## The Research Question

How much does success impact date-ability across genders?

The intuition behind the study

Historically men were the bread winners and women were judged by beauty and youth, but that is not necessarily the dynamic today. Yet many woman still hope to settle down and catch a good one before they are gone. It would be interesting to determine if attitudes regarding women's value in the relationship have actually evolved with the times. The same delineation could be applied to men: are the men who select a less ambitious education/career paths suffering from increased rejection? Or more generally, do successful individuals have a competitive edge in data or are there gender biases?

The impact of individual's success on dating would illuminate modern social norms and the dissemination of that knowledge could cause a paradigm shift. Metrics from observational analysis suggest that there are a greater number of educated women than men, intimating a supply and demand disequilibrium (Census Bureau; Table ID B15001). As the graph below demonstrates, the number of women with advanced degrees is growing across age cohorts. If education patterns are believed to be a marker of success, then there are less available men for the more educated women and therefore based on market economics if females are looking for equivalent partners, they should exhibit lower match rates for dating. Should the experiment provide evidence to confirm this behavior pattern, it could engender a shift where more young ladies embrace dating less successful men.
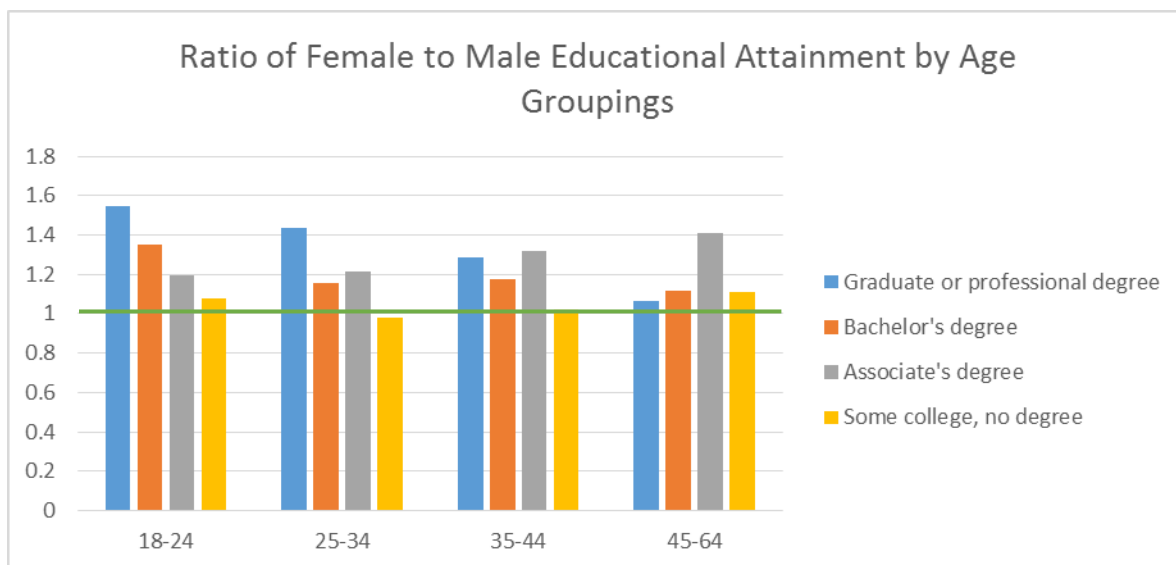
Additionally, it would be interesting to compare the relationship dynamics in dating to the gender roles displayed elsewhere. According to Sheryl Sandberg's renowned book Lean In, "success and likability are positively correlated for men and negatively correlated for women"

(Sandberg). The focus of that research was primarily in the workspace where resources are scarce, highly sought after, and split across genders. What about when the genders are not in competition? Does success still carry a negative association for women and a positive association for men? Or as a society, maybe two successful people link up because the power couple is viewed advantageously—especially as two modest incomes is increasingly (considered by some) necessary to stay in the middle class? If the prevailing perspective reinforces equality then the match rate for successful individuals should be more balanced across genders.

Along the same line of thinking, perhaps dating algorithms are leading to a more polarized world where success creates additional socio economic barriers. There is an entire book devoted to expounding the varied way algorithm's impact society in new and unexpected ways (Kathy O'Neil's book Weapons of Math Destruction). Technology in the dating space fosters an environment where people from different backgrounds may never meet because algorithms in the background filter out profiles. The experiment could potentially quantify the impact of socio-economic differences in society by measuring the associations for diverse relationships forming.

The Experimental Design

The experiment will be conducted strictly online where there is already a bevy of participants available—the people already using dating apps. Subjects will be exposed to a standard profile with varying factors of success. The experiment will hold constant the following features: the standard profile's location, age, photos; the experimenter's search time/date, number of potential matches; suitor's age range, geographic distance, and finally the dating application.

Objectively measuring actual success is difficult, but a reasonably good proxy could be educational attainment, job title prestige or educational institution prestige. The control group would be a profile giving no information for the particular success measure. Below is a table of potential degrees for each of the suggested treatment groups:

Educational Attainment	Job Title	Educational Prestige (nearest)
Advanced Degree (Masters, PHD, MD)	Doctor	IVY (Harvard)
College Degree	Teacher	State School (UMass)
Associate Degree	Social Worker	Community College (Bunker Hill CC)

The government and society have created very clear breaks in educational attainment that are known to all and would be easy to administer for an experiment. For job title and educational prestige, it is important that the subjects are able to recognize the schools and professions which is reflected in the mainstream/unambiguous selections. We could customize the education to reflect broadly known schools in the vicinity of the experiment. To enhance consistency of school selection, Barron's Ranking list and the US News school ranking could be consulted. Most adults know that doctors make significantly more than teachers who make more than social workers.

All three professions are in the business of helping people, but this could introduce potential bias. For example, men might seek women with a nurturing profession (picturing them raising babies at home) and women might avoid them. Additionally Researchers at Microsoft recently published a paper demonstrating gender based job title bias in the general public's vernacular, implying that this success measure could potentially introduce bias into our experiment (Bolukbasi, 2016). In conclusion, reviewing the options for success metrics shows location specific schools would introduce variability and job titles also carry bias, so the cleanest selection for success would therefore be educational attainment.

Subjects will see a selected measure of success when they view the profile. The experiment administrator will approve of all matches to gather an unbiased sample of 100 potential matches for each level of success and the control group, creating a total population of 400 data points. There aren't API's for dating apps so the data would have to be input by the experimenters. Blocking innately happens because dating apps are split by gender and the success level is fictitious, making it easy to manipulate. Furthermore, in this instance blocking is not necessary because of the large sample size.

The dating apps restrict users from seeing repeat profiles (as long as there is a large enough volume of users which there definitely is in major cities) so the trials are independent. The dating algorithms are effectively randomizing the trail, but we will discuss the implications of the algorithms soon.

Potential Apps

There are many dating apps available; above we have highlighted six popular ones. The ones in the bottom row have been elimination: Hinge's algorithm works off of an existing social network which would be difficult to build/control for an experiment, Match is the most expensive and it is impossible to determine failures, and League removes users who don't have the correct credentials. Tinder, Coffee Meets Bagel and Bumble are all viable options.

The Evaluation Technique

The individuals with the highest date-ability are those who more frequently make connections with opposite gender. The critical outcome measure is the rate of matches—given the bait

profile swipes right on all 100. The ratio of messages received could also be a secondary measure.

We plan on collecting several covariates: the city the experiment was run in, the suitor's age, distance, and his/her own level of success. These are the same variables that might engender clusters if they were more prominent in the experiment. Macro trends like the male to female ratio could influence the results in some cities and the individual's stage in life could also cause similar results. Once the data is collected we will build an explanatory model that measures the relationship between success and date-ability while controlling for these other factors.

Potential Challenges and Recommendations

It would flirt with ethical lines to use subjects as participants without their knowledge or consent. Online dating presents a broad spectrum of interactions and a false signal of interest would be a small harm against the subject. If potentially hurt feelings are a serious concern, the researchers could send an explanation shortly after the experiment concludes. Overall rejection is part of the online dating experience and unreturned messages (aka ghosting) are not uncommon.

One of the key areas of interest in the study design is the variance across gender. The problem is how do you build standard male and female profile with equal levels of attractiveness? As the saying goes, 'beauty is in the eyes of the beholder,' but something more concrete would lend more legitimacy to the experiment. In order to more objectively level the playing field of attractiveness, stock photos such as pictures of Barbie and Ken (examples shown below) could be leveraged. There was a very popular burrito that made the rounds on Tinder so these tactics are not unheard of in the dating world. Additionally stock photos would encourage participants to read the profile and see the treatment variable; however the whole profile could be considered a joke or introduce bias in the type of person who will click on it, so there is a trade-off.

Photos from: https://www.instagram.com/socalitybarbie/?hl=en
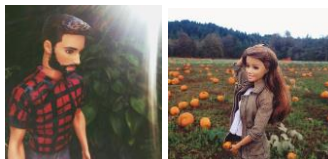
The behind the scenes algorithm could interfere with the experiment. For example, rumor has it that on Tinder the more profiles one rejects the 'better' matches he or she will receive. The experiment's automatic acceptance of sequential profiles could trigger the over-indexing of particular types of profiles. As researchers it will be impossible to control details regarding the participants that come up and only so much data can be scrapped from the subject's profile. The

best way to control for the impact of the algorithms is to run the experiment across different apps, but that is highly resource dependent.

Pilot Study Description:

Perhaps the biggest challenge with the study is that subjects may make split second decisions that are based entirely on looks, resulting in little variety across the treatment groups. A quick pilot study would be the best means to evaluate the aforementioned risk. The researchers could take a sample of 10 subjects for each education level and run the sharp null hypothesis to assess the experiment feasibility before proceeding at scale.

Also it would probably be worth reading the dating apps' terms of service.

Works Consulted:

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