

SPECIAL COLLECTOR'S EDITION

SCIENTIFIC AMERICAN

MIND

BEHAVIOR • BRAIN SCIENCE • INSIGHTS



THE SEXUAL BRAIN

WHAT REALLY GOES ON IN THERE

WHY KISSING IS A TURN-ON



A SURPRISING KEY TO ORGASM



THE SUNNY SIDE OF SMUT



HOW GAY ARE YOU?

YOUNG AND TRANSGENDER

THE
SEXUAL
BRAIN

5/5

COUPLING

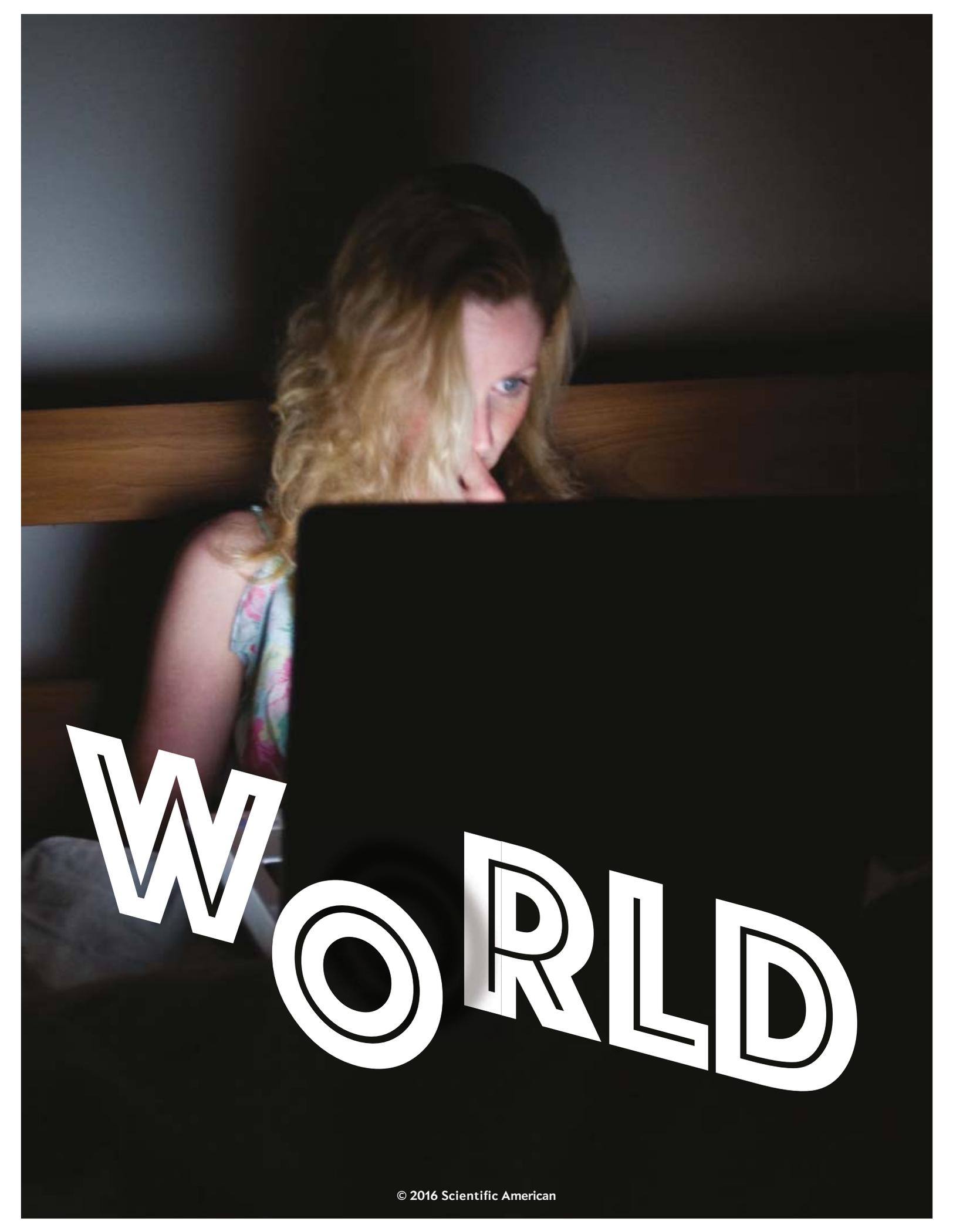
BY Eli J. Finkel,
Paul W. Eastwick,
Benjamin R. Karney,
Harry T. Reis and
Susan Sprecher

DATING IN A DIGITAL

Understanding the
science of online dating
can turn a frustrating
experience into
a fruitful mission

MIND.SCIENTIFICAMERICAN.COM

With online dating,
singles can now
search for romance
whenever they want,
including while cozy
in their pajamas.

A woman with long, wavy blonde hair is sitting in a dark room, looking intently at a laptop screen. Her hand is near her face, suggesting she is focused or perhaps surprised by what she is seeing. The background is dark, with a wooden headboard visible behind her. The overall mood is one of quiet concentration or discovery.

WORLD

ROMANTIC RELATIONSHIPS CAN BEGIN ANYWHERE.

When Cupid's arrow strikes, you might be at church or at school, playing chess or softball, flirting with a friend of a friend at a party or minding your own business on a train. Sometimes, however, Cupid goes on vacation, or takes a long nap, or kicks back for a marathon of Lifetime original movies. Instead of waiting for the capricious arrow slinger to get back to work, many people today use online dating sites and apps to assert some control over their romantic lives.

For millennia, cultures have developed practices to fulfill the evolutionary imperatives of mating and reproduction. In the Western world today, individuals are largely expected to identify romantic partners on their own, a process that can consume significant time, effort and emotional energy—and that provides no guarantees. The ability to hunt for dates online offers singles a modicum of control over a seemingly random process and grants them access to hundreds, potentially thousands, of eligible mates. The appeal of this unprecedented opportunity to pursue romance beyond one's social circles and neighborhood haunts has helped launch a multibillion-dollar industry.

Traditional online dating sites work like this: users create profiles describing themselves and then search a Web site for possible romantic partners according to various criteria—within their geographical proximity, for example, or perhaps by educational levels, age range or religion. Some

sites attempt to play the role of matchmaker and use proprietary algorithms to suggest pairings between users, whereas other sites give their customers free rein. By 2009, a mere 15 years after Netscape released the first major Web browser, one quarter of heterosexual couples and two thirds of same-sex couples were meeting online.

Rather than dabbling on perfume or cologne and preparing for a night on the town, singles using online dating services can peruse potential partners while drinking their morning cup of coffee, during meetings at work or when lying in bed for 10 minutes before nodding off. This is not your grandparents' dating landscape.

Not all the changes are constructive. Critical assumptions lurk in the mechanisms of online dating. One supposition is that people are good judges of which qualities described in an online profile will appeal to them in person. A second premise is that comparing multiple potential partners side by side is an effective way to evaluate compatibility. A third is that two people's questionnaire responses can, when paired with fancy math, reveal their underlying romantic compatibility. Several lines of scientific work suggest that none of these hunches is true.

This disconnect between the assumptions underlying online dating, which are reinforced by the services' overheated claims, and the realities of human psychology often yields dissatisfaction. Avid users may invest tens of hours every month in browsing profiles and only rarely arrange a date. They may contact dozens of potential partners and hear back from only a small fraction of them. They may set up dates with individuals who seem perfect "on paper" only to learn on the first date that as a pair they have no chemistry.

For online daters, what follows is a survival guide. For others, a look at today's dating methods offers revealing insights into the human psyche.

Set Limits for Yourself

Online dating is almost nothing like a typical night out on the prowl. At a bar, a man might size up the room before letting his gaze settle on the thirtysomething brunette with the welcoming smile and the sparkling eyes. If he approached her and managed to strike up a conversation, he could take in her nonverbal cues—such as her gestures, posture and gaze—as he tried to make her laugh.

If he were instead reading her profile on an online dating site, he would have learned that she plays board games on the weekends, works as a pastry chef and loves horror movies. A connois-

FAST FACTS

MINDFUL MATCHMAKING

- 1 Online dating, a multibillion-dollar industry, offers singles an unparalleled opportunity to meet and arrange dates with people outside their own social circles.
- 2 Often these services encourage users to rely on decision-making styles that are not well suited to the development of successful relationships.
- 3 Awareness of the obstacles in this psychological terrain can help online daters make the most of these services.

seur of art-house films still tormented by a childhood viewing of *A Nightmare on Elm Street*, he might have already clicked past her.

With the carrot of romance always dangling a mouse click away, the temptation to scan—and cavalierly dismiss—dozens of profiles is strong. We all value having options, but too many can undermine our ability to make good decisions. In one experiment, people who viewed 20, rather than four, online dating profiles were more prone to misremembering the information in those profiles. In a second experiment, as the number of profiles grew from four to 24 to 64, users switched from time-consuming choice strategies that attend to and integrate multiple cues to lazier strategies that superficially examine few elements and do not combine them effectively.

These cognitive biases are hard but not impossible to counteract. Remain aware of how many profiles you have scanned in a single browsing session and impose a time limit. View profiles in manageable clusters and consider reaching out to, say, one out of every 20 users. Keep in mind that behind the profile is a flesh-and-blood human.

Mobile dating sites help get people face-to-face more efficiently than traditional online dating sites do.

Monitor Your Mind-set

People tend to evaluate romantic prospects differently depending on how they encounter them. Many studies in nonromantic domains have demonstrated that people are inclined to prioritize different qualities when they compare multiple options side by side—referred to as a joint evaluation mind-set—than when they size up one specific possibility in isolation, known as a separate evaluation mind-set.

A study of incoming college freshmen explored this idea in the context of dormitory assignments. Before learning which one of 12 dormitories they would be randomly assigned to, the students anticipated that physical features, such as the build-

Online daters may be tempted to scan dozens of profiles at a time, but viewing a smaller cluster makes for a more thoughtful evaluation.



GETTY IMAGES

ing's location and the size of its rooms, would strongly influence their future happiness. None of these attributes ultimately predicted their well-being. Instead experiential qualities—such as the relationship with one's roommate and the social atmosphere of the dormitory—trounced any of the lodgings' physical characteristics.

One explanation for this discrepancy between expectation and reality is that the freshmen were in a joint evaluation mind-set when making the predictions and in a separate evaluation mind-set when living in the assigned dorm. Before moving in, they were more sensitive to unimportant physical variations simply because those differences were easy to judge as they compared and contrasted the 12 dormitories. Browsing profiles of potential romantic partners is also likely to trigger a joint evaluation mind-set and cause users to overvalue qualities that are easy to assess but unlikely to determine compatibility. Indeed, traditional online dating profiles are chock-full of details that tend to be largely unrelated to the hard-to-discern, experiential characteristics that promote relationship well-being. Levels of education or physical attractiveness, for example, can easily be assessed through a profile, whereas rapport and sexual chemistry can only be evaluated face-to-face.

Engaging in joint evaluation can also strengthen so-called assessment mind-sets and undermine locomotion mind-sets. When in an assessment mind-set, a person critically evaluates a specific option against available alternatives. When in a locomotion mindset, in contrast, a person focuses on a particular selection, such as a desirable mate, and pursues it vigorously. To be sure, all dating involves some degree of assessment. The side-by-side evaluation of countless online dating profiles, however, seems to invoke an especially strong assessment mind-set regarding the general pool and an especially weak locomotion mind-set with respect to any single person. We recommend taking a moment to imagine what it might be like to talk to the person behind the profile face-to-face. Mentally simulating a social interaction is likely to

make you less critical and more motivated to consider possible ways you might be compatible.

Cast a Wide Net

Studies suggest that online daters typically aim too high. They contact the most objectively desirable individuals—those whose profiles make them look the sexiest or the wealthiest, for example—at massively higher rates than others. In a real-world dating scenario, attendees at a party would not all mob one attractive individual, but that is essentially what happens online because these daters cannot see how much attention a person is already receiving. These desirable people are the least likely to respond to e-mails, and both the deluged daters and their pursuers become frustrated as a result.

Part of the problem appears to stem from the attitudes that daters adopt, intentionally or not, when on these sites. In one 2010 study Rebecca Heino of Georgetown University and her colleagues described online dating as “relationship-shopping.” The shopping metaphor is apt. Much like hunting for size 8 leather shoes on Zappos.com, online daters seek partners by searching through profiles using attributes such as income and hair color, as opposed to arguably more important factors, such as a sense of humor or rapport. One online dater illustrated the shopping mentality as follows: “You know, ‘I’ll take her, her, her’—like out of a catalog.” A second online dater agreed: “I can pick and choose; I can choose what size I want, it’s like buying a car, what options am I looking for.”

This checklist mentality underscores our lack of self-knowledge when it comes to romance. In one experiment, research participants who evaluated an online dater’s written profile expressed more attraction toward a person whose description was rigged to match their own idiosyncratic preferences. After a brief live interaction, however, the participants’ stated preferences no longer predicted romantic interest. These experiments reveal that the online profile descriptions that are especially appealing or unappealing to us are poor indicators of what we are likely to find attractive in real life.

Rather than getting hung up on figuring out who has the most appealing profile, get past profile browsing as soon as you can and do not expect too much from that process in the first place. Stay open-minded to discovering the person you are meeting and whom you might end up falling for—and who might love you back.



Appraising numerous dating profiles side by side can easily overwhelm online daters. Imposing a time limit can help.

THE AUTHORS

The authors are all social psychologists. **ELI J. FINKEL** is based at Northwestern University, **PAUL W. EASTWICK** at the University of Texas at Austin, **BENJAMIN R. KARNEY** at the University of California, Los Angeles, **HARRY T. REIS** at the University of Rochester and **SUSAN SPRECHER** at Illinois State University.

© ISTOCK.COM



Communicate with Care

Traditional online dating sites include easy methods, such as anonymized e-mail and online chat functions, for users to communicate with prospective dates. In fact, dating hopefuls must converse through one of these methods before switching to a personal e-mail account or messaging each other through social media. If these interactions go well, the romance seekers typically agree to meet in person in short order.

Unfortunately, many potential love connec-

Deprived of the social cues that modulate dating behavior in face-to-face interactions, online daters tend to contact the most objectively desirable people at much higher rates than other individuals.

Singles at a party would not all mob one attractive person, but that is essentially what happens online.

tions never get started. One reason is that not all profiles on a site represent paying or active users. (When Ashley Madison, a service that facilitates extramarital affairs, suffered a data breach in 2015, consumers of the mainstream media learned that only a tiny fraction of the female profiles were actually linked to real women.) In addition, responses to initial overtures can be few and far between. In one study, men replied to one out of four messages they received through a dating

site, and women replied to one in six. More promisingly, this study found no evidence that eager responses were a turnoff; the faster the reply, the more likely that reciprocal communication continued. If you sense a spark, don't play hard to get.

At this stage, the incipient relationship is still fragile. Do not wait too long to set up a date. Many pairings that start communicating outside the dating site's messaging systems meet face-to-face within a month, frequently within a week. Doing so is wise, as research shows that although a small amount of e-mailing or chatting online can increase attraction when two daters meet, too much of it tends to instill overly specific expectations, which can complicate the initial meeting.

Ultimately there is *something* that people must assess face-to-face before a romantic relationship can begin. Scholars are still working to identify exactly what that something is, but it appears to reside at the intersection of behavioral synchrony, chemistry and gut-level evaluations. Some emotional reactions could even be based on sensory experiences, such as smell, that cannot be gleaned through a digital screen. Meeting in person also serves as an important reality check before intimacy progresses: it is a whole lot easier to lie in a profile or an e-mail than face-to-face.

Don't Bet on Matching Algorithms

Several high-profile dating sites promise to match users with an especially compatible partner identified via a proprietary matching algorithm. Unfortunately, these companies have failed to provide any convincing evidence supporting their claims. We encourage you to consider this limitation before investing the sometimes considerable resources required to join such services and before allowing a matchmaking algorithm to eliminate partners from your potential dating pool. For better or worse, dating-site algorithms can probably discern which people have an increased risk of experiencing relationship problems by assessing individual differences such as neuroticism or a history of substance abuse. Some people are indeed better at sustaining intimacy than others. By assessing these types of characteristics, online dating sites can potentially screen out the relationally challenged more efficiently and effectively than an

MORE SCIENCE See the *Psychological Science in the Public Interest* article, "Online Dating: A Critical Analysis from the Perspective of Psychological Science," on which this story for *Scientific American Mind* is based, at the Association for Psychological Science's Web site: www.psychologicalscience.org

individual dater can. This is a potentially useful service, as long as you are not one of the unlucky folks who gets eliminated.

This filtering service, however, yields far less than what algorithm-based matching sites typically promise. They pledge to identify potential mates who are particularly compatible with you—your

Brief interactions online can boost attraction, but too much can lead to overly specific expectations.

soulmate, even—a claim that is every bit as dubious as it sounds. The problem is not simply that no matching site has mustered any compelling evidence that its algorithm is effective. A deeper problem is that decades of research suggest that the most important determinants of a relationship's fate emerge only after the pair have met—factors such as the way the partners navigate interpersonal conflict, respond to unpredictable events together or share good news with each other. Because matching sites have demonstrated insufficient ambition or creativity, their approaches are based solely on qualities of individuals that can be known prior to meeting in person. As a result,

these algorithms are poorly equipped to predict whether strangers on a date will linger over dessert or quickly request the check. Discerning whether two people will live happily ever after is even further out of reach.

In recent years we have repeatedly thrown down the gauntlet, challenging these algorithm-based matching sites to put up or shut up—either to provide evidence in support of their claims or to stop making them. It is obvious to any trained scientist how to test whether a given algorithm actually works: online daters would be randomly assigned to one of four experimental conditions. In the wait-list control group, participants would experience no intervention. A placebo-control group would consist of subjects who believe they are being matched by the site's algorithm but are actually matched at random. Daters in a relationship-aptitude control group would be paired randomly with people who tend to be good at relationships in general and are not, say, especially neurotic. Last, individuals in an algorithm group would be paired with people selected by the site's matching technology.

If the members of the fourth group experienced romantic outcomes superior to those of the participants in the other three groups, then we would have credible evidence that the algorithm is effective. Given that we have repeatedly spelled out

The information that best predicts a relationship's success, such as rapport and compatible senses of humor, can only be gleaned in person.



GETTY IMAGES

how matching sites could demonstrate their value, it seems suspicious that no site has done so—or allowed independent scholars to perform the study on its behalf. Until matching sites that claim to use science actually conduct adequate experiments, online daters should think twice before paying a premium for such services.

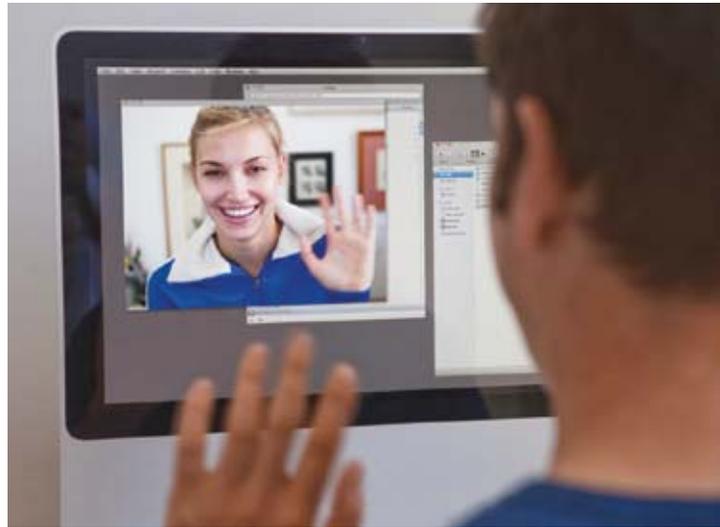
Ride the Tinder Wave

Traditional online dating sites are alive and well, but a smartphone-based alternative called mobile dating has recently gone mainstream. Mobile dating sites, which leverage GPS technology to help singles locate potential partners in their immediate proximity, adopt a minimalist user interface that helps get people face-to-face much more efficiently than traditional online dating sites do. Tinder, which took the dating world by storm in 2014 and remains the dominant mobile dating site today, employs a simple procedure in which users view photographs of potential partners, swiping right if the partner appeals to them and swiping left if not. If two individuals swipe right on each other's image, they can begin texting through the app, perhaps even setting up a first date for 10 minutes hence.

Mobile dating sites have both disadvantages and advantages, but the latter outweigh the former. On the downside, making initial romantic decisions on mobile dating sites tends to be even more appearance-based than other forms of dating, including traditional online dating sites. On the upside, mobile dating circumvents three major failings of traditional online dating sites: the emphasis on studying profiles to assess compatibility, the tendency for certain individuals to be deluged with offers from people they have not expressed interest in, and the false claims about matchmaking algorithms. Mobile dating helps people set up first dates with people they otherwise would not meet—and it does so far more efficiently than traditional online dating sites do.

Know What Works

“Online dating” is a misnomer. What happens online is the meeting. The dating happens at bars or coffee shops or sporting events or state parks—at the same places where people who meet offline go on dates. Once you go on a first date, you can assess your level of attraction to the other person. If there's a spark, you can play it out. Maybe it will be a short-term tryst. Maybe it will be happily ever after. Once you've gotten to the first date, the rest is up to you (at least until you're ready to dip back



Although communication through video chat can help acquaint two people, an in-person meeting is the best bet for assessing romantic compatibility.

into the online pool to search for somebody new).

Some aspects of online dating services are marvelous. Dating sites provide access to potential sources of romance that might otherwise be unavailable to their clients. They can transcend geographical and social-network boundaries to an unprecedented degree. These benefits may be especially powerful for those people who need it the most—including those who are socially anxious, who have recently moved to a new city, or who have demanding schedules that limit opportunities to socialize.

In general, online dating sites present a unique opportunity to bring happiness into the world. The industry is still young, which is probably one reason it has so many flaws. As these services increasingly incorporate the best relationship science, they will continue to evolve and improve. When wielded with skill and rigor, these sites can help millions of lonely hearts find love. **M**

MORE TO EXPLORE

- **Formal Intermediaries in the Marriage Market: A Typology and Review.** Aaron C. Ahuvia and Mara B. Adelman in *Journal of Marriage and Family*, Vol. 54, No. 2, pages 452–463; May 1992.
- **Matching and Sorting in Online Dating.** Günter J. Hitsch et al. in *American Economic Review*, Vol. 100, No. 1, pages 130–163; March 2010.
- **Searching for a Mate: The Rise of the Internet as a Social Intermediary.** Michael J. Rosenfeld and Reuben J. Thomas in *American Sociological Review*, Vol. 77, No. 4, pages 523–547; August 2012.
- **Intimate Relationships.** Second edition. Thomas N. Bradbury and Benjamin R. Karney. W. W. Norton, 2013.
- **The Predictive Validity of Ideal Partner Preferences: A Review and Meta-Analysis.** Paul W. Eastwick, Laura B. Luchies, Eli J. Finkel and Lucy L. Hunt in *Psychological Bulletin*, Vol. 140, No. 3, pages 623–665; May 2014.