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The Choice! The challenges of trying to improve medical students' satisfaction with their specialty choices

Le choix ! Les défis à relever pour améliorer la satisfaction des étudiants en médecine quant à leur choix de spécialité

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Article abstract

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Reviews, Theoretical Papers, and Meta-Analyses

The Choice! The challenges of trying to improve medical students' satisfaction with their specialty choices

Le choix ! Les défis à relever pour améliorer la satisfaction des étudiants en médecine quant à leur choix de spécialité

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Abstract

The authors describe the residency match as a two-step process. The first step, *the Choice*, is where students use a combination of intuitive and analytic information processing to select the specialty that they believe will provide fulfilment and work-life balance over their entire career. The second step, *the Match*, uses a "deferred-acceptance" algorithm to optimize pairing of students and their specialty choices. Despite being the rate-limiting step, in the minds of students and other stakeholders, the outcomes of the Choice have typically been eclipsed by the outcomes of the Match. A recently published study found that during their second year of residency training, one in 14 physicians reported specialty choice regret, which associates with symptoms of burnout in residents. While the obvious solution is to design interventions that improve the specialty choices of students, this approach faces significant challenges, including the fact that: 1) satisfaction with specialty choice is a difficult-to-define construct; 2) specialty choice regret may be misattributed to a poor choice; and 3) choosing is a more complicated process than matching. The authors end by suggesting that if we hope to improve satisfaction with specialty choice then we should begin by defining this, deciding when to assess it, and then creating assessment tools for which there is validity evidence and that can identify the underlying causes of specialty choice regret.

Résumé

Les auteurs décrivent le jumelage des résidents comme un processus en deux étapes. La première étape, *le Choix*, est celle où les étudiants utilisent une combinaison de traitement intuitif et analytique de l'information pour sélectionner la spécialité qui, selon eux, leur apportera l'épanouissement et l'équilibre entre leur vie professionnelle et leur vie privée tout au long de leur carrière. La deuxième étape, *le Match,* utilise un algorithme « d'acceptation différée » pour optimiser le jumelage des étudiants et de leurs choix de spécialité. Bien qu'ils soient l'étape limitante du processus, selon les étudiants et d'autres parties prenantes, les résultats du Choix sont généralement éclipsés par ceux du jumelage. Une étude récemment publiée a révélé que, durant leur deuxième année de résidence, un médecin sur quatorze regrette d'avoir choisi une spécialité, ce qui est associé à des symptômes d'épuisement professionnel chez les résidents. Bien que la solution évidente soit de développer des interventions qui améliorent les choix de spécialité des étudiants, cette approche pose des défis importants, notamment le fait que : 1) la satisfaction à l'égard du choix de la spécialité est un concept difficile à définir ; 2) le regret du choix de la spécialité peut être attribué à tort à un mauvais choix ; et 3) le choix est un processus plus complexe que le jumelage. Les auteurs concluent en suggérant que si nous espérons améliorer la satisfaction à l'égard du choix de la spécialité, nous devrions commencer par définir ce concept, décider quand l'évaluer, puis créer des outils d'évaluation pour lesquels il existe des preuves de validité et qui peuvent identifier les causes sous-jacentes des regrets à l'égard du choix de la spécialité.

"Choices are never right or wrong. Perhaps, the choice you made was the best choice under the given set of circumstances and at a given point of time."

Neelam Saxena Chandra

In the interests of fairness and efficiency, most medical students and residency training programs in the United States and Canada complete an analogous residency matching process that involves a fixed deadline for submitting choices and a specific date for announcing results. And, on that momentous day, most students are matched to a residency program, most residency programs have filled most of their residency slots, and *the Match* is considered mostly successful, albeit not perfect. But are Match statistics appropriate for judging whether or not students were actually successful in choosing a specialty to which they are well-matched?

In this theoretical paper, we consider the residency match as a two-step process, one of which (the Match) is relatively straightforward and has not changed significantly in almost seventy years.[1,2] We discuss why we feel that Match statistics do not fully represent the process and outcomes of residency matching and why, in particular, these neglect the more challenging antecedent step: *the Choice*. After acknowledging the potential value of improving our understanding of the Choice, we focus on the practical challenges of assessing satisfaction with specialty choice, exploring the relationship between choice and satisfaction with choice, and studying the process of choosing a specialty. We end by discussing the implications of, on one hand, recognizing that a proportion of residents and practicing physicians express specialty choice regret, and at the same time, not knowing how best to address this issue.

Why the Match is not the problem

Uncertainty regarding the outcome of the Match is recognized as a major source of anxiety among medical students.[3,4] The Match itself is a relatively uncomplicated, transparent, and predictable process that has used the same Gale-Shapley "deferred-acceptance" algorithm to pair students and specialty choice since 1952, and is designed to ensure that each student matches to the best available program of their choice (while also achieving optimal program outcomes in the majority of cases).[1,2,5] But, in reality, the Match is the conspicuous second step in the two-step process of residency matching. The nebulous and problematic first step is the Choice, which we would define as the process whereby applicants rank specialties +/- training locations that they predict will best satisfy their long-term personal career and non-career goals. One aspect of the Choice that has been extensively studied is the factors that influence specialty choice in medical students, and based upon the existing literature we feel that there are good quality data on what specialties students choose and which variables they identify as affecting this choice.[6] The gap, however, is in connecting these to the outcome of the Choice–i.e., satisfaction versus regret with specialty choice.

Data describing outcomes of the Match are complete, objective, and have been reported in a similar format for many years, thus revealing secular trends. And, a relatively consistent finding from these data is that approximately 19 out of 20 US or Canadian-trained applicants will match to a specialty of their choice.[7,8] By contrast, there are comparatively few data to judge the success of the Choice. A recently published study that included almost 3,600 residents found that 1-in-14 of those who matched to a specialty of their choice reported "specialty choice regret" by the second year of their residency, and in some popular disciplines, such as Internal Medicine and General Surgery, this rate was even higher (more than 1:10 and 1:6, respectively).[9] Few of us would argue that the 1-in-20 of the first group of applicants has been successful in the residency matching process,[10] but how should we categorize the larger group of applicants who regret matching to a specialty of their choice?

Before focusing on satisfaction/regret with specialty choice, it is important to first recognize that this outcome may be confounded by satisfaction/regret with career choice. Choosing a specialty is a choice within a choice: students initially make their career choice by applying to medical school and then select from the available specialities within this career at the time of the residency match. Dyrbye et al., reported career choice and specialty choice regret separately and found that the prevalence of career choice regret (approximately one-in-seven) was approximately double that of specialty choice regret.[9] While there are obvious advantages of trying to separate these outcomes (for example, choosing another specialty within the medicine might improve satisfaction with specialty choice but should not impact career choice regret), it may not be possible for respondents to accurately demarcate career from specialty choice regret. In residency training, "career" is constrained by specialty training–so given this superimposed relationship, can we

reliably attribute regret to one rather than the other? Similarly, when a surgeon expresses career choice regret after 20 years of independent practice, can we assuredly attribute this to their decision to apply to medical school rather than their subsequent choice of surgical training?[11]

Despite these attribution challenges, for those of us involved in undergraduate and postgraduate medical training the prospect of helping students make *better* specialty choices is enticing. Many would argue that choosing and matching are the ultimate learner-centered outcomes of undergraduate training and that we should prioritize these. But, before planning interventions in our undergraduate programs we should appreciate three reasons why studying and improving outcomes of the Choice is far more complicated than focusing on Match results.

1. Satisfaction with specialty choice is a difficult-to-define construct

The Match is a discrete event where results can be expressed as a dichotomous outcome that is enduring: applicants either match to their chosen specialty or not, and the interpretation of this outcome does not change over time. By comparison, the degree of satisfaction with specialty choice is more difficult to define. This is a continuous, repeated measures outcome that may be spread over several decades, so deciding if a physician is–and will continue to be–satisfied with their specialty choice at any point during this time is less precise (Figure 1).[11] The potential inconstancy of this outcome leads to several important questions. For example, given the many differences between residency training and independent practice, is the definition of satisfaction with specialty choice the same at each stage? How does satisfaction with specialty choice look when physicians are career-focused versus prioritizing non-career aspects of their life? Will their definition of satisfaction with specialty choice and work-life balance be the same at the age 50 as age 30? And, can they have satisfaction with specialty choice in the midst of life dissatisfaction (Figure 1)?

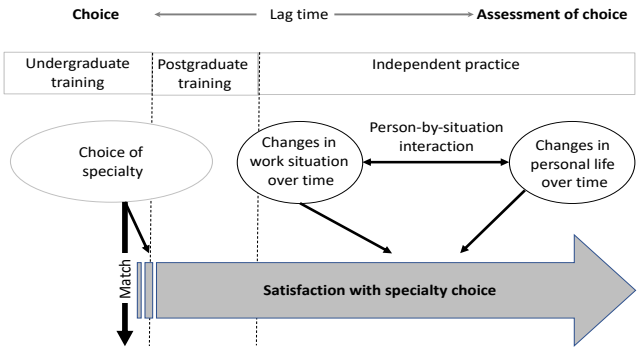

Figure 1. Proposed relationship between choosing a specialty and subsequent satisfaction with specialty choice

Assessing an outcome with the potential for change over time presents obvious challenges. Should we sample satisfaction with specialty choice at a fixed or random point in time and assume that this is representative, or should we treat this as continuous variable and express as time-averaged satisfaction with specialty choice? Alternatively, should we treat specialty choice regret as a time-dependent variable and express the outcome as a time-to-expressing specialty choice regret?

In the study by Dyrbye and colleagues, second year residents were asked: "If you could revisit your specialty choice, would you choose the same specialty again?"[9] Residents selected one of five options on a Likert scale where the anchors represented "definitely not," "probably not," "maybe," "probably," and "definitely yes."[9] Responses were then dichotomized so that "definitely not" and "probably not" were categorized as "specialty choice regret." If we apply Kane's framework to their assessment tool then we can identify obvious questions regarding validity inferences.[12,13] For example, is the construct of satisfaction with specialty choice adequately described as the dichotomous outcome of regret or not (*scoring*)? Is specialty choice regret consistent/reliable at different points in time (*generalization*), and is this rating a surrogate for specialty choice regret during independent practice (*extrapolation*)? Finally, without observational studies on the long-term impact of specialty choice regret–or interventional studies where residents or practicing physicians are allowed to revisit their specialty choice–what are the *implications* of specialty choice regret during the second year of residency training?

Suggestion #1. If we are to "improve" the specialty choices of students then we should begin by defining the outcome that we are targeting and decide if this is best represented by numbers, words, or both. Next, we should agree when and how often to assess this outcome. Finally, before trying to improve this outcome, we should develop assessment tools for which we can present a validity argument.[12-14]

2. Specialty choice regret may be misattributed to a poor choice

Gale and Shapley compare the relationship between choosing and matching to that of a marriage: there are two parties involved, applicants and training programs, and the choices that each makes effect the Match outcomes.[2] Within a few weeks of submitting their final choices, the results of the Match are announced and, barring a computer malfunction, success or failure in the Match can only be attributed to these choices. But, demonstrating a *causal* relationship between choice and satisfaction with specialty choice is more problematic.

Concerned that the second year of residency may be too early to assess specialty choice regret, imagine the scenario where we performed an explanatory mixed-methods study to assess this outcome twenty years after the Match. (A previous study estimated that at this time between 1-in-3 and 1-in-4 physicians express dissatisfaction with their specialty choice).[11] Four mid-career physicians express specialty choice regret, but each tells a different story. The first reports that within two years of beginning residency training, they found working in their specialty repetitive and unenjoyable, but they still enjoy interactions with their colleagues and consider their life outside of work fulfilling. The second states that they found all aspects of their specialty satisfying until the last year when a disgruntled colleague began a legal challenge against them. The third also reports relatively late-onset specialty choice regret that coincided with marital problems and a subsequent divorce. The final physician works in a high acuity specialty and has noticed a gradual waning in their enjoyment of work over the past 20 years as both their workload and family life have become more demanding. It is unclear when they transitioned from satisfaction with specialty choice to specialty choice regret, and even now there are still many days when they enjoy working in their specialty. With the exception of the first physician, it is difficult to argue that specialty regret was *caused* by a poor choice of specialty during undergraduate training. Even more challenging is interpreting the data from another participant who reports that during their residency training they contemplated switching specialty or leaving medicine altogether. Yet, now that they and their partner are living together and have family support nearby, they no longer regret their choice of specialty. Can the same choice *cause* regret and then satisfaction with specialty choice in the same physician?

As suggested by the opening quote from the Indian author Neelam Saxena Chandra, satisfaction with choice is the result of a dynamic person-by-situation interaction, and due to the lag time between choosing a specialty and assessing satisfaction with specialty choice, multiple specialty-related or specialty-unrelated factors may impact satisfaction with specialty choice, such as changes in workload, conflict with patients and/or colleagues, or personal life changes (Figure 1).[15,16] Although there is no clear statute of limitations, the longer the lag time between choosing and expressing specialty choice regret, the greater the difficulty in attributing *causality* to a poor choice and the more likely that a subsequent negative event was the true cause of dissatisfaction.[17] Establishing causality or lack thereof is important because if we misattribute cause for specialty choice regret then we run the risk of introducing solutions that are ineffective or even harmful.

Suggestion #2. If we are to "improve" the specialty choices of undergraduate students then, in addition to capturing specialty choice regret longitudinally, we need to explore the underlying cause(s) of regret over time.

If we can pinpoint the mechanism of specialty choice regret, then we could identify residents or independent physicians who may actually benefit from changing specialties. This exploration, however, would not only represent a significant workload for those involved in postgraduate training (in 2016 more than 250 second year residents in the United States expressed specialty choice regret),[9] it would also create a dilemma of what to do with the subset who express specialty choice regret that cannot be attributed to a poor choice during their undergraduate training. If we believe that specialty choice regret may have an adverse impact on the wellbeing of physicians and their patients, who is responsible for helping these individuals?[9,11,18]

3. Choosing is more complicated process than matching

As described above, a straightforward deferred-acceptance algorithm is used to perform the Match. By contrast, choosing is typically a complex cognitive task that involves both intuitive and analytical information processing.[19-21] Previous studies have suggested that post-choice satisfaction is higher when analytical processing is used to make simple choices, such as picking oven mitts, whereas intuitive processing may lead to greater satisfaction with complex choices, such as choosing a house.[19] Thus far, no studies have compared intuitive vs. analytical processing for choosing medical specialties, but the fact that intuitive processing may contribute to choosing a specialty implies that studies where students describe how they chose their specialty and which variables impacted this choice likely provide incomplete data since intuitive processing is typically subconscious and, therefore, difficult to articulate.[6]

The involvement on intuitive processing also makes choosing a specialty susceptible to a variety of cognitive biases, such as stereotype bias (e.g., based upon gender), anchoring, and availability bias.[22-24] Another potential source of bias is the time constraints imposed on choosing in the residency match so that choosing is treated as a finite process whereby applicants must submit their final specialty choices by the assigned date and time. In reality, choosing a specialty is typically a recursive process. Upon entry to medical school, many students have already decided on which specialty they intend to apply to for residency training.[25] But, studies have shown that during their undergraduate training, a large proportion of students then change their specialty choice.[26-29] And, the fact that some residents subsequently change their specialty suggests that the process of choosing a specialty may actually continue beyond the residency match (Figure 1).[30,31] The pressure created by this artificial time constraint increases the risk of biases such as premature closure, risk aversion, bandwagon effect, and decision fatigue.[32-35] Finally, as discussed above, satisfaction or regret with specialty choice is a difficult-to-define construct. When faced with the challenging task of trying to rate future satisfaction with choice, students may subconsciously switch this task for a simpler task (attribute substitution)[36] and choose a specialty based upon their experiences during a rotation (positive/negative event bias)[37] or the degree of similarity/dissimilarity with individuals in this specialty.[38]

Suggestion #3. If we are to "improve" the specialty choices of medical students then, rather than simply reinforcing that this is their personal choice,[39] we may need to take a more active role in helping students understand their decision-making processes and identify variables that may consciously or subconsciously impact their choices.

Implications for medical education

The historical focus of undergraduate medical education on the Match rather than the Choice is in many ways an example of attribute substitution.[36] It has, however, become increasingly difficult to ignore the growing body of literature highlighting the fact that a sizeable number of residents and independent physicians report dissatisfaction with the specialty choice to which they "successfully" matched. And, if we believe that specialty choice regret may have an adverse impact on the wellbeing of physicians and their patients, there is an undeniable need to try and improve the outcomes of the Choice.[9,11,18] But we need to acknowledge that the challenges involved in improving specialty choice are far greater than fixing the Match.[4,5] First, we will need to develop tools that can provide a valid assessment of a potentially fickle outcome, and these tools must also separate dissatisfaction with specialty choice due to poor choice by a students versus subsequent unforeseen changes in their work or life situation. Only then can introduce and assess the impact of interventions to help medical students improve their choice of specialty, such as identifying subconscious variables that may bias their intuitive information processing and/or limit their exploration of specialty options.[40] According to the Norwegian anthropologist, Thor Heyerdahl, "progress is man's ability to complicate simplicity". Trying to improve satisfaction with specialty choice will undoubtedly complicate the residency matching process, but perhaps in the long run this is preferable to the continued underreporting and misunderstanding of this outcome.

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