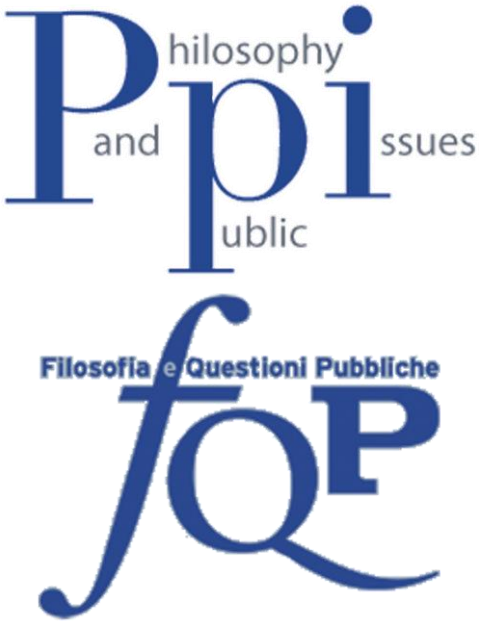
SYMPOSIUM

ENHANCING LOVE?



PSYCHEDELIC RELATIONSHIP ENHANCEMENT

LOVE DRUGS

A PRÉCIS

BY

BRIAN D. EARP AND JULIAN SAVULESCU

© 2020 – *Philosophy and Public Issues (New Series)*, Vol. 10, No. 3 (2020): 3-28
Luiss University Press
E-ISSN 2240-7987 | P-ISSN 1591-0660

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Psychedelic Relationship Enhancement
Précis of *Love Drugs*

Brian D. Earp and Julian Savulescu

> [Many people have] reached the normative conclusion that they do not want to live in a world where increasing swaths of human experience are under the logic of medicine. There are, or should be, experiences that use an older logic, which are under the jurisdiction of another profession or under no jurisdiction at all. We can all fear the medicalization of love.
>
> John H. Evans[1]

> There is something about seeing the same thing – the face of your beloved, for instance – over and over again, which creates a kind of automatic pilot of the mind. It seems that often the more we see something, the less we *see* it. Consciously grounding oneself in the moment can help [and if a 'love drug' could allow us to] see our partners with fresh eyes [this] could indeed have a revitalizing effect on stalled relationships.
>
> Tai Woodville[2]

[1] Quoted (from an unpublished essay, with permission) in Parens 2013.
[2] See Woodville 2012. The opening quote of the essay is from the same source.

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In a 2012 article entitled "The Love Pill: Brave New Drug of the Masses?" author Tai Woodville writes that "people have been hawking love potions for time immemorial, and it hasn't worked yet. But with science on their side, today's researchers might be the first to create a true love drug." This way of framing things might be taken to imply an equivalence between love potions and love drugs, where the latter are simply real-life, high-tech versions of the former. In our book *Love Drugs: The Chemical Future of Relationships*,[3] however, we draw a distinction between the two concepts. We are not concerned with substances that work like magical spells to override people's free will and turn them into lovestruck automata. Such substances do not exist. Rather, we consider current medications and near-future neurotechnologies that can indeed affect romantic feelings, but in more subtle and nuanced ways. Not through witchcraft or wizardry, or by bypassing a person's will completely, but by acting as a chemical nudge on the ancient brain systems involved in human love and pair-bonding, including libido, sexual attraction, and attachment.[4] A love drug, on this conception, is simply any chemical substance that, at least in part through its effects on the brain (yet working in concert with other factors, including the mindset and motivations of the users and their background relationship dynamics),[5] significantly alters the chances that love will come about or last, or alters the quality of love that exists between a couple.

[3] See Earp and Savulescu 2020.

[4] For an overview, see Fisher, Aron, and Brown 2006.

[5] On the importance of such extra-drug factors working in concert with the drug to influence love, in order for the latter to be authentic or desirable, see Naar 2016; Spreeuwenberg 2019.

One of the big takeaways from the book is that many of us are already consuming love drugs in this sense, in the form of common medications like selective serotonin reuptake inhibitors (SSRIs), often used to treat depression (see below). In brief, there is mounting evidence that pills we are prescribed for other purposes can have profound effects on our relationships and romantic neurochemistry, only in ways that are not yet widely appreciated nor fully understood. This is because Western medicine tends to measure the effects of drugs on individuals and their personal symptoms, without paying as much attention to potential interpersonal effects. We think this is a big mistake with potentially far-reaching consequences. Accordingly, we call for a comprehensive shift in scientific research norms toward a more relational focus, whereby effects on relationships should be more regularly included among the primary outcome measures in clinical trials and other studies.[6]

With respect to SSRIs, it is by now well-known that these drugs carry a high risk of dampening libido – a point we emphasize throughout the book[7] – and where sex is an important part of a romantic relationship, this can have major (likely negative) implications. But there is also some evidence that SSRIs can interfere with 'higher level' emotional processes, like the ability to care about a partner's feelings.[8] That, too, will often be bad for relationships. Conversely, when SSRIs work as intended and help a person function more effectively and engage with others,

[6] For a short summary of these arguments, see Earp and Savulescu 2018. For further discussion of the need to center social relationships in scientific research, see Earp et al. 2020.

[7] Contrary to the assertion of David Healy in his polemical review of our book: Healy 2020.

[8] Opbroek et al. 2002; Bolling and Kohlenberg 2004; see also Fisher and Anderson Thomson, Jr. 2007.

including their romantic partner(s), such drugs can be beneficial within a relationship, all things considered.[9]

One immediate lesson to draw from this example is that one and the same chemical substance might work as a pro-love drug or an anti-love drug depending on the couple, their dynamic, their circumstances, what they are dealing with, and their psychological profiles (among other factors, such as the dose of the drug). Importantly, however, it also depends on how the couple consciously engages with, and responds to, the various effects of the drug on their thoughts, fantasies, motivations, and emotions.[10] Other drugs that have under-studied effects, both positive and negative, on sexual desire, attraction, and/or attachment include methylphenidate (commonly marketed as Ritalin),[11] hormonal birth control, the hair-loss drug finasteride, certain blood pressure medications, and so-called recreational drugs like cocaine and alcohol.[12] As we argue, we should study the impact of these drugs on relationships more systematically, so that we can aim to avoid whatever harms they might be bringing to our love lives, while also exploring any potential benefits.

What about intentionally intervening in relationships, then? There are now some studies looking at the effects of intranasally administered oxytocin – a brain chemical that plays an important role in mammalian pair-bonding – on outcomes like trust,

[9] For a popular account with examples, see Kamps 2012.

[10] These points apply to debates about pharmacological enhancement more generally. This shows the limits of analyses which assume or stipulate one-dimensional, deterministic effects of a drug on some desired outcome. See Bostrom et al. 2020.

[11] See Schmid et al. 2015.

[12] See Earp et al. 2013. For a popular discussion of the relational effects of some of these drugs, including cocaine, see Kale 2016.

empathy, and even conflict resolution in bickering dyads.[13] We take a close look at the science and ethics of using oxytocin to 'enhance' relationships in Chapter 8 of our book, adopting a skeptical stance and calling into question standard narratives. But perhaps the biggest area of research right now is on chemicals like MDMA (the key ingredient in in the street drug ecstasy), lysergic acid diethylamide (LSD or acid), or psilocybin (from so-called magic mushrooms) being used as adjuncts to psychotherapy. The clinical trials that are currently testing these drugs[14] are focused on serious mental health conditions like post-traumatic stress disorder (PTSD) or major depression, and both short- and long-term treatment effects, where assessed, have so far been promising.[15]

But for our purposes, these studies have two main limitations. First, the primary focus is, once again, on individuals and their symptoms, rather than on robustly assessing the implications for couples or other close relationships.[16] And second, the overarching aim is to treat debilitating medical conditions, with far less consideration given to the ways in which these drugs might be used for enhancement purposes in healthy people – understandably,

[13] For a review, see Wudarczyk et al. 2013.

[14] See, for example: Carhart-Harris, Bolstridge, Rucker, et al. 2016; Griffiths et al. 2016; Ross et al. 2016; Mithoefer et al. 2019. See also Schmid et al. 2020.

[15] See, for example: Jerome et al. 2020; Wheeler and Dyer 2020; Carhart-Harris, Bolstridge, Day et al. 2018.

[16] This is not to say that the trials have not assessed interpersonal outcomes at all – that is not the case. Research out of Johns Hopkins by Griffiths et al., for example, regularly includes measures of what they term 'social effects' using broadly-phrased items such as "You have a more positive relationship with others" or "Your social concern/compassion has increased" (see following references). Our suggestion is that more fine-grained, robust measures drawn from the relationship science literature focused on different types of close relationships are needed. See: Griffiths et al. 2006; 2011; 2018.

given current research and funding paradigms.[17] That said, qualitative accounts of improved relationship functioning have been reported in some of the studies,[18] and leading investigators are now beginning to evaluate the effects of such drugs on romantic connections more directly. One example is a recent pilot study on MDMA-assisted 'conjoint' therapy for couples where one of the partners has PTSD.[19] This study, which has not yet been published as of the time of writing, marks an important step in the right direction. In the book, however, we go further, and call for research into drug-assisted couples counseling in cases where neither partner has PTSD, nor, indeed, any other diagnosable health condition for which said counseling is supposed to be a treatment. In other words, we ask if some couples who are dealing with so-called 'ordinary' relationship troubles might (also) benefit from drug-assisted psychotherapy, and we propose that significant resources be devoted to answering this question.

In this context, there are at least two ethical advantages to exploring an enhancement framework, according to which drugs or other medical interventions should be made available – all else equal – to the extent that they are reasonably expected to improve personal and interpersonal well-being.[20] This is in contrast to a treatment-only framework, according to which such biotechnologies should only be made available if they are regarded as an acceptable (i.e., sufficiently safe and effective) therapy for a recognized disease or disorder. The first advantage of the enhancement framework is consequentialist in nature: if drug-assisted counseling can genuinely improve relationships, not only

[17] See Elsey 2017. For exceptions, see the references above by Griffiths et al. See also, e.g., Schmid et al. 2015.
[18] See, for example: Barone et al. 2019.
[19] See Mithoefer, Monson, and Holland 2018.
[20] For more on this conception of enhancement, see Earp et al. 2014. See also Earp, Douglas and Savulescu 2017.

among those couples where one or more partners has a serious mental health condition, but among the larger set of couples dealing with a wider range of issues, then more good will be done overall.

The second advantage has to do with avoiding needless pathologization of love and relationships.[21] Under treatment-only norms, drugs are typically only legitimized as medicine when they can be used to address an extant pathology. If there is no pathology, but it is apparent that a drug could improve people's lives if used in the right way, a motive may exist to 'invent' a pathology (for example, by beginning to conceive as a disease state something that had formerly, and perhaps appropriately, been considered a normal part of life – as some critics argue happened in the case of so-called "Hypoactive Sexual Desire Disorder").[22] Yet when it comes to matters of the heart, it might be thought, the last thing we need is an additional incentive for pharmaceutical companies and/or psychiatrists to come up with an expanded raft of diagnosable 'relationship disorders' so as to explain why certain drugs should be made available to those couples who would benefit from their (appropriate) use. If such drugs could be legitimized as enhancements, by contrast, there would be no need to engage in such harmful and/or disrespectful pathologization.[23]

[21] The pathologization of love is just one worry that falls under broader banner of 'medicalizing' love, as we explore in detail in a pair of papers: Earp, Sandberg, and Savulescu 2015; Earp, Sandberg, and Savulescu 2016.

[22] See, for example: Meixel, Yanchar, and Fugh-Berman 2015; Chańska and Grunt-Mejer 2016.

[23] We do not suggest that are no reasons to maintain a treatment/enhancement distinction in some cases or toward some ends, for example, in deciding which interventions should be a priority for coverage by health insurance. We have also defended the treatment/enhancement distinction in deciding about contested interventions in minors: Maslen et al. 2014. Alternatively, one could

So much for drugs and medicine. What does all of this have to do with love? We cannot hope to give a comprehensive account of the concept here. However, in our book, we broadly characterize love as a 'dual nature' phenomenon, drawing on the recent work of Carrie Jenkins (Jenkins 2017). Jenkins points out that love is neither simply a psychosocial construct – a label we might give to certain subjective experiences that can only be had within a given cultural and historical context – nor is it reducible to an animalistic drive to reproduce, nor to bunch of molecules swirling around in our skulls. Instead, it is both a biological and psychosocial phenomenon, and we can make progress on understanding it – and even influencing it – along both of those dimensions.

On the biological side, we know that our ability to feel love at all depends on certain brain systems that evolved to suit the reproductive needs of our ancestors: libido to draw us toward a range of potential mating partners, attraction to focus our attention on a smaller number of partners, perhaps one in particular, and attachment to help us form long-term pair bonds (often in the context of parenting).[24] How exactly those underlying systems relate to 'love' depends on which philosophical theory of love you find most convincing, and we discuss some of those theories in the book. But on a common-sense understanding of what love is, those biological systems must play an important role.

The thought, then, is simply this: if we want to improve our love, either because we think it is deficient or floundering, or it seems 'okay' but we would like to make it better, we may have reason to intervene in one or both of its constituent dimensions.

conceive of health itself in welfarist terms, such that treatment or medicine becomes a subtype of enhancement. For a recent discussion and explanation, see Notini et al. 2020.

[24] See Fisher et al. 2002.

We are already (mostly) comfortable, as a society, with interventions into the psychosocial side. People go on romantic vacations, try to spice up their sex life, and so on, all in an effort to coax their love in a positive direction. Of course, those activities also have 'biological' effects that are relevant to love: having sex with your partner, for example, causes the release of serotonin, dopamine, oxytocin and other brain chemicals that may reinforce attachment directly. The point is that, if you believe it is okay to *work on* love – to try to bring it back into a tired marriage, or help it last in a committed relationship, or improve its quality through talk therapy or other means – then the sheer idea of taking deliberate steps to influence love's course in your life should not be controversial.[25]

The idea here is not to replace existing means of 'working on' love psychosocially, but rather, to identify those cases where supplementing such well-worn measures with biological interventions – as might be exemplified by drug-assisted couples counselling – could enhance the effects of traditional approaches, so as to help people meet their relationship goals and promote their mutual flourishing.

Nevertheless, there may be ethical concerns. At the beginning of this essay, we quoted the writer and poet Tai Woodville. Woodville acknowledges that love drugs could conceivably be used in beneficial ways, but also worries about the darker possibilities. In particular, she sees "Huxlian implications" – alluding to Aldous Huxley's *Brave New World* with its soma and pervasive inauthenticity – wondering "what kind of pain could be repressed, what kind of problems ignored, with the help of such a pill." In a powerful passage, she expands upon this theme:

[25] For a classic take, see Fromm 1956.

> Pain is our body's natural warning mechanism, telling us that something is wrong, indicating a need for change. If we simply synthetically engineer our chemicals to send us messages that everything is wonderful when, in reality, it is not, the danger of losing touch with one's natural sense of truth – for choosing self-deception over needed change – seems great. And if a feeling of connection can be artificially induced, what *true* breakthroughs – which would require, perhaps, facing unpleasant truths – could remain unplumbed in a relationship? To me, it seems like a recipe for arresting growth, both in the individual and the relationship.[26]

The devil is in the details. Some currently used drugs, like SSRIs for depression, do indeed seem to 'patch over' underlying problems in many cases, numbing negative emotions and blocking whatever lessons might be learned from hashing things out. As we review in the book, however, MDMA and psychedelic drugs like psilocybin – used as adjuncts to psychotherapy – do not seem to work that way.[27] Instead, they may help a person clear away the patchwork of defense mechanisms, trauma, and other impediments to a healthy mind or relationship, allowing them to address the deeper issues in a more thoroughgoing and durable way. In other words, they may in some cases *enable* a more authentic connection to oneself and one's partner[28] allowing a couple to see themselves and each other, as Woodville puts it, "with fresh eyes."

Crucially, however, it is what a couple *does* with what they 'see' that will furnish the outcome of such an intervention for their love. This has been a major lesson in the recent research on psychedelics

[26] From Woodville 2012.
[27] See Watts et al. 2017.
[28] See Carhart-Harris et al. 2018.

as applied to individual-level problems. In other words, it isn't enough to focus on what happens 'in our brains' when we are under the influence of such drugs if we are going to understand their full effects on complicated, meaning-ridden, high-level phenomena like PTSD, depression, or indeed love. In the case of PTSD, for example, much of the observed treatment effect from drug-assisted psychotherapy seems to be rooted in the subjective experiences people have in the context of such therapy, and how they subsequently reflect on those experiences and try to make sense of, and implement, whatever life-insights they have gained from the 'trip.'[29] Take MDMA-assisted therapy as an example. Undoubtedly, there are numerous 'direct' effects on the brain, including the release of serotonin and other neurotransmitters, which seems to cause a temporary override of hair-trigger fear responses (among other relatively low-level effects);[30] but it is largely what the person makes of the altered states of mind induced by these effects that appears to drive the reported healing.

In the case of couples, a similar lesson applies. In fact, there is some historical evidence to support this claim from the early use of MDMA in couples counseling during the 1970s and 1980s, before such use was (questionably) made illegal.[31] According to two prominent psychiatrists who oversaw such counseling, it wasn't that the drug, all by itself, directly 'cured' any of the relationship problems their clients hoped to address. Rather, they suggest, the drug facilitated a less-defensive posture between couples, motivated them to adopt each other's perspective more willingly than they normally would, and so on, so that they could actively,

[29] See Mithoefer, Grob, and Brewerton 2016.
[30] See Feduccia and Mithoefer 2018.
[31] For an overview, see Passie 2018.

and more productively, address the underlying issues that were hampering their romantic connection.[32]

Of course, some relationships should not be pursued or maintained, especially if they involve abuse, whether physical or emotional, or other forms of disrespect or dysfunction. In Chapters 9 and 10 of the book we discuss the potential use of *anti*-love drugs for ending certain bad relationships and/or recovering from fruitless heartbreak, while in Chapter 11 we raise a number of red flags about the ways in which such drugs could be seriously misused (for example, to interfere with the love lives of sexual orientation minorities or other vulnerable populations).[33] Even where abuse is not an issue, however, some relationships will have simply run their course, and we should not suppose that the only 'successful' relationships are the ones that last until somebody dies.

That being said, in the case of couples that do have enough in common, shared values, and a reasonable desire to try to work on their relationship despite difficulties – perhaps especially if there are children involved who depend on them for love and care – we think society should support them in their efforts. And while this may include making drug-assisted couples counseling available, pending further scientific and ethical research, we do not suggest this will be a simple panacea. On the contrary. In the epilogue to our book, we put it like this:

"Do we really need more drugs? We actually think the answer is no. What we need are changes to society: political action that puts human welfare ahead of special interests; resources to help people make good choices about forming and maintaining close relationships; less stress, and more time with friends and family.

[32] See Greer and Tolbert 1998. For further discussion, see Earp 2018.
[33] For an extended discussion, see Earp and Vierra 2018. See also Delmas and Aas 2018.

But so long as we use drugs for medicine – as societies have always done and will continue to do indefinitely – we will need better drugs. More effective drugs. Drugs with milder side effects, with less risk of dependency and abuse, and with the capacity to encourage more serious engagement with the underlying problems that plague our minds and relationships."[34]

University of Oxford

Appendix

Chapter Abstracts

Chapter 1: *Revolution*. This chapter highlights the recent burst of controlled, scientific research on medical and non-medical uses of psychedelic drugs and MDMA to improve individual welfare, and argues that this research should be extended to couples in romantic relationships. It questions the line between 'drugs' and 'medicine' and argues that such distinctions often reflect dubious social and historical factors, rather than a clear-eyed assessment of actual benefits and harms. It introduces the idea that love drugs might help strengthen certain relationships, and that anti-love drugs might help other relationships end. But there are serious risks that might be associated with such drugs, and the wider social implications will be hard to predict. To minimize this risk and

[34] From Earp and Savulescu 2020. Much of this précis was adapted from an interview of one of us by Kashmira Gander for *Newsweek* online magazine: Earp and Gander 2020. Additional material was adapted from Earp and Savulescu 2020b. Thank you to Mirko Garasic for arranging this symposium, and to David Yaden for helpful feedback on an earlier draft.

uncertainty, careful ethical deliberation and nuanced policy measures will be key.

Chapter 2: *Love's Dimensions*. What are love drugs? Basically, drugs that affect love – or romantic relationships more broadly. This chapter begins with an account of *drugs*, explaining that they are essentially just chemicals – clusters of molecules that work on the brain to produce certain effects – and that our choice to regard them as medicine versus recreation, or as a means to personal or spiritual development, is up to us. It is a question of values. The chapter then gives an account of *love*, explaining that it has both biological and psychosocial dimensions. When there is a tension between love and well-being, it may make sense in certain cases to intervene in either or both of those dimensions to improve our relationships and our lives.

Chapter 3: *Human Natures*. Why might tensions arise between love and well-being? Sometimes, there can be painful inconsistencies between our conscious values surrounding love, the prevailing cultural norms or social scripts for romantic partnerships in our environment, our subjective experiences of attachment and desire, and our underlying biological natures. Which of these dimensions can be altered? Which of them *should* be altered, and under what conditions? Many societies hold up monogamous marriage as the ideal for committed relationships. Is this ideal consistent with human nature? This chapter argues that there is no single answer to that question: natural variation among individuals and at the level of the species confounds such one-size-fits-all thinking. Accordingly, if biological interventions – In addition to psychosocial ones – will ever help love and happiness coincide, it will depend on the specific issues facing a given couple.

Chapter 4: *Little Heart Shaped Pills*. This chapter gets specific about the kinds of biological interventions into love that are currently possible—and those that may exist in the future. It shows

how love can be affected by certain chemicals through a variety of different pathways, depending on the psychosocial context. It also discusses common medications that may already be influencing love and relationships, such as hormonal birth control and anti-depressant pills, and argues for a shift in scientific research norms: away from an exclusive focus on individuals and clinical symptoms, toward a more inclusive, relationship-oriented paradigm that considers the interpersonal and social implications of drug-based medical treatments.

Chapter 5: *Good Enough Marriages*. If love drugs become more widely available, who should use them? This chapter introduces Stella and Mario, a married couple with dependent children who are in a 'gray' relationship – that is, a relationship that is not violent, abusive, or otherwise clearly dysfunctional, but which has lost its romantic spirit, despite many earnest attempts to keep it alive. The couple are unhappy. They are considering a divorce. They worry about how this might affect the children. They do still care about each other and value what they have built together. But they've run out of places to look for a shared sense of joy. The chapter argues that this is a very common situation for long-term partners, and that love drugs may soon be a viable option for supporting couples' mutual well-being within such relationships.

Chapter 6: *Ecstasy as Therapy*. Drug-supported couples therapy is not a new phenomenon. In fact, MDMA was widely used for this purpose, to good effect in many cases, into the 1980s – before it was banned for largely political reasons. This chapter discusses the history of MDMA-assisted psychotherapy, making clear that MDMA is not just 'emotional glue' that holds romantic partners together, no matter how incompatible. Rather, professionally guided, drug-enhanced counseling may help some individuals or couples realize that they need to end their relationship, and may allow them to do so in a more loving and healthy way. The chapter

asks whether MDMA poses a threat to authenticity or personal identity and raises other risks that may be associated with its use under certain conditions. It concludes with a call for careful, controlled scientific research into the potential of MDMA as an aid to couples counseling.

Chapter 7: *Evolved Fragility*. Why are there are so many couples looking for help with their relationships in the first place? Why is it so hard to make long-term, romantic partnerships work, much less flourish, in the modern world? This chapter argues that at least part of the explanation may lie in a disconnect between our ancient, evolved dispositions for mating and attachment and the social and physical environment we have created for ourselves through culture and technology. In short, our capacity for love did not evolve to support life-long relationships in contemporary societies. Rather, it evolved to support the reproductive success of our ancestors under social conditions that, for the most part, no longer exist. In addition, the place of love in marriage – and the institution of marriage itself – has undergone a whiplash-inducing transformation over the past 200 years, leaving us ill-equipped to fit the pieces all together. Might there be a role for chemical treatments in strengthening the bonds of attachment directly?

Chapter 8: *Wonder Hormone*. One of the most hyped possibilities for chemically strengthening love and attachment is the hormone oxytocin. This chapter surveys the evidence on oxytocin-enhanced relationships and identifies a number of gaps in the literature that would need to be filled before oxytocin could be used as a love drug. If stronger evidence comes out supporting real-world effectiveness of oxytocin in a relationship context, clear guidelines would need to be put in place to ensure that it was used responsibly and ethically. Building on this insight, the chapter concludes with an outline of key ethical constraints that should apply to any drug-assisted mode of couples therapy.

Chapter 9: *Anti-love Drugs*. Instead of trying to strengthen a relationship, what if the relationship needs to end? This chapter discusses existing drugs that may be capable of diminishing love, lust, attraction, or attachment to a current romantic partner. It also raises concerns about possible negative outcomes and points to the limits of what is likely to be possible. Given that drugs or medications used for other purposes may have anti-love side-effects, what would be the ethics of prescribing them off-label as a way of assisting with a difficult breakup or healing a broken heart? The chapter concludes by acknowledging the risk of 'pathologizing' love and romantic relationships by intervening in them with medical substances, and suggests a way to avoid this particular worry.

Chapter 10: *Chemical Breakups*. Who could benefit from using anti-love drugs, and what are the most serious ethical concerns raised by the prospect of a chemical breakup? This chapter identifies several cases where the use of a drug – in combination with appropriate psychosocial measures – might be justified as a way of blocking or degrading love, lust, attraction, or attachment: for example, victims of intimate partner violence who want to sever a feeling of addiction to their abuser; individuals with pedophilia who risk causing harm to children and who need help to control their urges; people suffering from unrequited love leading to suicidal thoughts or tendencies. By working through these and other case studies, the chapter develops a set of ethical conditions for the responsible use of anti-love biotechnology.

Chapter 11: *Avoiding Disaster*. Anti-love drugs could easily be misused. They bring to mind disturbing parallels with sexual orientation conversion therapies and other attempts to coercively intervene in the biology of vulnerable minorities, such as LGBTQ children and adolescents. This chapter explores the dangers of making certain biotechnologies available under oppressive

conditions or in societies characterized by widespread intolerance or injustice. It also questions the logic of the 'born this way' movement for LGBTQ rights, which is premised on the idea that sexual orientation is not a choice. If high-tech conversion therapies are ever developed that can in fact change sexual orientation, the intellectual foundation for the movement would collapse. The chapter therefore argues for the movement to be placed on stronger footing, and suggests how this might be done.

Chapter 12: *Choosing Love*. This final chapter has two main goals: to address lingering worries about the medicalization of love – that is, bringing love and relationships into the domain of medicine in a way that threatens to undermine their value – and to put forward a positive vision of love as something we can partially choose, or improve, through science and technology. Will knowing how love works, and even shaping it through hormones and chemistry, rob it of its importance in our lives? Or will it empower us to make our most intimate relationships more reliably consistent with real human flourishing?

Epilogue: *Pharmacopeia*. So much of our lives has been subsumed by drugs and medicine – do we really need another 'pill' to add to the mix? This brief epilogue argues that the answer is, actually, no. We need fewer, but better drugs – drugs with less severe side-effects, and more power to genuinely improve our well-being. The potential of MDMA and some psychedelics to replace a range of harmful medications is discussed, with a renewed call for high-quality research into this possibility as applied to relationships.

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