Medical scientists and intimate relationships: translating the language of love

D. J. Williams

It's undoubtedly true that a statistically significant proportion of medical science nerds have difficulty forming intimate relationships. Many of us are more comfortable pursuing an intimate relationship with our computers than with a fellow human being. We busily collect and analyze complex data for mind-numbing research reports and journal articles, but can't seem to figure out the fundamentals of love. Now, after much serious scientific analysis, I offer a glimmer of hope for the relationship-impaired scientist.

I have come to realize that the reason I haven't understood relationships is that whatever the language of love is, it is certainly not my first language. That language is inherently qualitative, while all these years I have been immersed in *quantitative* terminology. Could this be the reason why research nerds like me struggle with the "R" word? To test this hypothesis, I have attempted to translate the murky qualitative nature of relationships into a familiar quantitative jargon that scientists can understand. Indeed, my goal is to facilitate a *stepwise progression* toward fulfilling relationships (as opposed to the stepwise *regression* that characterizes the intimacy history of many medical scientists, myself included).

Finding that special someone requires paying close attention to observable characteristics. In this sense, our skills at data collection are a personal strength. As scientists, we collect data that help answer a *problem*; the beginning of a relationship involves a similar process, except that we may realistically be able to frame the problem as being *us*. The investigaro may therefore want to think of himself or herself as the *dummy variable*. That being said, we will start herein with some simple tests and inductively work up to the more complex. By the end of this paper, the dummy variable identification may be shed.

So, to begin. If the data from another individual seem to fit (*goodness of fit test*) with us at *face validity*, we may then apply more sophisticated statistical techniques in an effort to predict, with a *confidence interval*, the potential of relationship satisfaction. Like it or not, face validity is the foundation of the rest of the relationship analysis. Of course, some scientists and nonscientists argue that face validity is restricted only to the attraction (determined by sufficient *interrater reliability*) of the region from the anterior and superior cranium to the most distal point of the mandible, while others espouse a much more liberal operational definition. Don't tell anyone, but there is also just a teeny bit of subjectivity involved at this level of analysis.


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Once face validity is firmly established, the real fun begins. Any true researcher pondering the *predictive validity* of a potential relationship would want to conduct a *path analysis*. It is, of course, necessary to see if both you and your potential partner are truly on the same path in your lives (illusions do occur within our objective world) or if he or she happens to be a dreaded *outlier*. Medical statisticians constantly argue about how to deal in a politically correct manner with outliers that inherently scream *error*, and our next-to-nonexistent personal lives may be far less painful when we personally don't have to face them on a daily basis.

Also central to the analysis is the search for *mediating variables*. Mediating (or meddling) variables, such as frequently arise from immediate family, can be potentially disastrous in any significant intimate relationship and are certain to lead to an unwanted *paradigm shift*.

Another useful statistical technique that provides practical information is an *analysis of covariance*. Too much variance between you and your partner is usually undesirable, as is too little. Occasionally, students of medical science who have lost all sense of objectivity because of an overweening drive to establish a significant intimate relationship may be easily deceived in their relationship statistical analysis. Such cases illustrate vividly the very real problem of *autocorrelation*. However, experts frequently and insight-

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fully remind us that a critical evaluation of self (an accounting of *first-order differences*, i.e., the real problem is *you*) is effective in correcting such *serially correlated error* (i.e., never learning from your mistakes) and forms the basis for a much more accurate prediction of potential relationship satisfaction — and eventually the formulation of a healthy relationship.

If the relationship passes a path analysis and an analysis of covariance and there is minimal autocorrelation, then we may apply other sophisticated statistical techniques to further analyze the relationship potential. Related to the statistical test of analysis of covariance is an appropriate longitudinal demonstration by the potential partner of *degrees of freedom*. No hardcore medical researcher wants to feel smothered — though many have no empirical idea of what this emotion entails. If the potential mate demonstrates too few degrees of freedom, quickly retreat. Make up a three-quarter truth, if necessary, such as saying that you can't "do" a relationship because you must spend 23 hours of every day in your lab. Conversely, if the degrees of freedom are too many you run the risk of a *confounder* entering the relationship. In other words, you hook up with this person and suddenly he or she dumps you quicker than an outdated issue of *CMAJ* for someone else — perhaps someone higher on the scholarly ladder (translation: nerdier). Remember that people with many degrees of freedom are often attracted to power, prestige and visibility. Yes, there appears to be an association, but don't be fooled — it is a *spurious* one! Degrees of freedom should be many, but not too high, and you should make sure the relationship *power* is in your favour.

A frequent factor in relationship failure is differences in financial management. In fact, this can cause many couples to split apart faster and more violently than fission of uranium-235. Every good medical scientist may want to ponder applying an *econometric forecasting technique* to the financial history and context of a potential partner. Just as this technique is often used in conjunction with a *time-series analysis* for slope measurement and an accurate mathematical prediction that is based on historical data and trends, it can be used to assess your potential paramour's financial history and determine whether his or her spending habits are *risk factors* you can live with.Thus, time-series and econometric forecasting become practical statistical tools in the unfamiliar world of intimate relationships.

Finally, no relationship discourse would be complete without an investigation of sexual compatibility. For many medical scientists, good sex may physiologically validate, along the same lines as the experience of discovering a new enzyme or a previously unknown cure for warts, that not only do we have high levels of brain-wave activity but we also have heartbeats — rather strong heartbeats at times. For the first time we may personally discover a noticeable difference between ourselves and our cadaveric research subjects. Despite the potential magnitude of this personal discovery and its clinical significance, most scientists generally tend to remain fearful of sex. If sex really does provide an physiological arousal almost but not quite equal to that experienced when learning psychophysics or calculus, then it is correct to fear it: too much time spent at sex equals precious time taken away from medical science.

Nevertheless, the unscientific world in which we must to some degree live appears to unanimously agree that sex is an essential part of life and relationships. Therefore, if a potential partner has passed all previous statistical tests and functions reasonably well within our *general linear model* of personal life (although still insignificant), one may then progress to empirical testing in the expectation of significant results.

In conclusion, medical scientists who know little about the qualitative and nebulous nature of love and intimacy should take heart: relationships don't have to be scary. Simply translate the language and be sure to do your math as you go along!

D. J. Williams is at the University of Alberta, Calgary, Alta.