

# **Bumble** x Arthur Brooks

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*Complementing One Another:*  
How Connection Grows **IRL**

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## PART ONE

### *The Problem: In Their Search for Love, Adults Find it Difficult to Move Online to Offline*

*"Each desiring his other half, [two people] come together, and throwing their arms about one another, entwine in mutual embraces, longing to grow into one."<sup>1</sup>*

These are the words of the Greek playwright Aristophanes, recorded by the philosopher Plato in 380 BCE, describing how humans crave romantic love. According to Aristophanes, humans were once whole beings, who were split into two by the gods. This caused something like a wound in every living person, forging a collective instinct to heal it. Ever since, each person has wandered the world seeking love, because, per Aristophanes, "love is the desire of the whole, and the pursuit of the whole is called love."

It is tempting to dismiss this story as abstract and poetic, with little bearing on romantic relationships in the 21st century. But there is another way to interpret this myth. To Aristophanes, true love occurs when two people come together, face-to-face, in a union that heals the wound of separation inflicted by the gods. Put simply, in-person love is *the only* love there is. Unfortunately, the lack of in-person love is the relationship crisis of our time, as adults are increasingly wary of moving online to offline in their search for love. And although adults may not literally have a wound inflicted by the gods, plenty of evidence shows that they feel a painful absence and are craving this visceral connection.

Let's start with some big-picture data: both loneliness and anxiety are on the rise. According to the latest data, about 37 percent of Americans experience moderate-to-severe loneliness.<sup>2</sup> Likewise, before the COVID-19 pandemic, only about 8 percent of U.S. adults reported symptoms of an anxiety disorder; today, that figure has more than doubled to 17 percent.<sup>3</sup> (The data is more troubling for young adults, the cohort most likely to be in the dating market: up to one-third of adults aged 18 to 29 experience symptoms of an anxiety disorder.)

These data are driven by complex forces, without a single cause. But there is a strong circumstantial link between the misery we see and a lack of in-person romantic love.

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<sup>1</sup>Plato. (1996). Symposium: The Benjamin Jowett translation (B. Jowett, Trans.; H. Pelliccia, Rev.). Modern Library.

<sup>2</sup>Albertorio-Diaz, J. R., & Wheldon, C. W. (2025). Prevalence of loneliness states among the US adult population: Findings from the 2022 HINTS-6. *American Journal of Preventive Medicine*, 107935.

<sup>3</sup>"Estimates of Mental Health Symptomatology, by Month of Interview: United States, 2019." (2019). National Center for Health Statistics, <https://www.cdc.gov/nchs/data/nhis/mental-health-monthly-508.pdf>. "Anxiety and Depression" (2024). National Center for Health Statistics: CDC, <https://www.cdc.gov/nchs/covid19/pulse/mental-health.htm>.

For instance, nearly two-thirds of young adults cite anxiety as their biggest barrier to dating in real life, and 45 percent of men aged 18 to 25 have never asked a woman out in-person.<sup>4</sup> Academic experiments show that higher anxiety predicts a preference for texting over face-to-face communication.<sup>5</sup> And researchers are increasingly finding that young adults, despite being uber-connected digitally, are lonelier than ever.<sup>6</sup>

This evidence seems to suggest that loneliness and anxiety *cause* an aversion to in-person relationships, but studies show that the association is “bidirectional”—meaning that reduced in-person connection can cause or spike anxiety, too. Consider the COVID-era longitudinal work that shows how periods of social restriction correlated with worse social anxiety, and that social-anxiety symptoms *increased* as restrictions eased if people had been deprived of normal social contact.<sup>7</sup>

In light of these findings, dating apps—which have overtaken all other forms of mating in the past decade—have come under fire. Today, about half of couples meet on the apps, but at the same time, four in five users report “dating app burnout.”<sup>8</sup> To critics, dating apps keep users from fulfilling Aristophanes’s mythic embrace: users stay online rather than getting offline to “[throw] their arms around one another.” They are connected, but lonely.

It might be tempting to conclude that dating apps are an inherent bad, but this is too reductive. In fact, online meetings do not necessarily substitute for real life mating. Indeed, done right, the former can complement the latter. Academic research has shown that the relationship between time spent online during courtship and offline relationship success follows an “inverted U-shape” pattern.<sup>9</sup> It is true that at high levels of online interaction, relationship satisfaction suffers: “late modality switching” (that is, meeting one’s match offline only after substantial online interaction) produces poor outcomes, suggesting that protracted digital courtship can build idealized expectations that reality cannot meet.

<sup>4</sup>Bhaimiya, S. (26 March 2025). “Dating apps are dialing up in-person events as Gen Z struggle to build connections.” CNBC. <https://www.cnn.com/2025/03/26/dating-apps-are-dialing-up-in-person-events-as-gen-z-loneliness-persists.html>. Brown, E. (25 April 2025). “45 Percent of Guys 18-25 Have Never Asked a Girl Out in Person.” Relevant.

<https://relevantmagazine.com/life5/relationships/45-percent-of-guys-18-25-have-never-asked-a-girl-out-in-person/>

<sup>5</sup>Chen, Y. A., & Toma, C. L. (2024). To text or talk in person? Social anxiety, media affordances, and preferences for texting over face-to-face communication in dating relationships. *Media Psychology*, 27(3), 428-454.

<sup>6</sup>Hall, J. A., Pennington, N., & Holmstrom, A. J. (2025). Lonely and connected in emerging adulthood: The ambivalence of sociality in a time of transitions. *PLoS One*, 20(11), e0334787.

<sup>7</sup>Lim, M. H., Qualter, P., Thurston, L., Eres, R., Hennessey, A., Holt-Lunstad, J., & Lambert, G. W. (2022). A global longitudinal study examining social restrictions severity on loneliness, social anxiety, and depression. *Frontiers in Psychiatry*, 13, 818030.

<sup>8</sup>Wisniewska, M.J. (7 February 2025). “Percentage of Relationships That Start Online: Latest Statistics (2025)”.

<https://www.breakthecycle.org/percentage-of-relationships-that-start-online/>. Prendergast, C. (25 July 2025). “Forbes Health Survey: 78% Of All Users Report Dating App Burnout.” *Forbes*. <https://www.forbes.com/health/dating/dating-app-fatigue/>.

<sup>9</sup>Ramirez, A., Sumner, E. M., Fleuriet, C., & Cole, M. (2015). When online dating partners meet offline: The effect of modality switching on relational communication between online daters. *Journal of Computer-Mediated Communication*, 20(1), 99-114; Ramirez Jr, A., & Zhang, S. (2007). When online meets offline: The effect of modality switching on relational communication. *Communication monographs*, 74(3), 287-310.

But, at low to moderate levels—especially early on—online interaction before an in-person meeting enhances relationship success. A brief period of online interaction before meeting face-to-face increases intimacy and attraction—which dispels the fallacy that dating apps are the core driver of the online-to-offline problem.

This doesn't let dating apps off the hook in our current love depression. Work must be done to align the user experience with the best social science available on how to build and sustain love relationships.

That evidence points to one big idea: meeting online is perfectly acceptable, and in certain doses, even healthy. (And, to be realistic, online introductions are mostly necessary and unavoidable in the digital age.) Nonetheless, the research—and human nature—also tells us that individuals need to move offline relatively quickly for any chance at realizing lifelong love. What is more, people who use dating apps need to be more mindful consumers of the products, just as app developers need to be more mindful of the science informing their product.

In the next section, we will explain the “neurochemical cascade,” the process of what happens inside one's head while falling in love, and why face-to-face connection is the key to staying in love. Next, we will argue that the current cultural emphasis on compatibility through sameness leads to people feeling unfulfilled. We will then describe why dating apps and their community ought instead to focus on “complementarity.” Finally, we will cover the best strategies for developing confidence in the dating stage, the traits that lead to relationship satisfaction, and what traits one should avoid in their quest for a partner.

## PART TWO

### Exploring the Neurochemical Cascade

Nearly all of us want to fall in love, and then stay in love.

Of course, *the falling* must come first. This stage in any relationship is full of bliss and beauty, but also confusion and doubt. Indeed, the falling-in-love stage may make people behave in absurd and comedic ways. (Sending ten voicemails in an hour might seem utterly logical, for instance, when one's crush hasn't responded to a text.)

It turns out that this irrationality is part of human nature. Observationally, humans have known this for many millennia. Consider Plato's 370 BCE dialogue *Phaedrus*, in which he describes a lover losing self-control, babbling incoherently, neglecting his hygiene, and ultimately becoming hallucinatory simply at the thought of his beloved.<sup>1</sup> Not until recently, though, have researchers discovered what actually happens inside the human brain while falling in love, and why this process—called by some the “neurochemical cascade”—is built to help us reach the staying-in-love stage.

This process is important to understand odd behavior, and why some people madly in love (or so it seems) wind up losing interest in each other, or even become hostile. Most importantly, knowing this mechanism will underscore the point that the neurobiological process of falling in love requires a deep, in-person connection.

#### Step One: Initial Hormonal Attraction

The first step of the neurochemical cascade begins at the hormonal level. Evolutionary biologists have long known that pair-bonding mammals move from lust, to attraction, and finally to attachment.<sup>2</sup> In the most basic sense, humans are the same: sexual attraction is the initial ignition of the falling-in-love stage.

Researchers have proven this in many clever ways. For example, in one 2019 speed-dating study, partners had elevated levels of cortisol and testosterone—each important hormones for facilitating initial attraction.<sup>3</sup> (Note: although women experience an initial release of testosterone, it generally converts to estrogen.) In a separate study, when women merely glanced at the face of an attractive man, their estrogen levels increased.<sup>4</sup>

<sup>1</sup>“History of Love.” (2025). Internet Encyclopedia of Philosophy: A Peer-Reviewed Academic Resource. <https://iep.utm.edu/love-his/>

<sup>2</sup>Fisher, H. E. (1998). Lust, attraction, and attachment in mammalian reproduction. *Human nature*, 9(1), 23-52.

<sup>3</sup>van der Meij, L., Demetriou, A., Tulin, M., Méndez, I., Dekker, P., & Pronk, T. (2019). Hormones in speed-dating: The role of testosterone and cortisol in attraction. *Hormones and Behavior*, 116, 104555.

<sup>4</sup>Garza, R., & Byrd-Craven, J. (2023). The role of hormones in attraction and visual attention to facial masculinity. *Frontiers in Psychology*, 14, 1067487.

Generally, when two people have a similar hormonal attraction to each other, they can proceed to Step Two.

## Step Two: Norepinephrine & Dopamine Are Released

The next step occurs when two individuals get to know each other a bit—the “talking” stage in a relationship.

When one person thinks of their potential partner—especially when that possible mate’s name appears via text or on social media—the neurotransmitters norepinephrine and dopamine are released more than usual. (The lover about whom Plato wrote was certainly in the throes of Step Two.) Norepinephrine boosts alertness and focus on a particular object, and even increases one’s heart rate.<sup>5</sup> For example, when a text from a potential partner arrives while one is in class or work, it might suddenly be very difficult to focus on any project at hand. One’s full attention is on the text.

Simultaneously, dopamine increases. Most people tend to think of dopamine as the “feel good” chemical, but that’s not quite correct. Dopamine is better understood as the brain’s response to an *anticipation of reward*.<sup>6</sup> In a romantic context, simply thinking about one’s partner elicits dopamine release—because one is anticipating the reward of communicating with him or her. After firing off a text, dopamine likely spikes, too, because one is eagerly anticipating a partner’s response.

Fascinatingly, researchers have shown that individuals who are falling in love—whose norepinephrine and dopamine are therefore at high levels—exhibit similar brain patterns to people who are addicted to drugs.<sup>7</sup> One can see the parallels: as a person becomes fixated on a particular interest, thoughts about anything else get crowded out; and when that object is no longer present, dopamine levels crater. This leaves the person feeling worse, and in need of a bigger “hit” the next go around. It’s no wonder, then, that falling in love has always entailed highs and lows of both pleasure and pain.

In a very real sense, when a person is falling in love, they are becoming addicted to their beloved—and healthily so, if all goes well in Steps Three and Four.

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<sup>5</sup>Giorgi, F. S., Pizzanelli, C., Biagioni, F., Murri, L., & Fornai, F. (2013). “Norepinephrine: A neuromodulator that boosts the function of multiple cell types to optimize CNS performance.” *Frontiers in Cellular Neuroscience*, 7(69).

<sup>6</sup>Schultz, W. (1998). Predictive reward signal of dopamine neurons. *Journal of Neurophysiology*, 80(1), 1–27.

<sup>7</sup>Zou, Z., Song, H., Zhang, Y., & Zhang, X. (2016). Romantic love vs. drug addiction may inspire a new treatment for addiction. *Frontiers in Psychology*, 7, 187913.

<sup>8</sup>Wlodarski, R., & Dunbar, R. I. (2014). The effects of romantic love on mentalizing abilities. *Review of General Psychology*, 18(4), 313–321.

### Step Three: Serotonin Plummet

As couples move through the “talking” phase and into early dating, serotonin plummets.<sup>8</sup> Serotonin is a neurotransmitter that regulates mood and sleep. When it drops, one’s mood and sleep habits can become erratic.

According to Harvard Medical School researchers, plummeting serotonin in love relationships leads to “the obsessive-compulsive behaviors associated with infatuation,” such as surveilling one’s partner on social media, or sending ten voicemails in a single hour.<sup>9</sup> A drop in serotonin helps one to think consistently about a partner, and not to forget about him or her in the course of daily life.

### Step Four: Oxytocin & Vasopressin Release

Steps One, Two, and Three are mostly temporary. Experiencing these steps intensely for decades would be enough to drive anyone mad. In long-term romantic relationships, one should continue to experience some level of sexual attraction (Step One), some anticipation of reward (Step Two), and some rumination on one’s partner (Step Three)—but not so excessively that it makes the rest of life impossible.

This is what makes Step Four different. It is meant to last—even for life.

This is the stage involving oxytocin, popularly known as the “love molecule.” Produced through eye contact and physical touch, oxytocin bonds two humans permanently to each other.<sup>10</sup> A burst of oxytocin elicits a wave of affection for another person, reduces anxiety, and creates an enduring connection between people.<sup>11</sup> For example, plenty of research shows that in mother-infant interactions, mothers receive a huge bolus of oxytocin—which is one reason why parents, who don’t *know* their infant in any sense of grasping their personality, would literally die for them.<sup>12</sup> Oxytocin affects your brain much more profoundly than, say, serotonin. In effect, it says to your beloved: *You’re my person.*

Oxytocin’s neuropeptide cousin, vasopressin, is also implicated in Step Four. Vasopressin has a slightly different function: it prompts an individual to protect, and be committed to, their partner.

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<sup>8</sup>Edwards, S. (2015). “Love and the Brain.” Harvard Medical School, <https://hms.harvard.edu/news-events/publications-archive/brain/love-brain>.

<sup>10</sup>Zeki, S. (2007). The neurobiology of love. *FEBS Letters*, 581(14), 2575-2579.

<sup>11</sup>Dębiec, J. (2005). Peptides of love and fear: vasopressin and oxytocin modulate the integration of information in the amygdala. *Bioessays*, 27(9), 869-873.

<sup>12</sup>Nagasawa, M., Okabe, S., Mogi, K., & Kikusui, T. (2012). Oxytocin and mutual communication in mother-infant bonding. *Frontiers in Human Neuroscience*, 6, 31.

Research shows us that women tend to have more oxytocin than men, whereas men tend to have slightly elevated vasopressin.<sup>13</sup> This makes sense from the evolutionary perspective, because of the traditional role of men and women for hundreds of thousands of years: women reared children, while men protected the family unit.

The point, however, is that men and women both need oxytocin and vasopressin to reach the staying-in-love stage.

### **Why Relationships Fail, Neurobiologically**

The neurochemical cascade provides a plausible framework to explain how many painful relationship failures can occur if one partner goes the distance in the neurochemical cascade, while the other partner only reaches Steps One, Two, or Three. Consider these examples:

- Individuals looking for a “hook-up” are only interested in Step One; it hurts a lot when one partner cares only about Step One, but the other is moving into Steps Two and Three.
- A long-term relationship might break up when one partner reaches Step Four, but the other does not.

### **The Point: In-Person Connection is the Key**

Step Four depends critically on in-person connection. Remember that oxytocin is released predominantly through eye contact and physical touch; although no experiments have been conducted on in-person as opposed to virtual oxytocin release, related evidence shows that the brain regions responsible for deep social connection are more active in-person than, for example, over Zoom.<sup>14</sup> So, it is almost certainly the case that prolonged online interaction (via text, social media, or dating apps) does not produce the levels of oxytocin necessary to sustain lifelong love.

This is why staying online is so counterproductive: you can certainly get to Steps One, Two, and Three by online interaction. Seeing a photo of an attractive potential partner will stimulate testosterone or estrogen; communicating online with that person, as we have covered, can spike norepinephrine and dopamine, as you anticipate the reward from their responses; and while communication continues, serotonin can fall, as you ruminate on that person. But the most important step—significant oxytocin release—will be largely out of reach online.

What qualities, then, should one seek out in a potential (in-person) partner? That is up next.

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<sup>13</sup>Marazziti, D., Baroni, S., Mucci, F., Piccinni, A., Moroni, I., Giannaccini, G., ... & Dell'Osso, L. (2019). Sex-related differences in plasma oxytocin levels in humans. *Clinical practice and epidemiology in mental health: CP & EMH*, 15, 58.

<sup>14</sup>Zhao, N., Zhang, X., Noah, J. A., Tiede, M., & Hirsch, J. (2023). Separable processes for live “in-person” and live “zoom-like” faces. *Imaging Neuroscience*, 1, 1-17.

## PART THREE

### The Compatibility Myth

If someone were to explain that two potential mates “have so much in common,” you would probably consider that assessment an unalloyed positive for attraction. True, compatibility partly underpins successful relationships, but in the modern dating market, the term “compatibility” has expanded to mean *sameness* across all domains of life—from important factors such as religious affiliation or the desire to be married, to trivial factors such as cuisine preference or whether one uses the same kind of phone.

Many people today hold this expanded definition of compatibility as the highest aim in their quest for a potential partner. However, this is a poor strategy for facilitating and making high-quality, healthy, and long-lasting relationships. This is “the compatibility myth.”

In all kinds of relationships, humans have a strong “homophily” bias.

Homophily is a concept drawn from sociology, which describes how people tend to socialize with others who are similar to themselves. In one of the most-cited sociology papers of the 21st century, three researchers demonstrated that homophily is perhaps the pervasive pattern in human social life.<sup>1</sup> Indeed, homophily cuts across nearly every dimension of identity and experience. For example, scholars have proven that humans have a homophily bias across attitudes and values, personality traits, and demographics such as race, age, education, job, and gender.<sup>2</sup>

Research shows that groups with strong homophily communicate more fluidly, build trust more easily, and even predict their acquaintances’ behavior more accurately.<sup>3</sup>

It is not surprising, then, that we see homophily in modern dating behavior. According to one study of more than 400 million online dating matches, people increasingly curate their online choices through sameness.<sup>4</sup> On average, people on dating apps had a 64 percent increase in matching with a person if they each went to an Ivy League school; a 21 percent increase if they each rooted for a team in the same college sports conference; and a 9 percent increase if they had the same phone type (an iPhone or an Android).

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<sup>1</sup>McPherson, M., Smith-Lovin, L., & Cook, J. M. (2001). Birds of a feather: Homophily in social networks. *Annual Review of Sociology*, 27(1), 415-444.

<sup>2</sup>Byrne, D. (1997). An overview (and underview) of research and theory within the attraction paradigm. *Journal of Social and Personal Relationships*, 14(3), 417-431; Bahns, A. J., Crandall, C. S., Gillath, O., & Preacher, K. J. (2017). Similarity in relationships as niche construction: Choice, stability, and influence within dyads in a free choice environment. *Journal of Personality and Social Psychology*, 112(2), 329.

<sup>3</sup>Ertug, G., Brennecke, J., Kovács, B., & Zou, T. (2022). What does homophily do? A review of the consequences of homophily. *Academy of Management Annals*, 16(1), 38-69.

<sup>4</sup>Levy, J., Markell, D., & Cerf, M. (2019). Polar similars: Using massive mobile dating data to predict synchronization and similarity in dating preferences. *Frontiers in Psychology*, 10, 2010.

Meanwhile, young adults aged 18 to 23 were the most likely users to select matches based on sheer similarity, which suggests that this age cohort believes that “having so much in common” is the most important factor in a potential partner.

Given our homophily bias and the ability of dating apps to sort across thousands of potential mates for sameness, this theoretically should lead to higher rates of successful mating than ever before.

But it doesn't. Since 2019, the share of adults wanting to go on dates has decreased from 49 to 42 percent.<sup>5</sup> And from 1990 to 2020, married couple households fell by 16 percent, while single person households rose by 12 percent.<sup>6</sup> In that same timespan, the rates of unpartnered people rose by nearly one-third.<sup>7</sup> In other words, more people than ever are matching with others who are very compatible with them *at the same time* that rates of romantic relationships are in decline. Our homophily bias doesn't seem to be doing its job.

This is what scientists would call “maladaptation,” a term describing a behavior that, though perhaps once helpful to our ancestors, is now counterproductive to its original purpose.

The truth is that we do need a baseline level of similarity to be compatible—but only a baseline. For example, in the above study of 400 million online dating matches, two factors mattered most of all: shared religious or non-religious affiliation; and shared goals of a potential relationship, such as the desire for marriage, children, or settling down in an urban or rural region. Plenty of research shows that these factors are highly predictive of long-term relationship success.<sup>8</sup> Therefore, in your search for love, it is helpful to look for a partner who answers similarly the questions below.

### **The Big Four Compatibility Questions:**

- Do we share a religious or non-religious affiliation?
- Is marriage a long-term goal for you?
- One day, do you want to have and/or adopt children?
- Do you want to settle down in a big city or a small town?

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<sup>5</sup>Gelles-Watnick, R. (8 February 2023). “For Valentine’s Day, 5 facts about single Americans. Pew Research Center. <https://www.pewresearch.org/short-reads/2023/02/08/for-valentines-day-5-facts-about-single-americans/>

<sup>6</sup>Gryn, T. et al. (23 May 2023). “Married couple households made up most of family households.” U.S. Census Bureau. <https://www.census.gov/library/stories/2023/05/family-households-still-the-majority.html>

<sup>7</sup>Fry, R. and Kim Parker. (5 October 2021). “Rising share of U.S. adults are living without a spouse or partner.” Pew Research Center. <https://www.pewresearch.org/social-trends/2021/10/05/rising-share-of-u-s-adults-are-living-without-a-spouse-or-partner/>; Wolfinger, N. (23 May 2023). “Is the sex recession over?” Institute for Family Studies. <https://ifstudies.org/blog/is-the-sex-recession-over>

<sup>8</sup>Wilcox, W. B., & Wolfinger, N. H. (2008). Living and loving “decent”: Religion and relationship quality among urban parents. *Social Science Research*, 37(3), 828-843.

Being compatible on these issues is helpful for finding success in a romantic relationship. But across nearly everything else—from food tastes, to phone types, to personalities—it is fine and even beneficial to be different from one's partner. This is the concept of complementarity, to which we turn next.

## PART FOUR

### The Complementarity Truth

Although a baseline of similarity is important for romantic compatibility, the day-to-day success of a relationship revolves around how well two people complement each other with their differences—what researchers call “complementarity.” In today’s dating culture, finding one’s complement has fallen out of favor because a preoccupation with sameness dominates matchmaking. In our view, this is part of the reason why young adults are growing frustrated in their search for love: focusing on similarity restricts everyone’s dating pool, because potential matches are ruled out too soon. Complementarity, on the other hand, broadens everyone’s dating pool and makes the search for love more exciting, adventurous, and fulfilling.

“It is hypothesized that the need-patterns of ... two lovers will be complementary.”<sup>1</sup>

This was written in 1956 by the sociologist Robert Francis Winch, the first academic to test the theory of complementarity. What Winch guessed—and went on to prove—was that love relationships require significant differences, especially in tastes and character. In his research, Winch interviewed hundreds of couples and assessed the traits of those who were happily married and those who were unhappily married. He found that the happiest couples tended to round out each other’s personality. His body of work also formed the basis for the idea that introverts and extroverts make a great match.

Newer research has reinforced this finding.

In one 2003 experiment, strangers were paired up and assigned to perform a 20-minute task together.<sup>2</sup> The findings showed that pairs felt warmer toward each other when their personalities were complementary, rather than similar—suggesting that humans have a high aptitude to spot their complements and gravitate toward them.

This preference operates not just in the lab, but in the real world. For instance, when people are asked to describe their ideal romantic partner, they tend to describe a partner like themselves; but in follow-up experiments with these same people, their actual partner’s personality traits were uncorrelated with their own.<sup>3</sup> Put another way, we may *think* we want a partner like ourselves, but the most successful couples end up pursuing a partner who is different from themselves.

<sup>1</sup>Winch, R. F. (1955). The theory of complementary needs in mate-selection: A test of one kind of complementariness. *American Sociological Review*, 20(1), 52-56.

<sup>2</sup>Sadler, P., & Woody, E. (2003). Is who you are who you’re talking to? Interpersonal style and complementarity in mixed-sex interactions. *Journal of personality and social psychology*, 84(1), 80.

<sup>3</sup>Figueredo, A. J., Sefcek, J. A., & Jones, D. N. (2006). The ideal romantic partner personality. *Personality and individual differences*, 41(3), 431-441.

The attraction of difference may be biological. To give one example, biologists have long known that when two parents differ in a group of genes called the major histocompatibility complex (MHC), their children inherit better protection from diseases. Of course, humans cannot consciously know whether a potential partner's MHC is different from theirs, but intriguing research demonstrates that we can sense MHC difference through smell, below the level of conscious awareness.<sup>4</sup>

This finding led to the famous "T-shirt sniffing" experiment.<sup>5</sup> The study's concept was simple: college-aged men were instructed to wear the same T-shirt for 48 hours straight. Afterward, the shirt was placed in a shoebox, and women were instructed to sniff the boxes and rate the men on their attractiveness based purely on the smell. The outcome showed that women rated as more attractive men whose MHC genes were different from their own. Innately, then, we are attracted to differences.

Short of relying on smell, here's the big question: how can daters bring more complementarity into their romantic lives? Here are two ideas.

## 1. Focus On Being Interested, Not Interesting

Today, a lot of dating anxiety rises from pressure to "perform" as interesting, attractive, or likeable.<sup>6</sup> This pressure is only natural—daters want to make a good impression, after all. But in the early stages of romantic love, looking honestly for complementarity is more important than putting on a good show. This means being *interested* in one's date, rather than being *interesting* to him or her. Acting on that idea has dual benefits: it lowers one's anxiety about performing, and it will help one sense complementarity in the other person.

On first dates, the way to achieve this is by asking questions with true curiosity. Research on first dates confirms this practice. Among large cohorts of young adults who went on first dates, the individuals who asked more questions were far more likely to have a second date.<sup>7</sup> They were also rated as 9 percent more likeable by their partner.<sup>8</sup>

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<sup>4</sup>Spehr, M., Kelliher, K. R., Li, X. H., Boehm, T., Leinders-Zufall, T., & Zufall, F. (2006). Essential role of the main olfactory system in social recognition of major histocompatibility complex peptide ligands. *Journal of Neuroscience*, 26(7), 1961-1970.

<sup>5</sup>Wedekind, C., Seebeck, T., Bettens, F., & Paepke, A. J. (1995). MHC-dependent mate preferences in humans. *Proceedings of the Royal Society of London. Series B: Biological Sciences*, 260(1359), 245-249.

<sup>6</sup>Swami, V., Barron, D., & Furnham, A. (2022). Appearance orientation and dating anxiety in emerging adults: considering the roles of appearance-based rejection sensitivity, social physique anxiety, and self-compassion. *Archives of Sexual Behavior*, 51(8), 3981-3992; Yue, Y., & Jia, Y. (2023). Fear of negative evaluation: A cross-sectional study among undergraduate nursing students. *Nurse education today*, 121, 105678.

<sup>7</sup>Huang, K., Yeomans, M., Brooks, A. W., Minson, J., & Gino, F. (2017). It doesn't hurt to ask: Question-asking increases liking. *Journal of personality and social psychology*, 113(3), 430.

<sup>8</sup>In this experiment, women tended to ask far more questions than men. A lesson to men: ask questions and your odds of a second date (and likability) will improve!

In other research, being interested—especially during small talk and intimate conversations—strongly predicts greater closeness and relationship potential.<sup>9</sup> Being interested also outperforms factors such as physical attractiveness.

## 2. Embrace Diversity

Workplaces often tout the benefits of diversity. And rightly so: teams that are diverse in race, gender, worldview, and age perform better at work, broaden their members' perspective, and generally make life more interesting.<sup>10</sup> One can use this principle in romantic life by looking specifically for differences in a potential partner. This has the side benefit of expanding one's dating pool.

Researchers have done lots of work on what is called the “self-expansion model” of dating. In essence, this model suggests that relationships feel more exciting when each partner helps the other acquire new perspectives or skills by taking each other on varied and novel dates. This is a very practical way to deploy diversity in dating life. In one study, participants took their partner on a variety of dates: meals, movies, walks, sporting events, local travel, or other forms of entertainment such as art museums or music concerts.<sup>11</sup> The more novel the date, the higher each partner rated their relationship satisfaction.

Complementarity matters a great deal more than we realize in romantic relationships. It makes relationships fascinating adventures—and is highly predictive of long-term success.

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<sup>9</sup>Kashdan, T. B., McKnight, P. E., Fincham, F. D., & Rose, P. (2011). When curiosity breeds intimacy: Taking advantage of intimacy opportunities and transforming boring conversations. *Journal of personality*, 79(6), 1369-1402.

<sup>10</sup>Torchia, M., Calabrò, A., & Morner, M. (2015). Board of directors' diversity, creativity, and cognitive conflict: The role of board members' interaction. *International Studies of Management & Organization*, 45(1), 6-24.

<sup>11</sup>Harasymchuk, C., Walker, D. L., Muise, A., & Impett, E. A. (2021). Planning date nights that promote closeness: The roles of relationship goals and self-expansion. *Journal of Social and Personal Relationships*, 38(5), 1692-1709.

## PART FIVE

### Addendum

Over the last year, we have fielded many queries from people interested in falling and staying in love. Here are the three most popular questions received, with evidence-based answers.

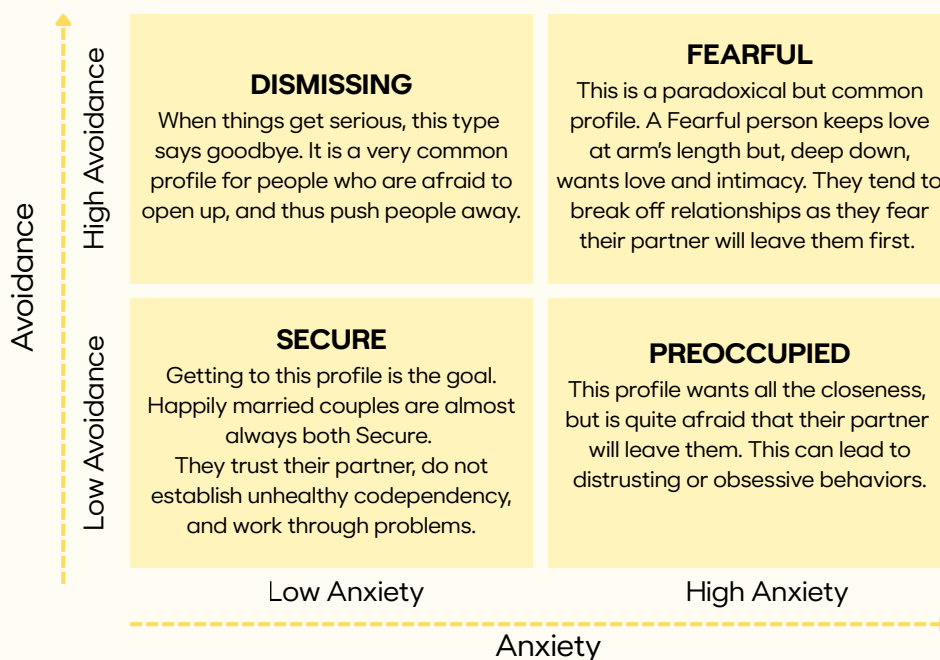
#### Question 1: “How can I develop more confidence while dating?”

For about three decades, researchers have studied what are known as “attachment styles.”<sup>1</sup>

The two main criteria for measuring one’s attachment style are anxiety and avoidance. People with an “anxious attachment” style are highly attuned to relationship threats, often worrying about their partner’s ability to love them back. On the other hand, people with an “avoidant attachment” style tend to keep love at arm’s length; they tend to equate intimacy with loss of independence, and when things get too serious in a romantic relationship, they step away. These styles are not anyone’s destiny—they can be learned, unlearned, and improved upon.

It’s important to know where a person falls on the attachment style spectrum. This is based on the Experience in Close Relationships Scale, a survey that reveals the extent to which one is anxious or avoidant in romantic relationships.<sup>2</sup>

The quiz will place you into one of four categories, as described in the below figure.



<sup>1</sup>Diehl, M., Elnick, A. B., Bourbeau, L. S., & Labouvie-Vief, G. (1998). Adult attachment styles: their relations to family context and personality. *Journal of personality and social psychology*, 74(6), 1656.

<sup>2</sup>You can take the Experience in Close Relationships Scale on Dr. Brooks’s website: <https://www.arthurbrooks.com/quiz/experience-in-close-relationships>

The problem today is that both anxious and avoidant attachment styles are on the rise. Over the past thirty years, academics have observed a 15 percent decrease in the Secure profile; a 56 percent increase in the Dismissive profile; and an 18 percent increase in the Fearful profile.<sup>3</sup> In other words, people are becoming less confident in dating because fear—as measured by anxiety and avoidance—is increasing.

In any quadrant but Secure, the first step is to accept anxiety or avoidance as a normal occurrence. This can be very difficult for people who have assumed that anxiety or avoidance ought to be eliminated. In fact, many attempts to eliminate anxiety or avoidance in romantic relationships lead to worse outcomes. For example, to eliminate anxiety, individuals can become obsessed that their partner will leave them, which then inspires distrustful behaviors such as snooping on their partner's phone or surveilling them on social media. Likewise, to eliminate feelings of avoidance, individuals will often break off relationships prematurely, before really giving their partner a chance. Neither route leads to long-term well-being.

It's important to know that eliminationist strategies typically make the original problem worse. For instance, researchers find that when people try to suppress their anxious behaviors, their anxiety increases when compared with what happens when instructed to accept their fears.<sup>4</sup>

So, when an internal anxious or avoidant alarm goes off, it is best to reframe what one is feeling in a spirit of acceptance: "This is just my brain alerting me to something out of the ordinary. It is not something I need to eliminate."

The next step is to remember that for an adventure toward love, "out of the ordinary" is exactly what one should want. The trick is to reconceive anxiety or avoidance even further—not as dread, but as indicators of an exciting opportunity. When some worry is present, this can be as simple as saying to oneself, "This is evidence of an exciting opportunity."

## **Question 2: "What traits lead to better relationships, and how can I develop those traits?"**

This question is productive, because it runs counter to the culture of sameness. As we have covered, many people are looking for someone who, in terms of compatibility, will be *perfect for them*. The more interesting goal is how to improve *oneself*.

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<sup>3</sup>Sprecher, S. (2022). Trends over time in emerging adults' self-reports of attachment styles. *Emerging Adulthood*, 10(5), 1173-1178.

<sup>4</sup>Hofmann, S. G., Heering, S., Sawyer, A. T., & Asnaani, A. (2009). How to handle anxiety: The effects of reappraisal, acceptance, and suppression strategies on anxious arousal. *Behaviour research and therapy*, 47(5), 389-394.

This leads to a brief discussion of what is called the OCEAN model, a widely accepted framework that measures personality across five dimensions: openness, conscientiousness, extraversion, agreeableness, and neuroticism. In big studies on romance, it turns out that people are more satisfied with their partner when they have higher conscientiousness, extraversion, and agreeableness.<sup>5</sup>

The question, then, is how to improve these personality traits?

**Conscientiousness:** People high in this trait are reliable, hardworking, and trustworthy. In short, they put in effort and are honest about their intentions. This can be raised with effort. In one interesting paper, participants who wished to be more conscientious practiced their reliability by writing down certain objectives—and they actually improved.<sup>6</sup> In the context of romance, this means setting and committing to goals. Perhaps that means committing to responding to text messages within two hours or less; or maybe it means deliberately planning a date night once a week and carrying it out. (It is no coincidence that Bumble's research shows that poor communication style and sending mixed signals are two of the top behaviors that people are planning to leave behind this year.<sup>7</sup>) Importantly, this would mean absolutely no "ghosting" behavior, which is a hallmark of low conscientiousness. Be open and honest in communication, and your relationships will improve.

**Extraversion:** In romantic relationships, extraversion doesn't mean what we tend to think it does: that is, loving big groups of people, going to lots of parties, or being talkative. Instead, it means a good and buoyant level of sociability with one's partner, which usually means exhibiting "approach" behavior (in other words, not withdrawing). When feelings of withdrawal surface, make a clear effort to *approach* instead. This improves extraversion in one-on-one relationships.

**Agreeableness:** The way to think about agreeable behavior is not saying "yes" to everything. Instead, it means a tendency to compassion and cooperation, rather than suspicion and antagonism. This, too, is behavior that can be improved. In one recent study, partners showed improvements in agreeableness when they did three things: attended to their partner's needs; asked questions; and reflected their partner's feelings.<sup>8</sup> These habits increased their partner's perception of them; their partner found them both warmer and more responsive. Put differently, this means taking a real interest in one's partner by asking questions and being responsive, not arguing for the sake of arguing, and being open to new ideas and perspectives.

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<sup>5</sup>Malouff, J. M., Thorsteinsson, E. B., Schutte, N. S., Bhullar, N., & Rooke, S. E. (2010). The five-factor model of personality and relationship satisfaction of intimate partners: A meta-analysis. *Journal of research in personality*, 44(1), 124-127.

<sup>6</sup>Hudson, N. W., Briley, D. A., Chopik, W. J., & Derringer, J. (2019). You have to follow through: Attaining behavioral change goals predicts volitional personality change. *Journal of personality and social psychology*, 117(4), 839.

<sup>7</sup>Based on 2000 active daters ages 18-35 in the US surveyed between 11.28.2025-12.01.2025.

<sup>8</sup>Visser, B. A., & Bedard, T. (2025). Traits and mates: The role of personality in intimate relationships. *Current Opinion in Psychology*, 65, 102053.

### Question 3: "How can I spot and avoid matches who aren't in it for the right reasons?"

Unfortunately, dating can sometimes lead to problems because of misaligned expectations: one partner is looking for lasting love while the other isn't. Sometimes, this is an innocent difference of goals. But there is one case in which the difference is not innocent at all.

In the last ten years, psychologists have done lots of work on the Dark Triad personality. These are people who score above the population average on three traits: narcissism ("it's all about me"), Machiavellianism ("I'll hurt you to get what I want"), and psychopathy ("I don't care if I hurt you"). This psychological profile might sound exceedingly rare, but unfortunately it's not: Dark Triads make up about 7 percent of the population, or about one in 14 people.<sup>9</sup> They live in the normal world and are sometimes difficult to spot.

Alarming, Dark Triads are good at getting people to fall in love with them quickly. They prefer short-term relationships—they reach only Step One of the neurochemical cascade—but in order to get many matches and dates, they cosplay as wanting to move through all four steps.<sup>10</sup> They are "commitment deceivers." Dark Triads who are high in narcissism are especially alluring: they embody self-assurance, charm, and social boldness, traits that many observers rate as attractive and that prompt a prospective partner to move through Steps Two, Three, and Four.<sup>11</sup> But when the Dark Triad's fun is over, they will hurt their partner with little or no remorse. Indeed, when a Dark Triad purportedly commits to a relationship, they tend to be unfaithful.<sup>12</sup>

In general, research tells us that Dark Triads install more dating apps and use them more than the rest of the dating population.<sup>13</sup> Male Dark Triads are significantly linked to higher success in securing matches and hookups due to their short-term mating strategies and manipulative self-presentation.<sup>14</sup>

Although no direct research has been conducted on this phenomenon, it is likely that women—who some hypothesize are more prone to falling in love quickly<sup>15</sup>—are more susceptible than men to Dark Triad personalities in romantic relationships.

<sup>9</sup>Neumann, C. S., Kaufman, S. B., ten Brinke, L., Yaden, D. B., Hyde, E., & Tsykayama, E. (2020). Light and dark trait subtypes of human personality—A multi-study person-centered approach. *Personality and Individual Differences*, 164, 110121.

<sup>10</sup>Benfante, A., Di Tella, M., Veggi, S., Freilone, F., Castelli, L., & Zara, G. (2024). Love actually: Is relationship status associated with dark triad personality traits and attitudes towards love?. *Heliyon*, 10(22).

<sup>11</sup>Rauthmann, J. F., & Denissen, J. (2014). Mate attraction in the Dark Triad: Narcissists are hot, Machiavellians and psychopaths not. *Personality and Individual Differences*, 60, S16.

<sup>12</sup>Alavi, M., Mei, T. K., & Mehrinezhad, S. A. (2018). The Dark Triad of personality and infidelity intentions: The moderating role of relationship experience. *Personality and Individual Differences*, 128, 49-54.

<sup>13</sup>Freyth, L., & Batinic, B. (2021). How bright and dark personality traits predict dating app behavior. *Personality and Individual Differences*, 168, 110316.

<sup>14</sup>Rico-Bordera, P., Galán, M., Pineda, D., & Piqueras, J. A. (2024). Unveiling the depths of Tinder: Decoding the Dark Tetrad and sociosexuality in motives behind online dating. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, 18(5).

<sup>15</sup>Røed, S. E., Nærlund, R. K., Strat, M., Pallesen, S., & Erevik, E. K. (2024). Emophilia: psychometric properties of the emotional promiscuity scale and its association with personality traits, unfaithfulness, and romantic relationships in a Scandinavian sample. *Frontiers in Psychology*, 15, 1265247.

This is why it is potentially helpful for women to take the Experience in Close Relationships Scale. To score as Preoccupied or Fearful means that one has higher than average anxiety in romantic relationships, and desires love but needs reassurance. Dark Triads prey on this, will tell a person exactly what she wants to hear, but ultimately leave her heartbroken.

The most important takeaway is self-knowledge: know oneself and one's inclinations. (*Do I tend toward an anxious attachment style? Do I fall in love quickly?*) If so, we recommend being on the lookout for Dark Triads and avoiding them at all costs. If a match is overconfident, too self-assured, or talks about themselves or their accomplishments all the time, then you might have matched with a Dark Triad.

One disclaimer, however: don't overdiagnose matches with Dark Triad traits. Remember that dating is scary to lots of people, and that Dark Triads are only a small minority of the population.

In fact, newer research shows that fully 50 percent of people qualify as what is known as "Light Triads."<sup>16</sup> These are individuals who don't treat others as a means to an end, believe in the goodness of people, and have respect for human dignity.

## CONCLUSION

At its core, one sentiment emerges consistently: dating today is challenging. This paper has explored the structural and psychological factors contributing to that reality. However, by applying evidence-based insights and the science-backed impact of meeting in person, we aim to reframe that challenge as something more understandable and navigable.

Falling and staying in love remains one of life's most meaningful pursuits. We are committed to supporting individuals with the tools to approach that pursuit with greater clarity and confidence.

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<sup>16</sup>Kaufman, S. B., Yaden, D. B., Hyde, E., & Tsukayama, E. (2019). The light vs. dark triad of personality: Contrasting two very different profiles of human nature. *Frontiers in psychology*, 10, 438704.

## ACKNOWLEDGEMENTS & ABOUT THE AUTHOR

Arthur C. Brooks, PhD, is a social scientist and one of the world's leading authorities on human happiness. He is a professor, columnist with *The Free Press*, podcast host, CBS News contributor, and internationally-acclaimed public speaker. He is the author of 16 books, including the #1 New York Times bestsellers *The Meaning of Your Life*, *Build the Life You Want* (co-authored with Oprah Winfrey), and *From Strength to Strength*. He lives with his family in Virginia.

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