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Exam success at undergraduate and graduate-entry medical schools:

Is learning style or learning approach more important?

A critical review exploring links between academic success, learning styles and learning approaches

among school-leaver entry ('traditional') and graduate- entry ('non-traditional')

medical students

Abstract

Phenomenon: The literature on learning styles over many years has been replete with debate and disagreement. Researchers have yet to elucidate exactly which underlying constructs are measured by the many learning styles questionnaires available. Some academics question whether learning styles exist at all.

When it comes to establishing the value of learning styles for medical students, a further issue emerges. The demographics of medical students in the UK have changed in recent years, so past studies may not be applicable to students today.

We wanted to answer a very simple, practical question: what can the literature on learning styles tell us that we can use to help today's medical students succeed academically at medical school?

Approach: We conducted a literature review to synthesise the available evidence on how two different aspects of learning – the way in which students like to receive information in a learning environment (termed learning 'styles'), and the motivations that drive their learning (termed learning 'approaches') - can impact on medical students' academic achievement.

Findings: Our review confirms that while learning 'styles' do not correlate with exam performance, learning 'approaches' do: those with 'strategic' and 'deep' approaches to learning (i.e. motivated to do well and motivated to learn deeply respectively) perform consistently better in medical school examinations. Changes in medical school entrant demographics in the past decade have not altered these correlations. Optimistically, our review reveals that students' learning approaches can change, and more adaptive approaches may be learned. .

Insights: For educators wishing to help medical students succeed academically, current evidence demonstrates that helping students develop their own positive learning approach using a 'growth mind-set' is a more effective (and more feasible) than attempting to alter students' learning styles. This conclusion holds true for both 'traditional' and graduate-entry medical students.

Introduction

Previously, selection for medical school in the United Kingdom has been based on high academic attainment at school, resulting in relatively homogeneous student groups.[1] In particular, this method of selection has been found to discriminate in favour of privately-educated students and against students from poorer backgrounds. For example, a British Medical Association study reported that, in 2003, 39.2% of UK successful medical school applicants came from the highest socioeconomic group (higher professional/managerial), even though this group accounted for just 11.1% of the working age population.[2] Selection by academic attainment alone therefore tends to produce doctors that are unrepresentative of the populations they serve.[2]

Now, medical selection is changing as the need to encourage more diverse entrants has become imperative. The UK government has adopted a 'Widening Access' policy which aims to encourage 'non-traditional' students (i.e. those from different ethnic/cultural groups, those from disadvantaged backgrounds, mature students and those with disabilities) into higher education.[3] Partly as a result of the 'Widening Access' policy, 13 universities in the UK now offer graduate entry medical training, and a 2008 UK study reported that graduate entry is succeeding in selecting more non-white and more socio-economically deprived students to enter medical school.[4] Graduate students now make up a significant minority of the 8,009 existing medical trainees in the UK: 10.8% or 865 students.[3]

Past research has explored the learning styles and learning approaches amongst 'traditional' medical students,[5] however some researchers suggest that 'non-traditional' medical students differ in the way they learn from their 'traditional' counterparts.[6] So it is timely to consult the literature to ask some questions. Can we assume that graduate entry students learn in the same way as their traditional counterparts? If differences between the two groups are found to exist, do these differences need to be addressed by educators? And does it matter when it comes to exam results? With a more diverse student group in medical training and at least 10% of our UK students being graduate entrants, there is

an identified need to review the recent literature on learning approaches and learning styles, to determine what today's medical students should be taught about these tools in relation to their own academic success.

Which are the main learning styles and learning approaches relevant to medical students?

Learning styles questionnaires and learning approaches questionnaires attempt to sort students into groups according to various factors deemed important for learning: they explore factors such as what motivates students to learn, [7] preferences for how information is presented, (e.g. by visual or experiential means),[8] and the different ways that data may be assimilated.[9]

Although there are many different models of learning styles and a vast literature on learning more generally, this critical review adopts a strictly practical approach: it focuses on the two models that have been most extensively investigated amongst medical students in the literature in the recent past (i.e. since 2000) - the VARK model[8] and the 'Tripartite model'[7] - to determine what the literature can usefully tell both educators and medical students about how best to approach their learning. To set the scene for this review, each model is briefly summarised below.

VARK model (visual/auditory/read-write/kinaesthetic) – learning 'styles'[8]

This model divides learning into four spheres based on the preferred mode of perceiving data – visual, auditory, read/write, and kinaesthetic (preferring active learning tasks). Students may have a mixture of preferred learning styles with this model. Amongst general student populations and, according to Johnson (2009),[6] 'non-traditional' medical students, auditory and kinaesthetic modes are believed to predominate. It should be noted, however, that the validity and reliability of this and other learning styles questionnaires, and their usefulness in deciding on teaching methods, has been challenged: there is currently considerable debate in the literature as to whether different learning styles actually exist in any meaningful way.[10-12] Researchers are now seeking to explore the inter-relationship between the many learning style questionnaires and theories.[11,13] Further research is therefore needed to determine precisely what underlying constructs are being measured by these questionnaires.

For this reason, with regard to the literature on learning styles, we have adopted a strictly practical approach, and putting aside for a moment the controversy surrounding learning styles, we decided to explore if there are any practical benefits to medical students' learning arising from their use.

Tripartite Model (deep/strategic/surface) – learning 'approaches'[7]

This model divides learning into three categories based upon learning *approaches*: i.e. the motivation with which a learner *approaches* a learning task. 'Deep' learning occurs when students approach a learning event with intrinsic motivation and personal interest in the educational material. These students tend to search for meaning and general principles in the learning materials presented, and make links with previous knowledge. 'Strategic' learning occurs when students are motivated to be successful. Students favouring this approach tend to focus on examinable material and thus their knowledge may be somewhat patchy. 'Surface' learning in contrast, occurs when students are motivated by a fear of failure. This is an approach that tends to result in rote learning and poorer understanding. As this model describes different ways that students may *approach* a particular learning topic, this means that a student may adopt a 'deep' approach to a topic that s/he finds intrinsically interesting and important, but a 'surface' approach to another topic. Additionally, students may adopt one approach to suit the particular requirements of a course or learning activity, suggesting a metacognitive ability to modify learning approach according to both level of personal interest and specific task demands. It should be noted that the controversy previously mentioned with regard to the validity of learning styles should not be applied to the evidence for learning approaches and learner *motivation*, which concern a different facet of learning.

What is already known

Over a decade ago, a systematic review by Ferguson, James & Madeley summarized the literature on learning approaches in relation to medical students up to the year 2000 (i.e. prior to the introduction of the 'Widening Access' programme).[5] Their findings were compelling with regard to the Tripartite model of learning approaches described above: they reported ten studies which showed

a significant, positive correlation between strategic and (less consistently) deep learning approaches and academic success, and a significant negative correlation between surface learning and academic success. These traits showed moderate stability over time. However, no data was reported on whether these learning approaches were intrinsic and inborn, or whether students learned these in response to specific learning challenges they encountered during their time at medical school.[5]

In conclusion, Ferguson and colleagues noted the relative paucity of research at the time on learning styles and approaches, suggesting further research in this area was "likely to be fruitful" (p.956).[5]   Reflecting on our experiences teaching medical students, we considered it was now imperative and very timely to update this review. We wished to determine whether these findings would still hold true amongst today's more diverse medical student groups.

Thus, we sought to obtain answers to the following research questions from the literature by examining the current evidence on learning styles and approaches in clinical education:

- Have changes in medical student populations since 2000 altered the evidence with regard to learning approaches (using the Tripartite model of deep, strategic and surface approaches) and academic success?
- Do 'traditional' students with higher school-leaving results differ in their learning styles (VARK) and learning approaches (Tripartite model) compared with alternate/graduate entry medical students? If so, do such differences have any effect on academic success?
- Can courses be designed to promote deep and/or strategic approaches to learning amongst medical students in order to increase the chances of success for all?

Methods

Inclusion/exclusion criteria

We included papers which were in the English language, dated 2000 to present day, and which provided either qualitative or quantitative data on learning styles, learning approaches and medical students. Papers which addressed non-medical university students were included if they

6

enhanced our knowledge or could shed additional light upon, our observations of the learning experiences of medical students.

Databases searched

We adopted an approach similar to that used by Ferguson and team in their original 2002 paper. Additionally we drew on BEME methodological guidelines.[14] Our search strategy was also informed by current best evidence-based healthcare practice.[15] Ferguson and colleagues searched Medline, Web of Science, PsychLIT (merged with PsycInfo, 2000), and three medical education journals (Medical Education, Journal of Medical Education and Academic Medicine) up to 2000.[5] In addition to replicating and updating the original authors' search across these three databases this new review expands on the earlier work as we also searched across the educational databases: Education Research Complete, British Education Index and ERIC. Refreshing the search of Embase did not reveal any further new studies. Relevant references identified from suitable papers / journals (hand searching) which emerged from the review were also examined.

Search terms used

First, we ran a number of exploratory searches using multiple keywords. These helped to identify those showing most sensitivity and specificity for identifying relevant papers. We found the most useful search terms to use were 'medical students' and 'learning styles'. Additionally, to ensure that the current review's search strategy would have successfully identified the studies found in Ferguson, James & Madeley's review[5], exploratory searches were also conducted of the relevant databases prior to 2000. This provided us with the evidence that our current strategy was effective in identifying the relevant papers. Thus, we concluded that our search strategy was sufficiently robust[15] and that the breadth of the search was satisfactory.

Method of critical appraisal

The following resources were used to assess the quality and relevance of the included papers: BEME guidance,[14] CASP guidelines,[16] and evidence-based experts.[15,17,18] All included papers were independently checked by the two authors according to the guidelines above. As clarity of reporting and quality of study design varied amongst the papers we found, we adopted an inclusive approach: we have reported any findings that were clearly described and note any gaps in reporting or quality issues where they occurred.

Results

From the six databases searched, 315 papers were initially retrieved. After removal of duplicates (n=60) and papers deemed to be of low relevance according to our identified research questions set out earlier, (n=198), a total of 57 papers were examined in detail (see summary table 1). The results of the review will be presented to answer the three questions set out in the introduction.

Question 1: Have changes in medical student populations since 2000 altered the evidence with regard to learning approaches (according to the Tripartite model) and academic success?

Overall, evidence in favour of strategic and (less consistently) deep learning approaches for medical school success is robustly confirmed by this new and extended review, as is the case *against* a surface learning approach. A strategic approach was identified as being positively correlated with exam success in all 5 studies that explored this issue,[19-23] while a deep approach showed positive correlation in 2 studies[21,24] and no effect in 2 others.[23,25] All studies that examined 'surface' learning found that it correlated negatively with exam success.[22,23,26] These correlations were found to hold true across different student groups in different countries and cultures worldwide.

Additional positive findings with regard to deep and strategic approaches were found. Cassidy for example, reported that both strategic and deep learners had enhanced self-knowledge compared with surface learners[27], while Fox, McManus & Winder found that both deep and strategic learners sought opportunities for more clinical experience than surface learners.[28]

Mellanby, Cortina-Borja & Stein studied 526 students who applied to Oxford University over a period of six years (across all disciplines, including medicine).[29] The authors aimed to determine whether a test designed to measure 'deep' learning skills correlated with success in admission to Oxford University, and with future examination results. This paper sought to go beyond the traditional approach of selecting candidates based on school-leaving tests, and to instead explore the strengths and attributes of those from 'alternate' backgrounds. Results showed that high scores on a 'deep learning' test were highly predictive of obtaining a place at Oxford and of obtaining a 'first' in final examinations. UK 'GCSE' (General Certificate of Secondary Education) scores did not have a significant impact upon students' finals scores. Mellanby and her colleagues concluded that deep learning was a highly valuable attribute displayed by students with potential to achieve at the very highest academic levels.[29] They concluded that it is possible to select students with excellent potential from more diverse backgrounds, and recommended that this test be used for selection to Oxford University in future. However, this conclusion cannot be assumed to be generalizable to medical students, given the more consistent evidence in favour of strategic learning for this group.

Question 2: Do 'traditional' students with higher school-leaving results differ in their learning styles or learning approaches compared with alternate/graduate entry medical students? If so, what are the implications for educators?

VARK model

There is conflicting evidence as to whether non-traditional students differ in their VARK learning preferences from traditional-entry medical students, however, if differences do exist, no evidence was found that these differences correlate with academic performance. Three studies were retrieved where a majority of traditional medical students favoured multimodal learning (i.e. more than one mode of learning preferred) according to the VARK model, (64% of n =155 and 74% of n =250).[30,31,6] In contrast, a study with larger numbers (n =988) reported that only 26% of traditional medical students favoured a multi-modal approach.[32]

Johnson compared 'traditional' students with so-called 'alternate' students with lower academic attainment who were admitted from a waiting list.[6] As above, the researchers found that traditional students favoured a multimodal approach, while 'alternate' students favoured auditory or kinaesthetic styles, thus making this group more similar to the general population. Importantly, in the studies which reported on exam results,[30,6] no correlation was found between VARK learning style and academic achievement amongst either traditional or non-traditional students.

Tripartite model (surface, strategic, deep)

Only two studies were found which investigated the learning approaches (deep, strategic, surface) of 'alternate/graduate entry' students according to the Tripartite model, and the second of these relates to non-medical graduate-entry students. First, a 2010 study of 32 graduate-entry medical students found a predominance of deep and strategic approaches,[33] suggesting that more mature students may possess the learning approaches most correlated with success at medical school. However this paper reports on a relatively small sample size (n =32). Vermunt in 2005 found that 'meaning-directed learning', a process akin to 'deep learning', was significantly associated with older age amongst a cohort of 1279 non-medical university students, and that it accounted for 25% of the variance in exam results.[34]

When it comes to academic success more generally, emerging evidence shows that while graduate entry students tend to have lower school-leaving results than 'traditional' students, they can equal[6,35] or even exceed[36] their 'traditional' counterparts' performance in final medical examinations, despite a shortened programme of study. One possible explanatory factor for this is the above tentative evidence regarding a preponderance of deep and strategic learning in this group. Additionally, this student group is perhaps more likely to exhibit tenacious qualities and be determined to succeed in training for their profession, as evidenced by higher retention rates amongst graduate entrants.[37]

Table 1: about here

Question 3: Can courses be designed to enhance learning or promote more adaptive learning approaches amongst medical students in order to increase the chances of success for all?

Learning styles: matching teaching methods to students' preferred learning style:

Cook et al. conducted a randomised controlled cross-over trial of 123 medical residents (i.e. not medical students), to see if matching teaching methods to students' preferred learning style had positive effects on learning outcomes.[38] However, no effect was seen, and students were not found to prefer a 'matched' approach over an unmatched experience. Another study investigated whether matching web-based learning material to students' learning preferences improved knowledge acquisition.[39] Levels of enjoyment correlated with higher test scores, but matching had no effect. Vaughn and Baker explored the learning and teaching styles of 44 learner/teacher pairs.[40] Collaborative learners responded positively to a range of different teaching styles, while competitive learners tended to rate different teaching styles more negatively.[40] The authors conclude that it might be helpful to identify learner traits in order to predict which students might find the learning environment more challenging. However, no outcome measures beyond teacher/learner preferences were reported.

Thus, neither VARK learning styles alone, nor matching teaching to preferred VARK learning styles, were found to improve academic performance amongst medical students.

Enhancing 'deep' learning approaches to learning:

Some evidence was found to suggest that students' *approaches* to learning according to the Tripartite model are potentially modifiable. Fox, McManus & Winder, in a longitudinal study of over a thousand medical students (n = 1349), found learning approaches (deep, strategic, and surface) to be "both partly stable and partly modifiable" over time,[28] suggesting that these learning approaches may indeed vary according to the different learning environments and challenges faced by students during medical training. Van Lohuizen et al. observed that medical students (n =113) in a clinical setting

used different learning approaches according to the Tripartite model depending on the task at hand, with no impact upon clinical performance.[41] This suggests that learning approaches may not just be modifiable over time, but may be flexibly used to match a given task.

The above evidence suggests that learning approaches can change. With this in mind, several attempts have been made to design course materials to encourage a 'deep' approach to learning, with the hope that it would improve learning outcomes. The introduction of on-line teaching courses prompted Svirko & Mellanby to establish which aspects of an e-learning teaching course promoted a deep learning response in a population of 205 medical students.[25] This research team found that higher levels of enjoyment, the use of clinical case material, and ease of understanding all correlated with deep learning and engagement, suggesting that a deep learning approach can indeed be facilitated in certain circumstances. However this effect did not result in higher test scores when the material was examined.

Papinczak et al. on the other hand, in a case control study of 213 first year medical students, where cases experienced an intervention designed to aid deep learning, reported that both cases and controls moved towards a surface learning approach after one year at medical school.[42] Similarly, Raidel &Volet discovered that medical students deliberately adopted a strategy of favouring teacher-directed learning (as against self-directed or group learning) as a way of coping with the high workload they experienced on entering medical training.[43] These findings suggest that the sheer volume of material to be learned at medical school in a limited time-frame may militate against deep learning approaches and toward less helpful surface approaches.

A series of linked trials from 2009 to 2011 reported on the introduction of a new medical curriculum designed to promote deep learning.[44-46] Students' responses to this new curriculum were complex. A proportion of students started off as deep learners and remained so, while others started off as surface learners and moved to deep learning. Others began as surface learners and remained so, while the final group, (who preferred didactic, structured teaching) moved from deep to surface learning. Integration of content and independent/collaborative learning were identified as being

factors most likely to polarize students in terms of their learning approaches (i.e. from a surface to a deep approach, and vice versa). These linked studies suggest that student preference and the learning approaches they choose to adopt may exert a powerful impact upon learning, and that there is no 'one-size fits all' approach to course design that will encourage maximal learning in all students.

The above studies seek to find ways to alter teaching methods or curricular design to promote learning amongst students, and the results show that their efforts have met with limited or no success. The work of Carol Dweck and colleagues,[47,48] in contrast, places less focus on teaching or curricula, and more focus on the mind-set of each individual student. Her work, similar to the Tripartite model (deep, strategic and surface learning approaches) focuses on motivation for learning, and importantly provides robust evidence that students *can* learn more adaptive approaches, and are able to enhance their learning as a result. Students can be supported to adopt a 'growth mind-set', learning to view academic success as an outcome that results more from their own efforts than from intrinsic intelligence or ability. Such a mind-set promotes resilience in learning, a positive approach to learning challenges, and a reduced fear of failure. This approach, where the goal is to develop one's learning or to achieve a particular learning outcome such as exam success, is akin to the deep/strategic approaches to learning that have been shown to correlate with medical school success.

The current evidence suggests that two interacting factors may be at play: the student's individual approach to learning, which is potentially modifiable, and the particular challenges of the learning task at hand, which may or may not be easy to adapt. Those students who have clear goals for learning, and who have the resilience of a 'growth mind-set' in the face of the sometimes challenging learning environment of a medical training, seem to be best placed for academic success. Given the disappointing results of attempts to alter curricular design and delivery to foster adaptive learning approaches, it may be more fruitful to focus our efforts on developing a 'growth mind-set' amongst our students, which can then help them learn even in challenging environments.

Some further interesting findings with respect to students' *awareness* of different learning preferences emerged. A study of 62 medical students in 2010 found that teaching them about their learning styles increased their confidence in learning.[49] However, no objective outcome measures

were reported. Another study investigated the effects of training in learning styles on group members' study self-efficacy, preference for group work, and assessment performance.[50] Medical students in this study reported greater awareness of their own, and others', learning styles following the training which led them to be more tolerant of others, but this had no impact upon academic performance. So there is at least preliminary evidence that fostering an interest in the process of learning itself can have positive effects for students beyond academic performance alone.

Discussion and Conclusion

Implications of findings for clinical educational practice: a critique and implications for future research

What can we take from this new review on the topic of learning approaches and learning styles?

First, in terms of learning styles, reviewing the literature revealed no evidence for an emergent consensus over the past decade as to the reliability or validity of learning styles questionnaires, while ongoing controversy continues as to whether learning styles exist at all. In this context, it is perhaps no surprise that our review found no correlation between VARK learning styles and exam results for either 'traditional entry' or graduate entry medical students. Additionally, although previous writers have proposed that teachers should match their teaching strategies to their students' preferred learning styles, (e.g. providing primarily visually-based teaching to visual learners), few researched attempts have been made to do this since 2000, and we found no evidence that matching has any effect on academic outcomes. Even if learners have clear preferences as to how material is presented to them, it is theoretically possible that exposure *only* to one's preferred mode of learning could stunt one's development as much as enhance it, particularly for medical students who need to work in a variety of different settings, with a variety of different people, and with a variety of different learning materials. In the absence of further empirical research, the conclusions we propose therefore, are that no evidence currently exists to support a change in medical school curricula to

explicitly address individual students' learning preferences during teaching activities. Conversely, no evidence emerged to suggest that exploring students' learning styles resulted in harm. Rather, there is tentative evidence that students who learn about learning styles experience increased self-confidence and an enhanced awareness of others' learning preferences. Pending further research, it may be reasonable to use learning style questionnaires in a formative way at medical schools with the aim of helping students think about their learning and that of others,[51] rather than promoting them as evidence-based learning tools.

Second, with respect to learning approaches according to the Tripartite model, the evidence is clear that a strategic approach to learning focused on exam performance is most highly correlated with academic success in medical school – even more so than a deep approach. It is notable that this association between medical school success and strategic learning differs from that for non-medical courses, where deep learning has a more robust correlation with performance.[34] Why might this be the case? There has been little exploration of this finding in the literature, but the answer may lie, at least partly, in the intensity of the medical training experience for our students. Deep learning amongst medical students was found to be related to a number of interacting factors: the way content is presented, the learning environment, and psychological factors such as ease of understanding, enjoyment and low anxiety levels.[25,52] Deep learning may be facilitated when students feel they have enough time to master and enjoy the topic at hand. Teaching styles that demonstrate enthusiasm, empathy, and give real-life illustrations may also promote deeper engagement among our students.[11,53] However, the very high workload that medical students face throughout their training seems to push some students towards a more surface approach and thus towards a more 'teacher-directed' style of learning. We propose that the success of a strategic learning approach in medicine can be explained thus: medical knowledge is growing and changing at such a rate that those who can sift the vital learning points from the mass of facts and opinion may be well-placed for academic and clinical success. A 'growth mind-set' with a clear motivation to learn and develop may be a factor in helping students resist the pull to adopt more surface approaches when faced with challenging learning tasks.

How can educators help medical students approach their learning in more adaptive ways to enhance their academic success? First, there is no evidence that curricular design can promote the 'best' learning approach for all students. Rather than focussing on curricular change, therefore, the current evidence suggests we can best help our students by encouraging each individual to find their own unique learning motivation to succeed at medical school and beyond. To this end, the evidence is that helping students adopt a 'growth mind-set', valuing effort and emphasising the utility of continuous development rather than fearing failure, is achievable. This approach may help students adopt the 'strategic' (and 'deep') learning approaches that have been shown to consistently correlate with medical school exam success.

Finally, this literature review found that non-traditional medical students perform just as well as their traditional counterparts by the end of their training, in spite of shortened time at medical school. Although the research reviewed was unable to pin point exactly why this is the case, and was based on a limited number of studies (a combined total of n =446 graduate-entry students), we suggest that the preponderance of strategic/deep learning approaches amongst this group may be a factor here. The important implication for medical trainers is that, on current evidence, once the selection process barrier is overcome, students from 'non-traditional' backgrounds can achieve equal medical school success with their 'traditional' counterparts. This strengthens the case for widening access to medical training, and suggests that our graduate entry students may have something to teach our 'traditional' students in terms of learning approaches and determination to succeed.

There are a few limitations to this review which we note. First, some of the papers retrieved used the term 'medical students' without identifying whether the population of students they included were indeed all 'traditional' school-leavers. It is possible that amongst such student cohorts there were also those who entered medical school as post-graduates, mature students, or via other 'non-traditional' routes. The likely effect of this would be to *underestimate* the differences we have highlighted between 'traditional' and 'non-traditional' students in terms of learning approaches. Additionally, papers included in this review come from medical schools around the world; thus we do need to bear this fact in mind when considering the applicability of our findings for clinical education

in the UK. However, the key findings of this review with regard to learning approaches and academic success amongst medical students hold true across different countries and cultures (including the UK), suggesting that UK medical students can take something from these findings. Finally, it is important to note the many complex and interacting factors that may impact on students' exam performance, in addition to their own learning approach. The current evidence suggests, however, that a focus on helping students identify and optimise their approaches for successful learning is one evidence-based method of improving exam scores.

With regard to further avenues of research, questions remain. Today's medical educators now need to investigate which aspects of strategic and deep approaches account for stronger academic performances, and to explore whether deep and strategic learning approaches translate into improved clinical and academic performance once qualified.

So, to return to our original question: which matters more for medical school exam success – learning styles or learning approaches? Our review offers a clear answer. When it comes to medical school exam success, learning styles do not appear to matter, but students' learning approaches matter a great deal. As medical educators, we conclude that these findings provide us with a clear message, from a robust evidence base, that we can utilise and pass on to our students.

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