

A Growth Mindset Approach to Preparing Trainees for Medical Error ¹

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INTRODUCTION

As medical students transition to become trainee doctors, they must confront the potential for making medical errors. In the high stakes environment of medicine, errors can be catastrophic, not only for the patient but for doctors themselves. Doctors have been found to experience guilt, shame, fear, humiliation, loss of confidence, deep concerns about their professional skills, and social isolation, effectively becoming the second victim of an error.[1-2]

A number of programs and practices have been suggested to provide psychological first aid to second victims after an error has occurred.[3] Little attention, however, has focused on how medical training can prepare doctors for the inevitability of error, and thus help protect them from potentially severe emotional consequences in the future. The WHO has developed the *Patient Safety Curriculum Guide for Medical Schools*, which includes training on understanding and learning from mistakes.[4] In addition, the case has been made for error management training in which students are encouraged to experience error in safe settings, such as simulation exercises.[5-6] While these approaches are promising, a more broad-spectrum psychological intervention aimed at changing how students perceive mistakes and cope with setbacks could be advantageous. Research from social psychology suggests a promising intervention that could help assist students in being resilient when encountering difficulties and setbacks.

THE GROWTH VERSUS FIXED MINDSET

Mindset theory holds that our implicit assumptions about the origins of abilities such as intelligence and talent have a profound impact on how we view mistakes or failure.[7] Those with a fixed mindset believe that ability is endowed and static, and thus a failure indicates a lack of ability. Those with a growth mindset view ability as acquired through effort, practice and learning from setbacks, and thus a failure represents an opportunity for development and improvement.

A great deal of research shows that this fundamental difference in how abilities are viewed has a powerful impact on a number of outcomes, including resilience in the face of adversity.[8] When those with a fixed mindset face criticism, failure or a setback, they experience self-doubt and negative emotions because their view of themselves as capable and talented is threatened. Further, they will avoid new challenges that might lead to failure or to being assessed as incompetent. In contrast, those with a growth mindset rebound better from failure, are motivated to gain competence in an area where they have experienced difficulty, and accept new challenges in order to improve their skills.[7, 9]

Research suggests that individuals develop a fixed mindset because others in their past, such as parents and teachers, have regularly praised them for their intelligence and abilities.[10] This upbringing is likely to characterise many medical students, given the academic prowess required for entry into and

graduation from medical school. But imagine a student with a fixed mindset who becomes a trainee and then commits a medical error that harms a patient. Research in other settings suggests that, compared to those with a growth mindset, this trainee will most likely blame a lack of innate ability for the error, and will see the error as indicative of a permanent deficiency.[7, 10] This is consistent with the finding that young doctors can feel a loss of identity and a severe lack of confidence in the aftermath of an error.[11-13] Alternatively, a trainee demonstrating a fixed mindset response may protect their identity by deflecting blame. A commonplace response among trainees to medical errors involves social defences such as justifying errors, redefining them as non-mistakes, or blaming colleagues, patients or extenuating circumstances for error.[14]

There have been many calls for improvements in how medical supervisors support doctors as second victims in the aftermath of a medical error.[2-3] While an error can be an occasion for professional growth and improvement when handled appropriately, learning opportunities can be missed when the teaching response is inadequate—either by failing to recognise the need for emotional support or by the opposite: over-protecting young doctors from the seriousness of a mistake.[13] Further, when a doctor is so overcome by the emotional distress of an error or, alternatively, engages in self-deflection by blaming the error on other parties or defending against disclosure,[15] opportunities for learning are not taken.[2] Many of these lost opportunities may be exacerbated by fixed mindset views. Research in other contexts suggests that those with a fixed mindset are more likely to self-justify in the face of poor performance, or show great fragility when deflection opportunities are lacking.[7]

SHIFTING MINDSETS

A fixed mindset does not need to be permanent, and a growth mindset can be learned. There are many opportunities during medical training and beyond to instill a growth mindset. Encouraging a growth mindset through a simple educational intervention such as an orientation or workshop can have positive consequences for achievement, success and psychological well-being.[16] While intervention content and styles are still evolving, key components of the training seem to be: 1) participants are first exposed to scientific information on neuroplasticity: that the brain is “like a muscle” and greater learning, experience and practice leads to the development of denser networks of neurons in the brain; 2) participants write about a personal example of learning and getting smarter; and 3) participants are asked to write a letter to a future student who might be struggling in school.

Further, mindset interventions can be bolstered by scenarios of others learning from setbacks, particularly role models.[17] In the medical context, this could come from teachers and experienced doctors sharing their stories of overcoming errors or difficulties in their clinical work. Like any learning process, reminders help solidify new information and habits of thinking. Thus, peppering the curriculum with occasional referrals to growth mindset thinking can help students retain their learning and promote

more habitual growth mindset responses even when they are challenged by a mistake or setback. This requires that medical school faculty be exposed to mindset material in order to offer a consistent message to students.

Interventions reported in the literature range from several short, once a week sessions, to on-line interventions, to single session interventions [18]. In fact, research finds that effective interventions may be as simple as a sentence or two of instruction. In one study, participants about to undertake a perceptual motor skill task were instructed either that the task measures one's basic natural capacity (fixed mindset) or that performing the task is a learnable skill and that early errors are common (growth mindset). When encountering difficulties in performing the task, those given a fixed mindset were more likely to experience increasing self-doubt, less interest in the task, and a more limited level of skill development.[19] Similar results were found in a study in which managers had to make a series of difficult business decisions.[8]

A growth mindset approach can also inform how learning exercises are introduced and how feedback can be provided after errors are made. Eva argues that mistakes are necessary evils in learning, and students should have ample opportunity to make errors in diagnostic reasoning and learn from these errors.[6] Similarly, simulation-based training provides occasions for students to make errors and improve their skills.[5] Learning is likely to be greater if simulations and other learning exercises are introduced as situations in which errors are common, and the necessary skills are learnable, rather than introducing such exercises as a test of natural ability.[19,8]

Feedback on performance in simulations or in actual clinical work should focus on process as much as possible, pointing out the efforts and behaviors that led to positive outcomes and those that did not, with specific recommendations for the actions that can be taken to make improvement. In addition, it is important to praise any learning that students exhibit as a result of a mistake. Feedback that seems to suggest that performance is due to an innate capacity is likely to reinforce a fixed mindset. Praising students for their ability and intelligence has been found to lead to poorer performance and a lowered willingness to take on challenges than praising effort [10]. When providing negative feedback to students after an error, adopting a growth mindset perspective can increase students' motivation to process and learn from constructive criticism.[9] Framing negative feedback as a necessary and common part of the learning process, and relabeling criticism as coaching or mentoring, can potentially reduce fixed mindset defensiveness and instill a greater openness to learning.

Medical schools can teach students to have a growth mindset orientation, but if the culture of the clinical settings in which they enter does not support a growth mindset approach, any gains that have been made will be eroded. Work environments can be full of fixed-mindset triggers, particularly when they are

competitive and individuals are valued for their talent.[20] Unfortunately, these factors characterize many clinical settings. Further, experienced clinicians with a fixed mindset may model a response to errors and setbacks in a manner that is counter-productive to themselves and those around them.

This suggests that institutional approaches should play a key role in developing and supporting a growth mindset culture. While cultural change of this nature can be challenging, there are a variety of techniques that can be used to permeate a growth mindset orientation into the organization. Clinical supervision can take the form of supportive, yet challenging ‘formative spaces’ [15] which build in regular opportunities for shared learning from experience, including medical errors. At a broader organizational level, grand rounds can include a growth mindset presentation. Further, an increasing number of hospitals are holding Schwartz Rounds, which provide opportunities for all staff across varying disciplines and levels to share and understand the emotional challenges that clinicians and managers experience in providing clinical care and services.[21] A growth mindset approach to coping with these challenges could be integrated into these sessions.

More broadly, adopting a growth mindset in clinical teams may positively influence how errors and their repercussions are disclosed, discussed and learned from, reducing the blame dynamics that often occur after an error.[16] Creating a more positive approach to the handling of errors is increasingly important as health professionals and services are obliged to openly disclose errors (such as with the UK’s statutory duty of candour intended to overcome a ‘culture of silence’ in the reporting of errors).[22]

Future research should examine specific interventions that will work best in medical settings. While some studies have been conducted with adults, much of the research on mindset was done with children and adolescents, and none of it involved medical students, doctors or clinical settings. Thus, there is a broad opportunity to design and test specific interventions and practices that will help clinicians develop and maintain a growth mindset.

CONCLUSION

While negative emotions naturally predominate after an error, positive responses are also possible. Indeed, there is potential to learn and thrive in the aftermath of an error if the event motivates reflection and a determination to improve.[12] These positive responses are consistent with a growth mindset, but unfortunately they are currently the exception rather the rule. Growth mindset instruction could tip the balance toward a more resilient response to error, allowing students and trainees—as well as more experienced doctors—to cope and even flourish in the wake of an error. Importantly, a more resilient response to making an error encourages doctors to avoid turning inwards, where they focus on the

negative impacts of an error on themselves, and instead to identify and reflect upon the positive lessons for future patient safety and quality of care.

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