather than goals that fall into the categories of performance and learning. In this way, taking the overarching demand for return on investment into account might uncover a greater variety of goals than currently understood to arise from mindsets. If more growth mindset individuals find themselves unable to fulfil their goals due to pressure toward performance, would they experience frustration, disengagement, and even withdraw from the context? It would be fascinating for research to explore whether the goals valued by the organization can flip traditional mindset effects on persistence, engagement, and achievement in this manner.

Conclusion

The goal of this manuscript was to equip and energize the reader to consider how studying mindsets in workplace contexts will enrich our understanding of individuals' workplace experiences, organizational dynamics, and the theory of mindsets. Taking the established theory and findings of mindsets into workplace contexts and identifying whether, and how, these effects generalize is an excellent start, and we shared many exciting research questions that arise from this approach in the section reviewing past work and in the section on new research questions. To advance the study of mindsets even further, and to gain new insights for the study of organizational behavior, research should also begin to explore whether workplace contexts might moderate either mindset expression or the mechanisms of mindset effects. We believe that the study of mindsets can contribute positively even as global events (e.g., the 2020 COVID-19 pandemic and Black Lives Matter movement) transform the nature of work, and shake up people's assumptions about the boundaries between private and organizational life. In sum, the potential for growth and development in the field's understanding of mindsets is nearly unlimited, and we believe represents the most worthy of scholarly endeavours. We hope you will join us.

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Figures

Figure 1. The original model of mindset theory (within the solid lines) and our proposals for how studying mindsets embedded in the workplace might expand our understandings (within dashed lines).

