

HOLIDAY READING



UNSUBSTANTIATED THEORY

Evidence-based dating: the Johnson–Purdy nomogram

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The holiday season is a time for celebration and reflection. Unfortunately, for those celebrating alone, reflection often revolves around their state of singleness. The New Year's Resolutions that follow (e.g., attend more social gatherings, be open to more experiences) are not without merit, yet run the risk of being swept aside in the face of multiple other demands on one's time. This is especially true for medical learners, who are apt to place romantic endeavours low on their priority lists. Despite this, medical learners continue to desire partners. The solution therefore may not be to simply date more, but rather to date in a more intelligent, targeted way.

We propose that the principles of evidence-based medicine are not only applicable to the act of finding a partner, but can also provide a helpful framework for those lacking practical experience in the act of dating. This concept of "evidence-based dating" is illustrated here in the Johnson–Purdy nomogram (Figure 1).

For those who are unfamiliar with the Fagan nomogram,¹ it is a tool used in clinical medicine to facilitate understanding of the result of a diagnostic test in the context of a single patient. Clinicians create an initial impression based on clinical gestalt or risk stratification tools, then apply a diagnostic test. The result of that test either increases or decreases the likelihood of the patient having the disease in question. The degree to which the test will change the user's opinion depends on the operating characteristics of the test at hand.

How can we apply this tool to romantic endeavours? Consider the following scenario. At one of the holiday season's multiple social events, you are introduced to a friend of a friend. You find this person attractive, and your initial exchange suggests that they are relatively interesting. Based on this interaction, you feel that this individual is a potential romantic partner. We shall call this first impression the "pre-test dateability."

Yet, just as not all cases of chest pain represent a myocardial infarction, not all favourable first impressions are indicative of an ultimately successful romantic relationship. More data are needed.

Though the gathering of collateral history through careful questioning of mutual friends and judicious use of online search tools can be helpful, this approach will only get you so



far. To obtain a more accurate estimate of your relationship's probability of success, time must be spent in each other's presence. This means actually going on a date.

Not all dates are created equal. Different activities have their own properties — sensitivities and specificities, if you will. The ever-popular coffee date, for example, has a high intrinsic sensitivity. It is the dating-world equivalent of the C-reactive protein test in the presentation of joint pain. You are unlikely to miss a potential beau with this initial screen, but if you cannot tolerate your companion for the length of time it takes to consume a hot beverage then the possibility of a relationship has been effectively ruled out.

Unfortunately, the first-date coffee has a high false-positive rate due to its poor specificity. You might enjoy an afternoon coffee with many people whom you do not want to date in the long run. Let us take a minute to review the formula for a positive likelihood ratio (Figure 2).

A high sensitivity combined with a low specificity does not make for a strong positive likelihood ratio, and as such the posttest dateability will not change much from the pretest dateability. Luckily, this is an iterative process, and we can apply further testing.

On a second date, you may opt to go to dinner. The stakes are somewhat higher as you are committed to the activity for at least the length of the meal; the more time you spend together, the more likely it is that the conversation will turn to discriminating topics. Having the dinner at someone's house as opposed to a restaurant will further increase the specificity

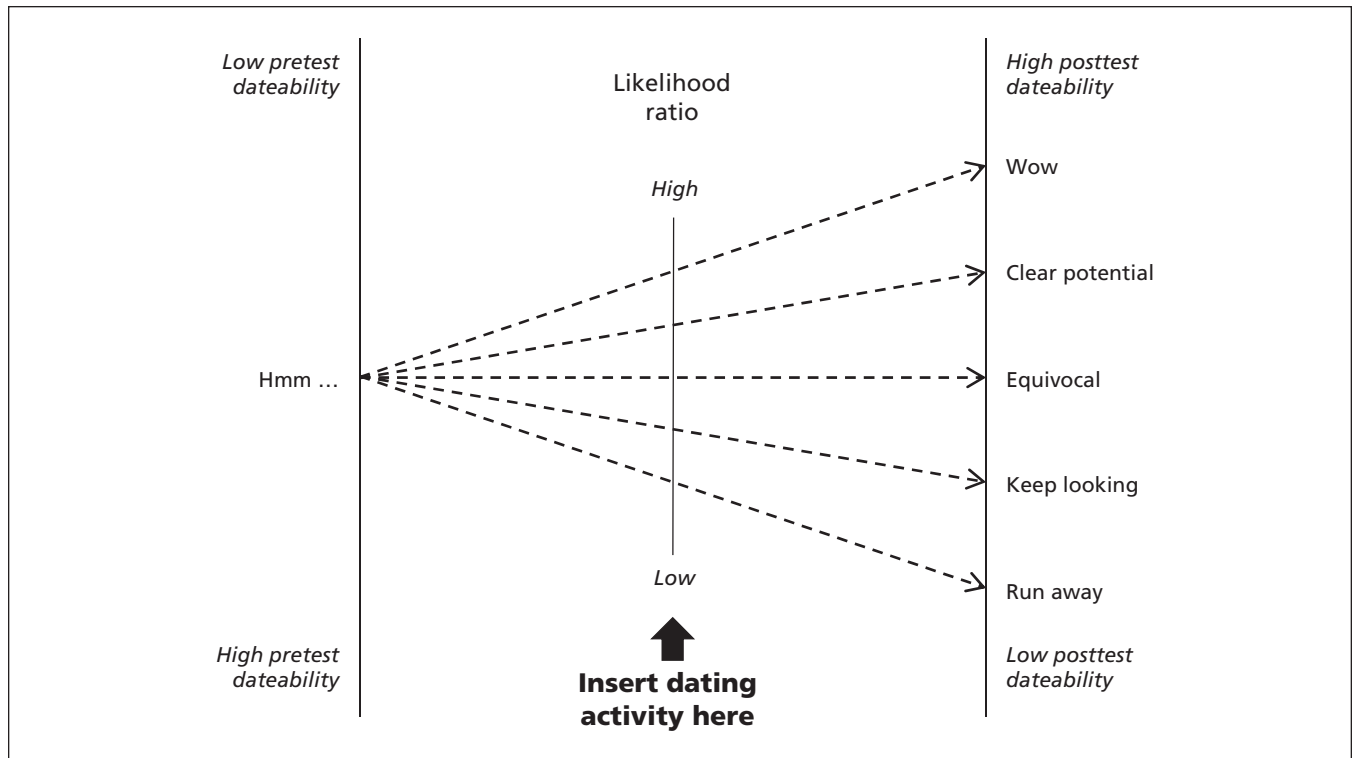


Figure 1: The Johnson–Purdy nomogram.

$$LR (+) = \frac{\text{Sensitivity}}{1 - \text{specificity}}$$

Figure 2: Positive likelihood ratio.

of the encounter, as this not only provides greater intimacy but also insight into their tastes and housekeeping habits.

A note of caution: it is possible to be *too* specific early on. The couple that travels together can do almost anything together; a successful day-trip is therefore an excellent prognostic sign. That being said, many individuals in successful relationships will be less than enamoured with their partner after several hours trapped in a car. It is therefore wise to beware the false negatives that may arise from high-specificity dates.

As we know, sensitivity is often compromised for increased specificity. Highly sensitive tests are used for initial screening; subsequently, more specific tests can be applied to rule in conditions. According to this principle, dating activities should be chosen such that the sensitivity decreases and specificity increases over time.

Based on information from available resources, a highly sensitive *and* specific date does not exist. Discovery of such a date would represent a significant advancement in the field, and is therefore a key area for future research.

In evidence-based medicine, the right evidence needs to be applied to the right patient in the right way. The same holds true for evidence-based dating. Despite a strong theoretical understanding of evidence-based medicine — or dating — each new patient and each new prospective partner will bring something unexpected to the table that does not fit into one’s current understanding of medicine, the evidence or life as we know it. In the end, we see that epidemiology and dating are not so different after all, except that medical students spend a great deal more time and energy on one. We leave it to our readers to guess which.

Reference

1. Caraguel CGB, Vanderstichel R. The two-step Fagan’s nomogram: ad hoc interpretation of a diagnostic test result without calculation. *Evid Based Med* 2013;18:125-8.

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