Emotion Researcher

ISRE's Sourcebook for Research on Emotion and Affect

Editor's Column

The Emotion Researcher officially becomes a Sourcebook with this edition! Check out why, and get a preview of the issue by clicking on the post's title.

ISRE Matters

ISRE's President talks about love.

Spotlight

This issue's spotlight is on Piercarlo Valdesolo, a psychologist from Claremont McKenna College.

LOVE: ROMANTIC AND PARENTAL

In this issue of Emotion Researcher, we cover the emotion of love, focusing on romantic and parental love and their possible connections. Do not miss the articles by Elaine Hatfield and Richard Rapson, Stephanie Cacioppo, Michael Numan and Berit Brogaard.

An Interview With Justin D'Arms

Read an interview with Justin D'Arms, one of the world's leading philosophers of emotions. Justin discusses how he decided to become a philosopher, and how the philosophy of emotions can help the affective sciences (in the picture, Rome, where Justin spent part of his youth).

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Editor's Column

Andrea Scarantino, Department of Philosophy, Georgia State University

I am thrilled to announce that, after a long and glorious run as a Newsletter (1987-2015), the *Emotion Researcher* is morphing into something new: *ISRE's Sourcebook for Research on Emotion and Affect* . The new caption, selected through a voting process by the members of ISRE's Board, is meant to signal a new phase in the life of the *Emotion Researcher*.

Rather than being primarily a purveyor of news about the profession (although news will continue to be reported), the *Emotion Researcher* aims to become the premiere web-based, free and multi-media reference work devoted to research on emotion and affect. Such a resource is required if our profession is to stay informed on the growing body of interdisciplinary research going on in the affective sciences and humanities alike.

Why emotion *and* affect? The caption makes it clear that the *Emotion Researcher* welcomes both self-described emotion theorists and self-described affect theorists. Since the nature of emotion and affect, as well as their relation, are contentious, we wanted to err on the side of safety: if you study affective and/or emotional phenomena broadly understood, the Emotion Researcher is your home.

Over time, the *Emotion Researcher* will offer a repository of articles about most cutting-edge topics pertaining to emotion, affect, mood, feelings, preferences, attitudes, affective dispositions, affective disturbances, and so on. And it will cover each topic from the distinctive interdisciplinary perspective that defines ISRE as a society, bringing you the viewpoints of psychologists, neuroscientists, philosophers, psychiatrists, primatologists, sociologists, linguists, roboticists, business experts, historians, anthropologists, political scientists, educators, lawyers, computer scientists, economists, and anyone else that works in the affective sciences broadly construed.

This change represents a natural progression for the Newsletter, which got its start in 1987 under the editorship of Stephanie Shields (Ross Buck took over in 1992). It was then just called ISRE's Newsletter, and it was fairly limited in scope (the first issue, which you can check out here, only consisted of 6 pdf pages). Its main purpose was then to facilitate communication among ISRE members in a largely pre-internet world (once internet use became widespread, Stephanie created the ISRE listserv in 2000).

In the course of the 5 years of her editorship, Stephanie expanded the scope of the newsletter, including book reports, discussions of the state of emotion theory in a particular region of the world, abstracts of articles, and brief commentaries, adding more and more substance to the publication (Stephanie has kindly scanned all issues produced under her editorship. If you are interested, they are all available here).

The *Emotion Researcher* itself was born in 1999, under the editorship of Tracy Mayne (I found out that the Newsletter also was briefly called *Affect Scientist*, a moniker soon discarded because not considered sufficiently inclusive). The *Emotion Researcher* was then 8 pdf pages long (you take a look here at the first issue), and it progressively showcased more and more short articles written by leading researchers.

A sequence of talented and committed editors (I remember the following: Randy Cornelius, Agneta Fischer, Nathan Consedine, Christine Harris. If you edited the newsletter and I did not include your name, please email me!) further expanded the scope and ambition of the newsletter, which by the time Christine Harris became sole editor consisted of 16 pdf pages on specific topics of analysis (I recall helpful issues on happiness, laughter, nasty emotions, emotion regulation, emotion and health, and a celebratory issue on the 25 years of ISRE).

When I took over as editor in 2013, I had two main objectives. The first was to go online, and make the newsletter

available to all for free. I am a big believer in the transformative potential of open online academic resources, and I thought then, and continue to think now, that it is in ISRE's interest to reach the largest number of people, whether they are members or not (but do not be a free rider, and become a paying member of ISRE if you rely on the *Emotion Researcher* for your research!).

The second was to build a searchable resource, which could help all emotion and affect researchers get their bearings on a new topic, and explore the latest research in disciplines other than their own. The Sourcebook caption makes it explicit that, having now reached a critical mass of articles (equivalent to more than 500 pdf pages), the *Emotion Researcher* can begin functioning as a reference resource moving forward. The new Table of Contents feature will make navigating the site even easier.

I plan to continue for a couple of more years as editor of ISRE's Sourcebook, and once it is fully established I will leave my post to someone else who will make the *Emotion Researcher* thrive even more. In the long run, I see the *Emotion Researcher*, with expanded economic resources and governance, as the counterpart in the affective sciences of the Stanford Encyclopedia of Philosophy, which after a twenty-year run has become a vital reference resource for philosophers all over the world.

Ok, enough with the preliminaries. This *Emotion Researcher* is devoted to love, which, as it is well know, makes the world go around. Love is arguably the most prototypical of all emotions for English speakers, but one of the last to become the object of sustained scientific investigation. This is not by chance.

As Elaine Hatfield, a pioneer of love research, reports in her article with Richard L. Rapson, the study of love was not considered a respectable endeavor in the 1960s, when the behaviorist aversion to feelings was replaced by the cognitivist disinterest in them in favor of computational models of cognitive abilities. As reported by Arvid Kappas in his ISRE Matters column on love, Elaine Hatfield and Ellen Berscheid even received the first Golden Fleece award from Senator Proxmire, given from 1975 to 1989 to chastise "wasteful, ironic or ridiculous uses of the taxpayers' money".

But Elaine and Ellen pushed right ahead, developing the Passionate Love Scale which has now been translated in dozens of languages, and defining the central questions of love research, several of which have now been (at least tentatively) answered.

One of the central distinctions in contemporary love research is that between romantic (or passionate) love and parental love. In this issue, we have the privilege of back-to-back articles on the neuroscience of, respectively, romantic love and parental love by two leading researchers in the field.

Stephanie Cacioppo walks us through her cutting-edge research on the behavioral and brain markers of romantic love and lust, arguing that they both recruit the dopaminergic reward-related brain system, but also differ in a number of respects. In addition, she explores how these recent findings on neural differences between love and lust could help in the context of couples therapy and pharmacology.

Michael Numan provides us with a first-rate overview of the neuroscience of parental behavior, which in mammals is largely maternal behavior (in 95% of mammalian species, females care for the offspring by themselves). He also makes the case that the neural circuits underpinning maternal behavior may have provided a neural foundation for other types of caregiving behaviors, including long-term pair bonding in humans. An especially interesting aspect of Numan's analysis concerns experimental studies showing how being the victim of poor parenting behaviors in youth negatively affects one's own parenting skills.

Finally, Brit Broogard explores a question central to the philosophy of love, namely whether true romantic love must be unconditional. She defends a negative answer to this question, suggesting that on all dominant philosophical theories of love – she distinguishes the union view, the history view and the emotion view – love is based on features that the beloved could lose, thereby leading to a dissolution of the love bond. She also briefly deals with the challenging question of whether romantic love can be rational or irrational depending on the features of the beloved.

The Young Researcher Spotlight goes to Piercarlo Valdesolo, an up-and-coming young researcher from the Claremont McKenna College who is doing innovative work on the role of emotions in morality, focusing specifically on trolley problems, moral hypocrisy and moral emotions such as awe.

Last but not least, this *Emotion Researcher* features a long-ranging interview with Justin d'Arms, one of the world's leading philosophers of emotions. Justin reminisces about his time in Italy as a young man in the late 1970s, reflects on the relevance of the philosophy of emotions for affective scientists, and discusses his influential theory of rational sentimentalism, which tries to ground sentimental values like the shameful or the funny in fitting emotional responses. Do not miss the now customary ER recipe, which is meat sauce for pasta!

As usual, be in touch with comments, ideas for future issues, reports about especially promising young researchers, and whatever else strikes your fancy. To whet your appetite, let me also tell you that two new issues of *Emotion Researcher* are in the works, one focused on guilt and the other focused on emotions in the law. Once again, welcome to *ISRE's Sourcebook for Research on Emotion and Affect* !

Previous Editor's Columns

Editor's Column – Facial Expressions Issue

Editor's Column – Emotional Intelligence Issue

Editor's Column – Musical Emotions Issue

Editor's Column – Emotions and Social Engagement Issue

Editor's Column – Understanding Disgust Issue

Editor's Column – Emotional Brain Issue

ISRE Matters – Love Issue

Arvid Kappas, Psychology, Jacobs University Bremen, ISRE's President

January 2016 – One of the curious paradoxes of emotion researchers meeting *the real world* relates to when the discussion comes to *love*. You ask a *random person* to name some emotions and with a high probability Love will come up. With a capital L. When you talk to an emotion researcher, the answer is often quite different.

In the heyday of basic emotion theory, love was relegated to the secondary role of an "emotional plot". On account of its lack of distinctive facial expressions, love did not make it into the set of basic emotions, which attracted the bulk of empirical research. And yet, many *real people* will say "… of course you can tell when someone is in love, you can see it in their eyes", or something like that. So what is going on here? One problem is that the terminology we use to talk about love in everyday language can be confusing, and may be disambiguated in different ways by scientists and the folk.

There is *being in love*, *falling in love, loving*, *liking*, *experiencing infatuation*, *being fond of someone*, *caring for someone*, *doing something in a loving way*, and many other expressions, often used to ground distinctions that are explanatory and puzzling at the same time ("I love you, but I am not in love with you"; "I thought I loved her, but it was just infatuation"; "I love my mother, but I do not like her"). To add complexity, we use the term "love" and its cognates to refer to a feeling or a behavior or a relationship.

In recent times, as this issue of *Emotion Researcher* testifies, love has become central in emotion science as well. But this has led to some backlash. Some people feel uneasy that love, perhaps the loftiest of all emotions, might be the object of systematic scientific inquiry. They wonder whether it can be studied at all, and whether it should be: "Can Love really be put under the scientific microscope? Does it not take away the magic?". These types of arguments are actually quite informative as to the representation of emotions as something separate from us, something that does mysterious things to us. There are many lessons here regarding lay theories.

Every year, when St. Valentine's Day nears, newspapers and other media in many countries feel the need to write something about love. Quite a few years ago, when I was teaching at Université Laval, I was contacted by a reporter from the Toronto Star. I think he must have been desperate for materials because I clearly indicated that I was not a love researcher. But he did not leave empty handed. Although I did not have a theory of love to offer him, or specific data, I shared with him how what I knew about emotions in general might affect love. The story I told was a very complicated one. It involved the interplay between biology and culture, the role of metaphors and bodily symptoms, and the possible variations on the love theme produced by age and gender.

Alas, most of my story did not make it into the article. This did not stop my team and colleagues, who were quite amused by the interview, to insist on calling me *Dr. Love* for a couple of months at least. I realized that being a love researcher is something that creates more snickering than being impressed in your peers. But, I should not complain. At least I was not a *real* love researcher. If you ask Elaine Hatfield, a pioneer of scientific research on love, she can tell exciting stories. For example, she and Ellen Berscheid received a Golden Fleece award from Senator Proxmire for maximally wasting taxpayers' money. How so? Because they were studying love! What a horror. What a waste. You can read the whole story, which is almost too good to be true (but it is true!), here.

The unproxmirean question I wish to ask to my fellow emotion researchers is: Why we do not study love *more*? There are two major problems to be solved: streamlining language and finding the right experimental procedure. Firstly, as I mentioned before, the concept of love is used inconsistently in everyday language and that makes it more complicated

to create a narrative of how it works than for other emotional states. Secondly, how do you study love scientifically? Consider as a contrast the example of fear (By the way I can give an hour-long talk on how it can annoy me when people say “for example fear” – given that fear seems to have a very clear structure and evolutionary narrative, but that is a separate column though):

Fear:

1) Snake appears

2) Person freaks out as manifested in physiology, expression, action tendencies, and subjective experience

3) Person acts or regulates

See, nothing complicated here. But how could we map this to love? It is easy to get a snake or a picture or video of a snake and confront people in the laboratory with it. If you wanted to study the response to a loved one, you need to have a different loved one for every subject. See how complicated it quickly gets? But of course it is doable. Consider Jim Coan’s research (If you do not know it – check out his TED X talk) on the responses to threat while people are in an MRI scanner. Typically, there is a condition in which a loved one (married in the earlier studies) or a stranger holds the subject’s hand – and lo and behold interesting things can be found in the brain. The goal of Jim’s research is not to find a neural correlate of love as a feeling or a process, but the moderating effect of a love-relation on an acute threat. In this case love doesn’t hurt (as the song would have us remember), but it comforts. This is an example of relatively rigorous research that can be done with loved ones. In other words, the worries that love cannot be systematically studied, even with neuroscience methods need not be an issue. And of course you find other examples in this special issue.

So, if we assume that there is nothing worrisome about studying love and that it is also technically possible, let me close with a final argument. Love is often a very very strong emotion – and I can think of nobody more eloquent in making this argument than Nico Frijda. Nico was a very passionate emotion researcher and he was no stranger to arguing for the study of strong passions – associated to sex, or for example jealousy. Sometimes, it is tempting to think of basic emotions as ‘the strong ones’ as opposed to what some might call secondary emotions. But think of jealousy – this can be one of the most intense feelings, associated with massive action tendencies, and motivating people to be violent, likely even more so than anger.

As president of ISRE, I think love is an excellent case of why it makes sense to unite researchers working on emotion from different cultures, from different disciplines, and to have an acute sense of the historical dimension as well – how the representation of love changed over the course of human history and how it relates to our phylogenetic ancestors and relatives*. *Love is like oxygen, Love is a many splendored thing. All you need is love* — this is a quote from a scene from Moulin Rouge, a true work of love on love, by Baz Luhrmann, where song titles are connected that all deal with the seemingly magical and essential quality of love. I love to use this excerpt (try the link) in my emotion courses when we touch on love. So it’s very befitting to have a special on love – in fact, not the first ISRE newsletter – let me correct myself, sourcebook! – to do so. And I hope it will not be the last.

*A nice read? How about Richard Shweder’s You’re not sick, you’re just in love: Emotion as an interpretative system.

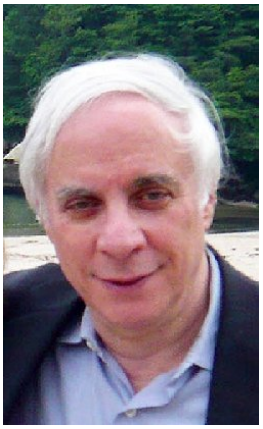
LOVE: ROMANTIC AND PARENTAL

In this issue of Emotion Researcher, we focus on the emotion of love. Check out the following four articles, which give you an up-to-date overview of the psychology, neuroscience and philosophy of love.

Passionate Love: The Forgotten Emotion (Elaine Hatfield and Richard Rapson)

Neural Markers of Interpersonal Attraction: A Possible New Direction for Couples Therapy (Stephanie Cacioppo)

Brain Circuits for Parental Behavior and Love, with Implications for Other Social Bonds (Michael Numan)



Does True Love Need To Be Unconditional? (Berit Brogaard)

Passionate Love: The Forgotten Emotion

Elaine Hatfield, Department of Psychology, University of Hawaii and Richard L. Rapson, Department of History, University of Hawaii

January 2016 –It is hard to believe, but there was a time, perhaps 50 years ago, when many scholars would insist with a straight face that it was ridiculous to study cognition or emotion since neither was an observable phenomenon. Edward Thorndike, John B. Watson, and B. F. Skinner reigned. Behavioral science meant the study of behavior.

At the University of Minnesota, one Friday night, a colleague—and in his defense, he'd had a lot to drink—mocked Ellen Berscheid and me for our interest in emotion (villain's name available on demand). We found ourselves in the absurd position of trying to convince him that humans really do possess thoughts and feelings. "Not so," slurred our adversary. Finally, beaten down by Ellen's compelling logic, he acknowledged that rats may possess cognition and emotion; but, still, humans did not. Today, only devotees of the Flat Earth Society could possibly take his side in such a wondrous argument. Cognition and Emotion are now considered so critically important to an understanding of humankind that they comprise fields of their own.

Even more, if the study of emotions were "taboo," the study of passionate love simply lay beyond the pale. It wasn't a respectable topic of study; it wasn't amenable to scientific investigation, there was no hope of finding out anything about it in our lifetime. And it wasn't "hot"—the hot topics in the 1960s were mathematical modeling, learning theory, and rats in runways. As women in a man's scholarly world, however, Ellen Berscheid and I didn't have to worry about acceptance—we couldn't ruin our non-existent reputations. So we decided to study passionate love.

We defined passionate love this way:

A state of intense longing for union with another. Passionate love is a complex functional whole including appraisals or appreciations, subjective feelings, expressions, patterned physiological processes, action tendencies, and instrumental behaviors. Reciprocated love (union with the other) is associated with fulfillment and ecstasy; unrequited love (separation) with emptiness, anxiety, or despair (Hatfield & Sprecher, 1986, p. 383).

The Passionate Love Scale was designed to assess the cognitive, physiological, and behavioral indicants of such love. Below is a copy of the scale we have developed.

	Not True								Definitely True
I would feel deep despair if _____ left me.	1	2	3	4	5	6	7	8	9
Sometimes I feel I can't control my thoughts; they are obsessively on _____.	1	2	3	4	5	6	7	8	9
I feel happy when I am doing something to make _____ happy.	1	2	3	4	5	6	7	8	9
I would rather be with _____ than anyone else.	1	2	3	4	5	6	7	8	9
I'd get jealous if I thought _____ were falling in love with someone else.	1	2	3	4	5	6	7	8	9
I yearn to know all about _____.	1	2	3	4	5	6	7	8	9
I want _____ physically, emotionally, mentally.	1	2	3	4	5	6	7	8	9
I have an endless appetite for affection from _____.	1	2	3	4	5	6	7	8	9
For me, _____ is the perfect romantic partner.	1	2	3	4	5	6	7	8	9
I sense my body responding when _____ touches me. .	1	2	3	4	5	6	7	8	9
_____ always seems to be on my mind.	1	2	3	4	5	6	7	8	9
I want _____ to know me--my thoughts, my fears, and my hopes.	1	2	3	4	5	6	7	8	9
I eagerly look for signs indicating _____'s desire for me.	1	2	3	4	5	6	7	8	9
I possess a powerful attraction for _____.	1	2	3	4	5	6	7	8	9
I get extremely depressed when things don't go right in my relationship with _____.	1	2	3	4	5	6	7	8	9

Total: _____

We would like to know how you feel (or once felt) about the person you love, or have loved, most passionately. Some common terms for passionate love are romantic love, infatuation, love sickness, or obsessive love. Please think of the person whom you love most passionately right now. Try to describe the way you felt when your feelings were most intense. Answers range from (1) Not at all true to (9) Definitely true.

Results:

• 106-135 points = Wildly, even recklessly, in love.
• 86-105 points = Passionate, but less intense.
• 66-85 points = Occasional bursts of passion.
• 45-65 points = Tepid, infrequent passion.
• 15-44 points = The thrill is gone.

The PLS has been translated by scholars all over the world: in Brazil, France, Germany, Holland, India, Indonesia, Iran, China, Italy, Japan, Korea, Pakistan, Peru, Poland, Portugal, Russia, Slovenia, Spain, Sweden, Switzerland, and Turkey. And as to the nature of love? We had plenty of questions:

1. What is passionate love? A cognition? An emotion? A behavior? All three?
2. Why are people in the throes of love so crazed, so unable to think of anything else? Why are their feelings so tumultuous—traveling from elation to blackest despair in a matter of seconds? Why are they willing to take such stunning risks for love?
3. Is passionate love a cultural universal?
4. Are there some people who never fall in love?
5. Are passionate love and sexual desire the same thing—kissing cousins, so to speak—or are they different constructs?
6. Do men and women love with equal passion?
7. Are people with high self esteem more (or less likely) to fall in love?
8. In dating and marriage is there sort of a "mating marketplace"—i.e., with people pairing up with potential partners who possess attractiveness and mate appeal similar to their own? (Is it foolhardy to yearn for someone "out of your league," or to settle, when you can obviously "do better"?)
9. How long do passionate and companionate love last?

We had no answers. Now we do. For answers, see [1)]In a nutshell, here are the answers: 1. All three. 2. That's what makes us human. 3. Yes. 4. Yes, sad to say. 5. They are closely connected: kissing cousins. 6. Yes. 7. The data are mixed. 8. Yes. 9. Both decline slightly and equally over time. If you scored from 7-9: Bravo. 4-6: Typical! 1-3: You are in deep trouble..

What a change has occurred in 50+ years! Today, scholars from a variety of theoretical disciplines—social psychologists, neuroscientists, cultural psychologists, anthropologists, evolutionary psychologists, historians, and more—are addressing the same issues with which we struggled. They are employing an impressive array of new techniques as well, ranging from studying primates in the wild and in captivity to pouring over fMRIs on lovers, in the throes of passion or enduring devastating loss.

Love has also acquired a historical dimension, as historians study the love lives, not only of kings and queens, but those of regular folks as well. They are utilizing demographic data (marriage records, birth and death records, records of divorce), architecture, medical manuals, church edicts, legal records, song lyrics, and the occasional journal that floats to the surface like a long-lost treasure. We can now answer in some detail most of the questions we raised in the 1960s. Here, let us now consider the evidence in support of a few of our answers in more detail:

What is passionate love? A cognition? An emotion? A behavior? All three?

The earliest researchers, struggling to define love, tended to categorize it in ways that were familiar to them. Attitude scholars (like us) defined love as an attitude, chemists defined it as a chemical reaction, and the like. Emotions researchers, however, were already well aware that in the course of evolution, our ancestors had evolved "emotion packages" that included a constellation of components. The angry person possessed dark thoughts, felt furious, had strong physiological reactions, and yearned to lash out. So with love: it involves a variety of components, all working in synchrony.

Is passionate love a cultural universal?

Scholars like William Goode (1959) were scathing in their denunciation of Westerners' idea that love was the sine qua non of marriage. Today, however, anthropologists, evolutionary psychologists, and social psychologists agree that passionate love is a cultural universal. William Jankowiak and Edward Fischer (1992), for example, searched for evidence of romantic love in a sampling of the tribal societies included in the Standard Cross-Cultural Sample. (The Sample contains ethnographic information on 186 cultural and pre-industrial areas of the world.)

The authors classified societies as to whether or not romantic love was present (or absent) on the basis of five indicators: (1) accounts depicting personal anguish and longing; (2) the existence of love songs or folklore that highlight the motivations behind romantic involvement; (3) elopement due to mutual affection; (4) native accounts affirming the existence of passionate love; and (5) the ethnographer's affirmation that romantic love was present.

They found clear evidence of passionate love in almost all of the tribal cultures they studied. People in all cultures recognize the power of passionate love. In South Indian Tamil families, for example, a person who falls head-over-heels in love is said to be suffering from mayakkam—dizziness, confusion, intoxication, and delusion. The wild hopes and despairs of love are thought to "mix you up" (Trawick, 1990).

Culture can, of course, have a profound impact on people's views of love, how susceptible they are to falling in love, with whom they tend to fall in love, their willingness to insist on marriage for love, and how their passionate affairs work out. Yet, a wide variety of studies document that the significant differences that once existed between Westernized, urban, modern, industrial societies and more traditional rural societies are disappearing, sometimes amazingly quickly.

These days, those interested in cross-cultural differences may only find them if they investigate the most underdeveloped, developing, and collectivist of societies—such as communities in Africa or Latin America, or the Arab countries (Egypt, Kuwait, Lebanon, Libya, Saudia-Arabia, Iraq, or the U. A. E.). However, even in those countries, the winds of Westernization and change are blowing. For more information on the universality of love, see Hatfield, Rapson, & Martel (2007).

Neuro-biological perspectives

In 2000, two London neuroscientists, Andreas Bartels and Semir Zeki, set out to identify the brain regions associated with passionate love and sexual desire. The scientists put up posters around London, advertising for men and women who were "truly, deeply, and madly in love." Seventy young men and women from 11 countries responded. Participants were asked to complete the Passionate Love Scale (PLS). Participants were placed in an fMRI (functional magnetic imagery) scanner.

This high-tech scanner constructs an image of the brain in which changes in blood flow (induced by brain activity) are represented as color-coded pixels. In the machine, Bartels and Zeki gave each participant a color photograph of their beloved to gaze at, alternating the beloved's picture with pictures of a trio of casual friends. They then digitally compared the scans taken while the participants viewed their beloved's picture with those taken while they viewed a friend's picture, creating images that represented the brain regions that became more (or less) active in both conditions.

Not surprisingly, the Bartels and Zeki research sparked a cascade of fMRI research. Several findings from this flood of research are of interest:

(1) Neuroscientists have found that scores on the PLS are highly correlated with the intensity of lovers' reactions to pictures of the beloved.
(2) Passion sparked increased activity in the brain areas associated with euphoria and reward. Most of the regions that were activated during the experience of romantic love were those that are active when people are under the influence of euphoria-inducing drugs such as opiates or cocaine. Apparently, both passionate love and those drugs ac-

tivate a “blissed-out” circuit in the brain.
(3) The authors also found decreased activity in the areas associated with sadness, anxiety, and fear. Among the regions where activity decreased during the experience of love were zones previously implicated in the areas of the brain controlling critical thought. Apparently, once we fall in love with someone, we feel less need to assess critically their character and personality. (In that sense, love may indeed be “blind.”) For more information on this topic, see Hatfield & Rapson (2009).

In dating and marriage is there sort of a ‘‘mate marketplace’’—i.e., with people pairing up with potential partners who possess attractiveness and mate appeal similar to their own?

In fairy tales, Prince Charming often falls in love with the scullery maid. In real life, however, dating couples almost always ends up with a “suitable” partner—which means the most appealing partner they can attract in a competitive dating market. As Goffman (1952) dryly observed:

“A proposal of marriage in our society tends to be a way in which a man sums up his social attributes and suggests that hers are not so much better as to preclude a merger” (p. 456).

Since the 1960s, scientists have conducted a flood of research documenting that people tend to pair up with romantic and sexual partners similar to themselves in physical attractiveness (see Hatfield, Forbes, & Rapson, 2012, for a review of this research.) Of course, in the dating and mating “marketplace,” physical appearance is not the only thing young people have to offer.

Equity theorists Hatfield, Walster, and Berscheid, (1978) assembled voluminous evidence documenting the critical importance of the dating “marketplace” in mate selection. Specifically, scholars find: Market considerations affect both gay and straight people’s romantic and sexual choices. Couples are likely to end up with someone fairly close to themselves in social desirability. Couples tend to be matched on the basis of self-esteem, looks, intelligence, education, mental and physical health (or disability). People rarely get matched up with someone who is either “out of their league” or “beneath them.”

It is in the early stages of dating or sexual relationships, of course, that considerations of the marketplace loom large. As couples become more committed to one another, love and compatibility become more important than “mate value”, and the “marketplace” diminishes in importance
How long do passionate and companionate love last?

Passionate love is a fleeting emotion. It is a high, and one cannot stay high forever. Hatfield and her colleagues (2008) interviewed couples (dating couples, newlyweds, and long-married couples). They found that, as expected, passionate love decreased markedly over time. When asked to rate their feelings on a scale that included the responses “none at all,” “very little,” “some,” “a great deal,” and “a tremendous amount,” steady daters and newlyweds expressed “a great deal” of passionate love for their mates. However, starting shortly after marriage, passionate love was shown to steadily decline, with long-married couples admitting that they felt only “some” passionate love for each other.

Fortunately, there may be a bright side to this seemingly grim picture. Where passionate love once existed, companionate love sometimes takes its place. Companionate love is thought to be a gentle emotion, comprised of feelings of deep attachment, intimacy, and commitment. It is this kind of love that often keeps couples together.

In conclusion: Given the current popularity of research on passionate love among emotions researchers, it is obvious that in the next few years our understanding of love will increase. Given the societal changes, the context of love research is also bound to change. What is the impact of dating Web sites and speed dating on passion? What will be the impact on romantic commitment from sites like Zoosk, Badoo, and Tinder? They allow one, when chatting up a real, physically present date at a club, to search for someone better, for fun or sex, from across the room or down the block. What will be the impact on passion of made-to-order sex robots?

Asked in the form of serious play, these are just a few of the questions that can be generated by an awareness of the rapidly changing landscape of love. Love research has made remarkable progress in the past half-century, but research on that elusive and powerful emotion is obviously only just getting started.

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Neural Markers of Interpersonal Attraction: A Possible New Direction for Couples Therapy

Stephanie Cacioppo, The Biological Sciences Division, The University of Chicago Pritzker Medical School

January 2016 –Have you ever taken a walk in the woods to enjoy nature only to find yourself jumping back and looking down at a curved stick, while thinking it was a snake? You were probably unaware that your brain was implicitly on the lookout for snakes during the walk. Your brain has evolved neurological mechanisms that surveil the environment looking for significant stimuli, like potential snakes.

A similar automatic mechanism applies to potential mates. Your brain has evolved neurological, hormonal, and genetic mechanisms to quickly detect stimuli that can play a significant role in your ability to survive, reproduce, and leave a genetic legacy (Cacioppo & Patrick, 2008; Cacioppo & Cacioppo, 2012, 2013a). As your eyes are on the lookout for cues of snakes, they also are on the lookout for cues of potential mates, very quickly, without a deliberate decision on your part to do so.

We tested this hypothesis recently using eye-tracking measurements while 20 neurologically healthy college students (13 women, 7 men; mean age: 22.15, *SD* = 3.38 years) were looking at photographs of potentially desirable or lovable individuals (see Figure 1 for sample).

Figure 1: In one block, the participants were asked to look at each photograph and decide as rapidly and as precisely as possible whether they perceived the photograph as eliciting feelings of lust (sexual desire). In the other block, the participants were asked to look at each photograph and decide as rapidly and as precisely as possible whether they perceived the photograph as eliciting feelings of romantic love. The same photographs of attractive individuals were presented in each block. Responses were made by pressing one of two response keys ("K" for "yes", and "L" for "no") on a keyboard with fingers of the right hand (response "yes" with the index and response "no" with the middle finger). The order of these experimental instructions was counterbalanced across participants (See Bolmont et al., 2014 for details).

Overall results showed that when participants were asked to indicate whether the photographs could elicit feelings of romantic love (a sentimental and tender state of longing for union with another, that is not necessarily associated with sexual feelings) or lust (the presence of feelings of sexual interest, and of sexual thoughts or fantasies related to the image depicted in the photograph), their decision making about lust (rather than that for romantic love) was associated with specific eye gaze to the torso and face.

Participants' decision making for romantic love was more focused on the face per se (Bolmont et al., 2014). These eye movements were performed extremely quickly (in less than one second). For instance, time to the first fixation toward the torso (*Mean* = 0.19 s, 95% Confidence Interval = [0.111, 0.275]) was shorter than time to the first fixation toward the face (*Mean* = 0.42 s, 95% Confidence Interval = [0.27, 0.575]; $F(1, 8) = 7.13$, $p = .03$, $\eta 2 = 0.37$).

What do these results tell us? First, our findings provide further evidence that a distinct visual pattern exists for love vs. lust. These findings reinforce hypotheses suggesting that romantic love and lust are distinctive emotions with unique behavioral scripts (Cacioppo & Hatfield, 2013; Diamond, 2004; Diamond & Dickenson, 2012; Hatfield & Rapson, 2005). Second, such identification of categorical thinking and other information about what a person captures about their environment and their interlocutor during a social interaction could have theoretical and clinical importance in couples therapy when patients' self-reports fail to disentangle romantic love and lust (Baron-Cohen, 1995; Bockler et al., 2014; Emery, 2000; Mason et al., 2005).

Although romantic love and lust are distinct, they are not mutually exclusive. Being in love or in lust can be experienced individually or in any combination. In one study of 500 individuals conducted by Dorothy Tennov, 61% of the women and 35% of the men agreed with the statement, "I have been in love without feeling any need for sex"; and 53% of the women and 79% of the men agreed with the statement, "I have been sexually attracted without feeling the slightest trace of love" (Tennov, 1999).

From a psychological viewpoint, lust and romantic love may not differ in their constituent components (e.g., they both have a positive valence) as much as in their goals (Hatfield & Rapson, 2005). Lust is oriented toward consummation

of a temporary sexual encounter (Hatfield & Rapson, 2005), whereas romantic love is characterized by the wishing to maintain a long-lasting relationship with a significant other (Hatfield & Rapson, 2005). From a neurobiological viewpoint, love and lust have some overlaps and differences.

Both love and lust recruit the dopaminergic reward-related brain system (involving dopamine and oxytocin receptors). The dopaminergic system mediates functions that are important for goal-directed motivation, reward, and pair-bonding. By demonstrating a specific activation of the subcortical dopaminergic system in both love and lust, these findings fit well with the long-lasting theories of emotion and motivation defining love and lust as a central motivation for pair-bonding in human beings (Cacioppo et al., 2012 for review).

In addition, our fMRI meta-analyses demonstrated that different types of love involve distinct cerebral networks inside and outside the dopaminergic-rich brain network. For instance, romantic love specifically recruits the ventral tegmental area and the caudate nucleus, although maternal love and unconditional love for persons with intellectual disabilities rather recruits PAG.

Despite the close spatial proximity of these three brain regions, they may mediate different functions. More precisely, the ventral tegmental area (a brain area coinciding with brain areas rich in dopamine, oxytocin and vasopressin receptors) is considered as a central platform for pleasurable feelings, and pair-bonding. Another notable activation is observed in the caudate nucleus, associated with representation of goals, reward detection, expectation, and the preparation for action. These fMRI results suggest that romantic love is more than a basic emotion. Romantic love is a complex positive emotion and also a reward-based goal-directed motivation towards a specific partner.

The systematic study of the modulation of these specific dopaminergic romantic love-related brain areas (i.e., ventral tegmental area and caudate nucleus) might be helpful to better grasp the motivational modulations (increases/decreases) that may occur in a couple's relationship over the life span. A focus on the specificity of these three brain regions and their functions would facilitate the development of new pharmaceutical approaches that would target drug therapies on the dysfunction of a specific brain network. Based on the present findings, we hypothesize that modulations of activity in these dopaminergic brain areas could modify the motivational dynamics within a couple.

For instance, the excess of dopaminergic-related inputs may have detrimental consequences in couple relationships (e.g., love addiction). Thus, the study of excessive activation (or deficits) in these brain areas might help physicians and psychologists better comprehend the pathological behaviors in a passionate love relationship. The integration of these neuroimaging findings of love with standard approaches in sexual medicine and couple therapy might allow the development of new psycho-biological models of the human sexual response. For instance, the understanding of the functions (e.g., motivation, reward) that are mediated by the brain areas activated during romantic love might help clinicians build models of couple relationships that are based on reward-based information.

Compared to lust, love also activate a different brain network within the dopaminergic systems (See Figure 2; Cacioppo et al., 2012; Cacioppo & Cacioppo, 2013b).

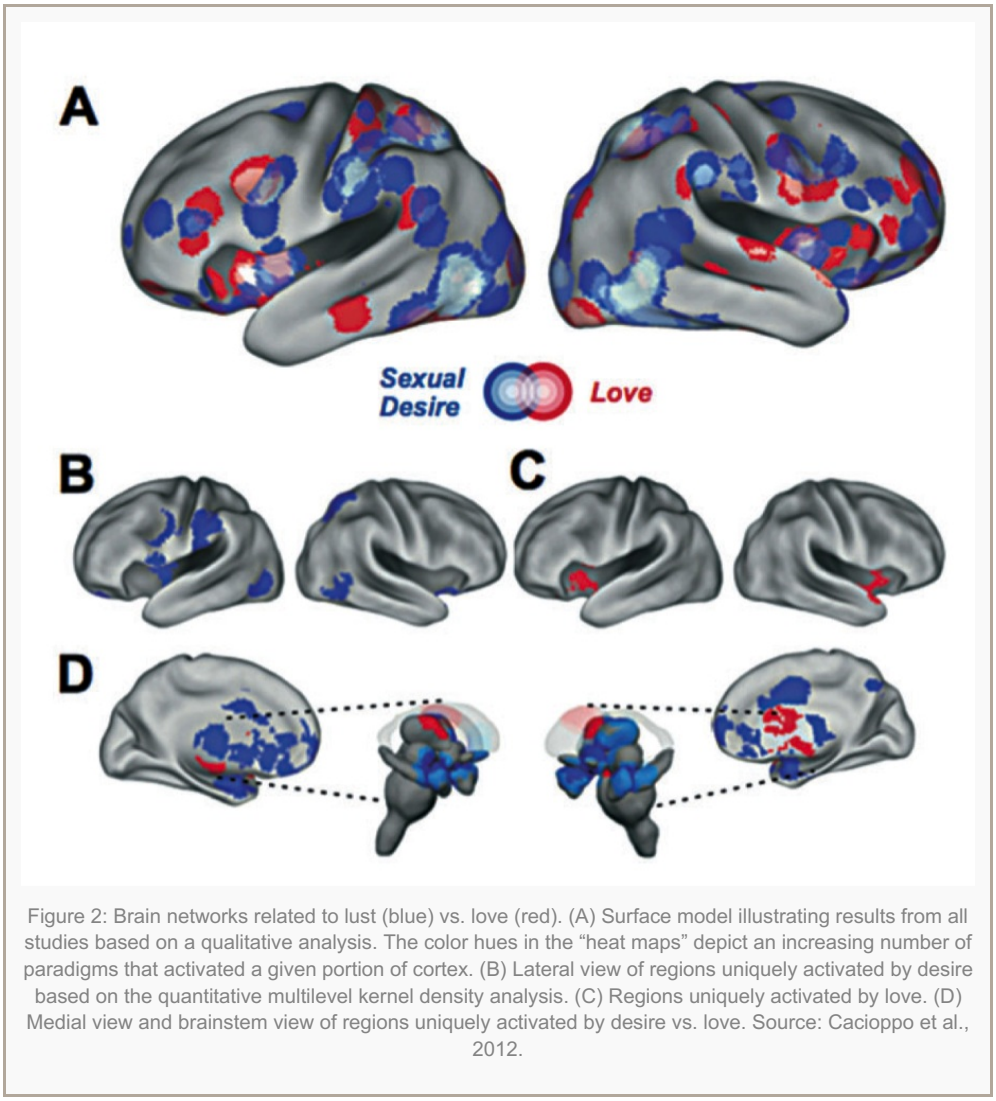

Figure 2: Brain networks related to lust (blue) vs. love (red). (A) Surface model illustrating results from all studies based on a qualitative analysis. The color hues in the "heat maps" depict an increasing number of paradigms that activated a given portion of cortex. (B) Lateral view of regions uniquely activated by desire based on the quantitative multilevel kernel density analysis. (C) Regions uniquely activated by love. (D) Medial view and brainstem view of regions uniquely activated by desire vs. love. Source: Cacioppo et al., 2012.

For instance, the anterior region of the insula is mostly activated by love (but not lust; Cacioppo et al., 2012, 2013), whereas the posterior region of the insula is mostly activated by lust (but not love; See Figure 2; Cacioppo et al., 2012). This posterior-to-anterior distinction between lust and love within the insula is in accord with a broader principle of organization of the insula: the posterior part of the insula is involved in current, concrete somato-sensorial and physical sensations, feelings, and responses, whereas the anterior part of the insula is more involved in relatively abstract, integrative representations.

If the anterior insula is involved in the feeling of love, as suggested by this correlational fMRI result, then a lesion in the anterior insula should be associated with a diminished capacity to ignite normal responses to romantic love but should be relatively normal in capacity to ignite normal responses to lust. We tested this hypothesis with a patient who had a circumscribed ischemic lesion in the anterior insula, an area that overlaps the love (but not the lust) brain matrix (Figure 3; Cacioppo et al., 2013).

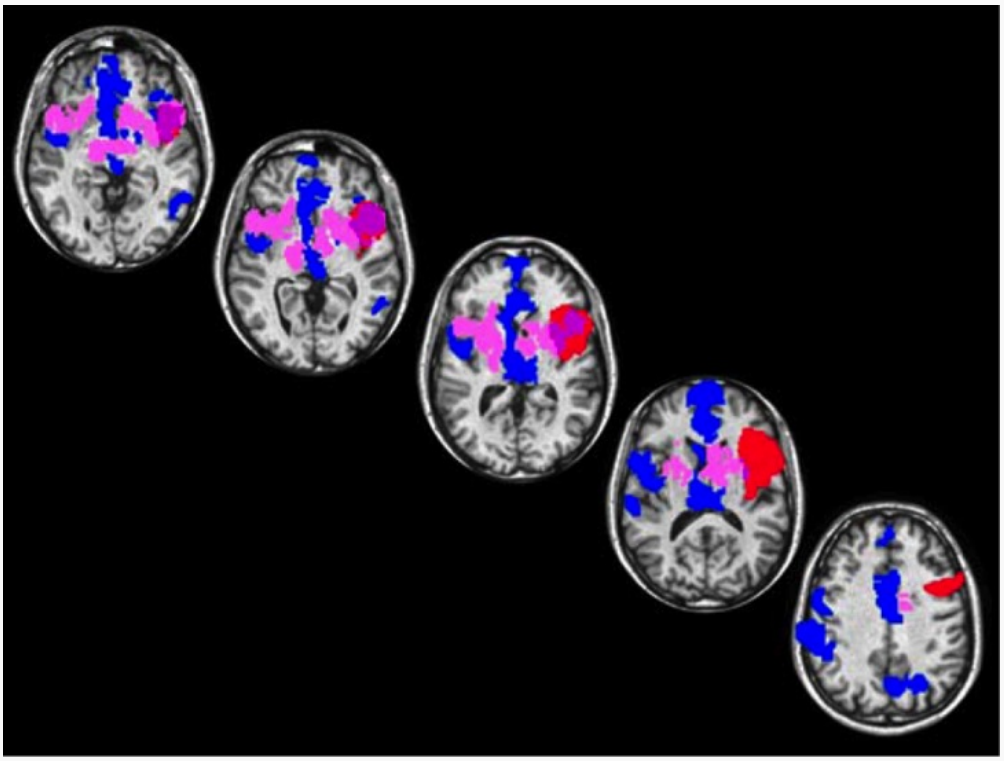

Figure 3: Transverse brain slices illustrating overlapping (in purple) brain regions between the patient's brain lesion (in red), and the brain matrix of lust (in blue) compared to the brain matrix of love (in red) from healthy subjects. Source: Cacioppo et al., 2013.

The patient was a 48-year-old heterosexual male who suffered from an ischemic brain lesion (see Cacioppo et al., 2013 for details). At the moment of the evaluation, the patient performed accurately in behavioral tasks involving the recognition of basic emotions, such as fear. When asked to perform one of our behavioral decision tasks involving more complex emotions, such as love and lust, the patient, in contrast to seven neurologically typical participants matched on age (mean age 46.88 years ±3.01), gender, and ethnicity, was much slower at making decision about romantic love than lust. (see Cacioppo et al., 2013 for details).

These results provide the first clinical evidence that the anterior insula may play an instrumental role in love but not lust more generally. Our overall findings support the notion of a posterior-to-anterior insular gradient, from sensorimotor to abstract representations, in the evaluation of anticipatory rewards in interpersonal relationships. These findings are also in accord with a broader principle of brain organization: Posterior regions are involved in current, concrete sensations, feelings, and responses, whereas anterior regions are more involved in relatively abstract, integrative representations.

This specific pattern of activation suggests that love, unlike lust that originates from bodily sensations, is an abstract construct that builds upon feelings and pleasure, adding regions associated with reward expectancy, habit formation, and feature detection. In particular, the shared activation within the insula, with a posterior-to-anterior pattern, from lust to love, suggests that love grows out of and is a more abstract representation of the pleasant sensorimotor experi ences that characterize lust.

When comparing love with lust in our meta-analysis of fMRI studies, we also found that activity was differentially recruited in the striatum, a dopaminergic-rich area known to be activated for inherently pleasurable such as sex and food. Our results showed that the ventral striatum was specifically more activated for lust than love, whereas the dorsal part of the striatum, an area involved in the process of conditioning by which things paired with reward or pleasure are given inherent value, was more activated by love than sexual desire.

This ventral-to-dorsal dissociation from lust to love is in line with reward theories, which distinguish between the vari-

ous hedonic experiences of reward with lust being related to the processing of the immediate reward value of a stimulus via dopaminergic neurotransmission in the ventral striatum and love being related to a more abstract long-term reward (Berridge, 1996; Cacioppo et al., 2012; Cacioppo & Cacioppo, 2013; Wyvell & Berridge, 2000).

Interestingly our fMRI meta-analyses also demonstrate that love not only recruits subcortical or insula-centered dopaminergic brain areas, but also activates higher-order cortical brain areas. This reinforces the point that love is more than a basic emotion or an addiction like the one to cocaine, as some have suggested (Ortigue et al., 2010; Cacioppo et al., 2012). Crucially, love also involves cognition. Romantic love recruits brain areas known to sustain cognitive functions, such as abstract constructs. In addition, both romantic love and lust spark increased activity not only in the subcortical brain areas that are associated with addiction, euphoria, reward, and motivation, but also in the cortical brain areas that are involved in self-representation, perspective taking, theory-of-mind, and empathy (Cacioppo, S. & Hatfield, E. (2013; Cacioppo et al., 2012 for reviews).

This indicates that not only romantic love but also lust is more cerebral that previously thought. Notably, lust shares with love a specific cortical network within the middle frontal gyrus (MFG), superior temporal gyrus (STG), pre-central gyrus, temporo-parietal junction (TPJ), and occipito-temporal cortices (see Figure 2; Cacioppo et al., 2012 for review).

Relatedly, the co-activation of both subcortical emotion-related areas and higher-order cortical areas that mediate more complex cognitive functions (e.g., body image, mental associations, and self-representation) reinforces the potential role of past experiences on future emotional feelings and behaviors, suggesting that higher-order cognitive brain areas may be governing eye gaze and attentional focus to certain aspects of a visual target, such as regions of the body that are particularly relevant to making decisions about the sexually desirable or lovable nature of the target.

The brain regions that handle self-awareness and understanding others may also be performing computations that are integrated with information from the brain areas sustaining emotion processing to impact the love or lust an observer feels toward the target person. The neural dissociations between love and lust suggest that these two phenomena are not only separable but each influences attention and, as previously mentioned, sustains separable behavioral scripts.

These behavioral and neuroimaging results clarify how a rigorous neuroscientific approach integrated with other disciplines such as social psychology and neuropsychology has the potential to answer age-old questions concerning the nature of romantic love and its differences with lust. To sum up, romantic love, often termed pair-bonding in non-human mammalian species, has an evolutionary base; it has a distinctive neurobiological substrate different from that of lust that extends beyond that of addiction; and it manifests (in humans) as a combination of physical sensations, feelings, and mental states that are in response to certain stimuli or events. Together these results show that love is more than a basic emotion.

Additionally, there is compelling neurobiological evidence that love has a complex cognitive profile that emerges from the interplay between appraisals, goal-directed motivation, reward, self-representation and body-image, while sharing a cortical circuit with lust (see Figure 2). This knowledge provides a novel anatomical and functional foundation for developing a cortical network-level perspective for advancing research in affective neuroscience, medicine, and couples therapy.

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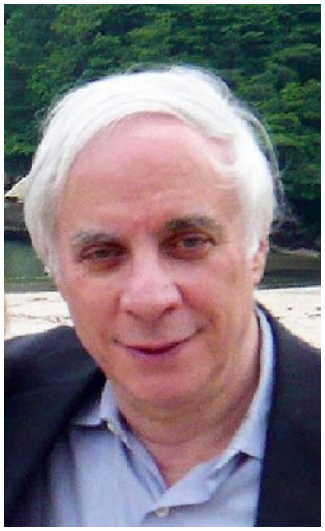
Brain Circuits for Parental Behavior and Love, with Implications for Other Social Bonds

Michael Numan, Department of Psychology, University of New Mexico



Introduction

January 2016 – Parental behavior can be defined as any behavior displayed by one member of a species toward an immature member of the same species (an immature conspecific) that increases the likelihood that the infant will survive (Numan & Insel, 2003). Depending on the species and its particular ecological niche, parental behavior can include maternal, paternal, and alloparental behavior, the latter being caretaking behaviors directed toward infants other than one's own offspring. For mammals, the dominant care system relies on maternal behavior. In about 95% of mammalian species, the two sexes leave one another after mating, and once the pregnant female gives birth she cares for her offspring by herself (Numan & Young, 2015).

This uniparental maternal care system evolved because most lactating females can successfully raise young without the help of the male. About 5% of mammalian species, in contrast, exhibit a monogamous mating system where the male-female pair remains together following mating and both biological parents care for their offspring (maternal and paternal behavior). Examples include some rodent species, such as California mice and prairie voles, and certain species of New World monkeys, such as common marmosets and cotton-top tamarins (Kentner, Abizaid, & Bielajew, 2010).

While males do not lactate, they can directly care for infants in other ways, such as carrying them, huddling over them to keep them warm, or protecting them from threats. Monogamy occurs under ecological conditions where biparental care is necessary for infant survival (Brown, 1975). Alloparental behavior occurs in certain monogamous mammalian species when older siblings remain in the family group, instead of emigrating, and help their mother and father care fo more recently born young. Such cooperatively breeding species include prairie voles, common marmosets, and early hominins (Hrdy, 2009; Numan, 2015).

In this essay, I will first describe the evolutionary conserved core neural circuits that regulate maternal behavior in nonhuman mammals. For the remainder of this paper, whenever I use the term animals, I will be specifically referring to nonhuman mammals. Since maternal behavior is a characteristic of all mammals, it is not surprising that a common neural network regulates the behavior across species (Numan & Insel, 2003). Panksepp (2011) has referred to this network as the Maternal Care System. Then I will describe the functional magnetic resonance imaging (fMRI) research that affirms for humans that similar neural regions are active when mothers view infant stimuli, presumably because they are imagining that they are engaging in caretaking activities.

This analysis will then be followed by a discussion of the possible neural basis of maternal love in humans. I use the term maternal love to refer to the pleasant and empathic feeling states that are associated with caring for one's infant. Positive maternal feelings must interact with the core neural circuits of maternal behavior if feelings are to be translated into caregiving responses, and I will present neural models describing such an interaction. I am agnostic with respect to whether maternal love occurs in animals, since subjective feelings cannot be measured in animals, while humans can tell us about their subjective states.

My essay will conclude by comparing maternal behavior and love with paternal behavior and love, and with the long-

term attachment and love that can occur between monogamous mating partners. It will be proposed that the neural circuits underpinning maternal behavior and maternal love may have provided a neural foundation for other types of caregiving behaviors and their associated emotional states (Numan, 2015; Numan & Young, 2015).

Descriptions of Maternal Behavior in Animals

The types of maternal behaviors shown by different mammalian mothers are influenced by the maturity of the young at birth (Numan & Insel, 2003). Infants can be born immature (altricial) and immobile, precocial and mobile, or intermediate between these two extremes. Rats, sheep, and rhesus monkeys are representative of each class, respectively. Rats give birth to their immobile pups in a secluded site where a nest is built, and where the mother nurses and licks (grooms) her young. She also retrieves displaced pups back to the nest site by carrying them in her mouth. Sheep give birth to relatively mature young that are mobile at birth. The mother nurses and grooms the young, but transport or retrieval behaviors do not occur, since the lamb can follow the mother.

In rhesus monkeys, initially the mother is in constant contact with her infant, nursing and grooming it, and the infant clings to its mother for transport. As the rhesus infant develops and becomes more mobile it wanders away from its mother, but the mother is usually aware of the infant's location and if the infant is in danger the mother will move toward the infant and carry it away.

In all species, mothers are strongly attracted and attached to their infants until weaning. However, this mother-infant bond can be either nonselective or selective (Numan & Young, 2015), and this is dependent upon whether mixing and the potential confusion between one's own young and those from another mother could occur under natural conditions. For example, rats form nonselective bonds with their young because in nature altricial young cannot move from one nest to another and therefore confusion between the infants of different mothers does not occur. As evidence, *experimental* cross-fostering tests show that postpartum rats will care for young that are not their own.

In contrast, sheep (and most primates) exhibit a selective bonding system. In sheep, lambs are born into a large herd and can move from one mother to another. Therefore, at the time of birth maternal sheep quickly learn the olfactory characteristics of their offspring and will subsequently care only for their own lamb, while rejecting the advances of alien young. Of course, under natural conditions, maternal rats learn the location of their nest site, which ensures that they are only taking care of their own young. But the point I am making here is that for the mechanisms underlying social bonding, maternal rats are attracted to a generic pup stimulus, while maternal sheep are ultimately attracted to a specific lamb stimulus.

In my discussion of the brain regions involved in maternal behavior in animals, the focus will be on those regions controlling maternal motivation or a mother's interest in, and attraction toward, her young, rather than on brain regions which regulate specific maternal responses. Therefore, while rats retrieve their infants and sheep do not, damage to certain core neural regions disrupts maternal motivation in both species, so that they lose interest in their young, are no longer attracted to them, and therefore do not show their respective maternal responses (Numan, 2015).

Hormonal and Oxytocin Regulation of the Onset of Maternal Behavior in Animals

In most mammals, virgin (nulliparous = never having given birth) females avoid or reject infants, while parturient females show appropriate maternal behavior toward *any* conspecific infant at birth. In those species that develop selective attachments, this occurs as the mother interacts with her young during the early postpartum period and learns their particular stimulus characteristics.

What causes this change in the processing of infant stimuli by the brain, shifting such stimuli away from antisocial avoidance and rejection neural circuits in virgins and toward prosocial attraction and acceptance neural circuits in parturient females? In most mammals, hormonal and other physiological events at the end of pregnancy act on the brain to cause this change. The critical events include the hormones estradiol (an ovarian hormone) and prolactin (an anterior pituitary hormone), and the neuropeptide oxytocin. Estradiol and prolactin enter the brain from the peripheral blood supply, while oxytocin is produced in the hypothalamus, primarily from neurons in the paraventricular nucleus,

which release oxytocin into diverse brain sites near the time of birth (Numan, 2015; Numan & Stolzenberg, 2009). [Oxytocin is also released into the peripheral blood supply by paraventricular nucleus axon terminals that project to the posterior pituitary, and in the periphery oxytocin stimulates uterine contractions and milk ejection from the mother's nipples in response to suckling. However, unlike estradiol and prolactin, peripheral oxytocin has weak penetrance across the blood brain barrier. Therefore, it is the central release of oxytocin into the brain, where is serves as a neurotransmitter, that is important for maternal behavior.]

While estradiol, prolactin and oxytocin are essential for the onset of maternal behavior at parturition, they are not required for its maintenance during the remainder of the postpartum period. After a sufficient amount of postpartum maternal experience, it is likely that synapses become strengthened within certain key nodes of the maternal neural circuit so that maternal behavior can continue without hormonal and oxytocin stimulation (Numan, 2015; Numan & Young, 2015). Therefore, experience with infants coupled with the physiological events associated with late pregnancy and parturition cause neural changes that promote an enduring mother-infant bond. Which particular neural changes occur will be discussed in the section on brain circuits of maternal motivation.

Although oxytocin is not essential for the maintenance of maternal behavior, it does boost maternal motivation during the postpartum period (Numan, 2105). Oxytocin action on the brain causes increased licking and grooming of pups in postpartum rats, and is associated with increased levels of affectionate touching of infants by human mothers.

Finally, in those species that show paternal and/or alloparental behavior, it should be clear that mechanisms other than those related to pregnancy and parturition are involved in triggering these behaviors. Evolutionary processes are crucial: If paternal and/or alloparental behavior are necessary for infant survival, natural selection will create alternate mechanisms through which the parental circuitry can be activated. I will have more to say about these issues in subsequent sections.

Brain Circuits Regulating Maternal Motivation in Animals

A large body of experimental evidence has outlined the subcortical neural circuits regulating maternal motivation, and the medial preoptic area (MPOA), located in the hypothalamus, has been shown to play an essential role in all female mammals that have been examined (Dulac, O'Connell, & Wu, 2014; Lonstein et al., 2015; McHenry, Rubinow, & Stuber, 2015; Numan, 2015; Numan, 2007; Numan & Stolzenberg, 2009; Numan & Young, 2015). Destruction of MPOA neurons impairs the onset and maintenance of the behavior, and estradiol, prolactin and oxytocin act on MPOA to trigger the onset of maternal behavior.

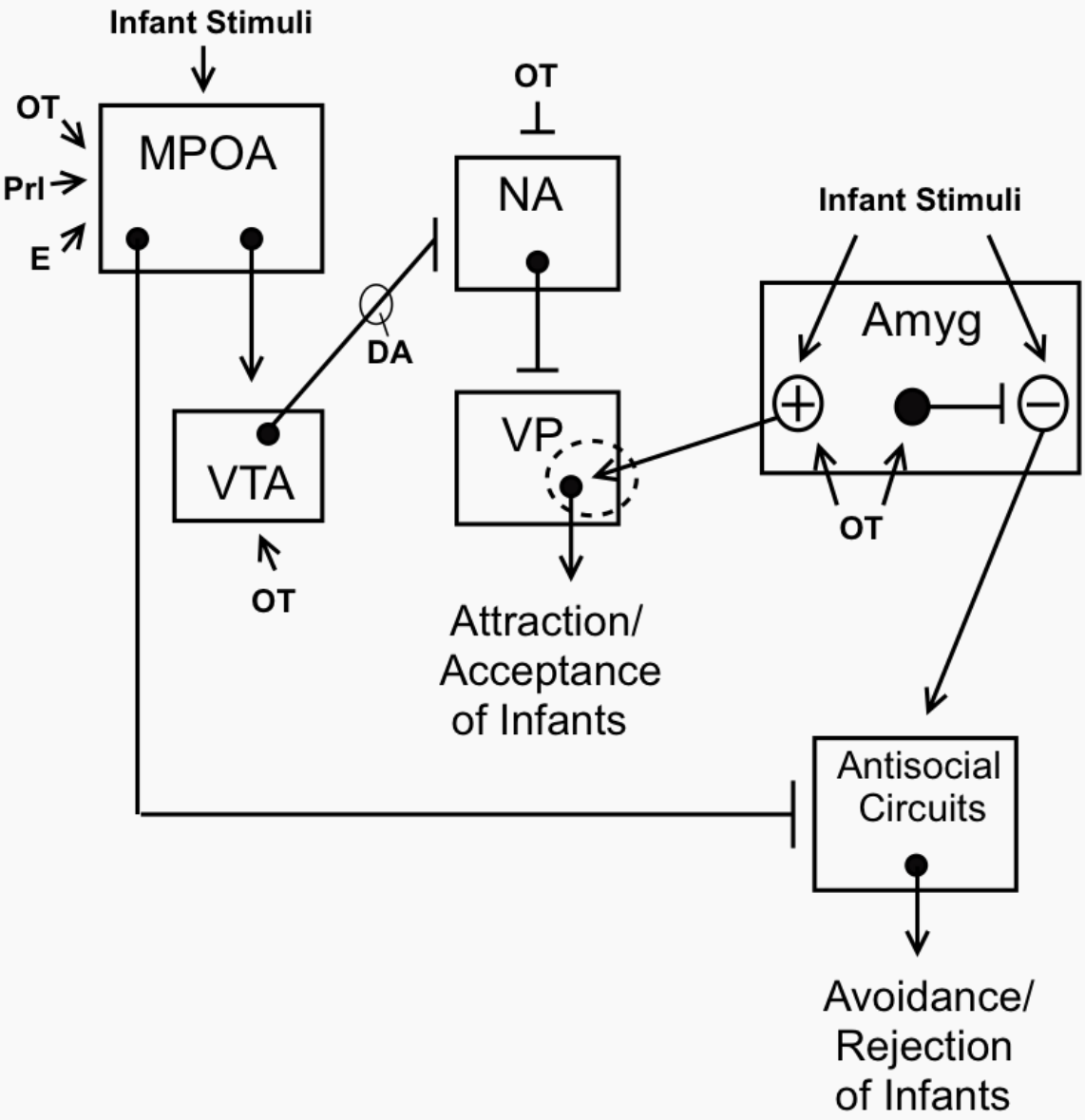


Figure 1: A neural model of maternal behavior in animals. Nulliparous females typically avoid infant stimuli because they activate negatively valent amygdala (Amyg) neurons. Maternal behavior occurs because these avoidance responses are inhibited, while attraction toward infants is stimulated. Physiological events at the end of pregnancy cause the medial preoptic area (MPOA) to be activated by infant stimuli. MPOA projections then inhibit antisocial avoidance circuits and activate the mesolimbic dopamine (DA) reward system. The brain's oxytocin (OT) system is also involved, with actions at several sites. In the amygdala, oxytocin stimulates positively valent neurons, while inhibiting negatively valent neurons. When oxytocin co-acts with dopamine in the nucleus accumbens (NA), it potentiates the inhibitory effects of dopamine, which releases the ventral pallidum from nucleus accumbens inhibition. This process allows the ventral pallidum (VP) to become responsive to infant stimuli arriving from positively valent amygdala neurons. The output of the ventral pallidum promotes maternal motivation. These events may also strengthen synapses between the amygdala and ventral pallidum (shown by a dashed circle), causing an enduring attraction between a mother and her infants. Neuronal, hormonal, and oxytocin effects ending in an arrow denote stimulation. Effects ending in a bar indicate inhibition. See text and Numan (2015) for more information. E = estradiol; Prl = prolactin; VTA = ventral tegmental area.

Fig. 1 presents a theoretical neural model, built upon evidence (Numan, 2015; Numan, 2007), which depicts the larger neural circuitry within which the MPOA operates. Before describing the details, a simple way to understand this figure is to say that MPOA outputs have two important functions: They activate the brain's reward system so that infant stimuli become attractive and rewarding and they inhibit aversion or antisocial neural networks so that infant stimuli lose the ability to activate avoidance and rejection responses.

MPOA neural connections to the mesolimbic dopamine system are crucial for the rewarding aspects of maternal motivation (Numan, 2015; Numan & Stolzenberg, 2009). The mesolimbic dopamine system, an important component

of the brain's reward system, includes dopamine neurons in the ventral tegmental area of the midbrain that project upstream to the nucleus accumbens in the forebrain. Note that nucleus accumbens projection neurons inhibit the nearby ventral pallidum. The model in Fig. 1 proposes that hormones prepare the MPOA to be responsive to infant stimuli. Infant stimuli then activate MPOA projections to the ventral tegmental area, which stimulate dopamine release into the nucleus accumbens. Dopamine acts to *inhibit* the nucleus accumbens, in this way releasing the ventral pallidum from inhibition. Such a mechanism allows the ventral pallidum to become responsive to infant stimuli that reach the ventral pallidum via the amygdala.

The resultant stimulated output of ventral pallidum attraction/reward circuits gives rise to motivated responses that attract a mother to her young. Therefore, it is the output of ventral pallidum, triggered by MPOA activity, which is critical for maternal motivation (Numan & Stolzenberg, 2009). If one were to prevent 'maternal' MPOA neurons from interacting with dopamine neurons in the ventral tegmental area, then the mother would lose interest in her young, would no longer be attracted to them, and would not care for them (Numan & Stolzenberg, 2009). The MPOA also pro jects to the oxytocin neurons in the paraventricular nucleus, stimulating the release of oxytocin into diverse sites that include MPOA, ventral tegmental area, nucleus accumbens, and amygdala. Oxytocin, therefore, acts to promote neural activity across the circuit that allows the MPOA to trigger ventral pallidum output in response to infants, in this way contributing to the onset of maternal behavior at parturition.

The amygdala, a critical site in the model (Numan, 2007; Numan, 2015; Numan et al., 2010), is functionally heterogeneous, and different neurons respond to either pleasant or aversive stimuli (positively valent or negatively valent neurons). When infant stimuli are processed through negatively valent amygdala neurons that project to antisocial circuits, the avoidance and rejection responses typically shown by virgins occur. As shown in Fig. 1, when the MPOA is appropriately primed at the end of pregnancy, it not only stimulates prosocial reward circuits (mesolimbic dopamine system), but it also inhibits the antisocial circuits. Further, oxytocin action on the amygdala potentiates the responsiveness of positively valent neurons to infant stimuli while inhibiting negatively valent neurons (Numan, 2007; Numan, 2015).

Why are estradiol, prolactin, and oxytocin essential for the onset, but not the maintenance, of maternal behavior? A strong possibility is that during an initial maternal experience with infants at parturition, the hormone primed MPOA stimulates dopamine and oxytocin release into the nucleus accumbens. Dopamine and oxytocin co-act to strongly inhibit the nucleus accumbens, which, in turn, activates mechanisms that strengthen the synapses between positively valent amygdala neurons and ventral pallidum (see Fig. 1), causing the development of an enduring attraction between a mother and her infants (Numan & Young, 2015). This process would be akin to the development of long-term potentiation (LTP) between the amygdala-to-ventral pallidum connections. These neural plasticity effects are important because although the physiological events of late pregnancy synchronize the onset of maternal behavior with the birth of the young, in order for the young to survive, maternal behavior must continue after the events which triggered its onset have waned. As I will describe at the end of this paper, similar neural and neurochemical mechanisms may underlie the formation of other types of enduring social bonds in animals and humans.

The Neurobiology of Maternal Behavior and Maternal Love in Humans

Although for most mammals the physiological events of late pregnancy stimulate the onset of maternal behavior, such events are not required in some species: allomaternal behavior, where adult virgin females care for conspecific young, occurs in certain species (Numan & Insel, 2003), and evidence shows that MPOA activity along with dopamine and oxytocin action on the nucleus accumbens are involved (Numan, 2015; Numan & Young, 2015; Tsuneoka et al., 2013). In these species, infant stimuli, in the absence of parturition-associated events, have easy access to MPOA neural circuits, triggering parental motivation.

Hrdy (2009) has proposed that allomaternal behavior was crucial for infant survival during early human evolution, and this may explain why human maternal motivation is relatively emancipated from hormones, which would allow for the adoption of infants by nulliparous women. However, maternal motivation is not all-or-none, and research shows that the endocrine events of parturition do boost maternal motivation in women (Numan & Insel, 2003; Saltzman &

Maestripieri, 2011). Even with such hormonal stimulation, experiential factors also seem to be important for the development of optimal maternal behavior: in monkeys and apes, the mortality rate of infants born to first-time mothers [primiparous females] is much higher than that for mothers who have previously given birth [multiparous females] (Hrdy, 1999). These data lead to the possibility that for those nulliparous women who adopt infants, experiential factors associated with mothering, in the absence of hormones, may enhance maternal motivation over time. Experimental evidence shows that such a process does indeed occur in rodent species that exhibit allomothering (Numan & Insel, 2003; Stolzenberg & Rissman, 2011). Although allomaternal rodents will initially care for young in their home cages, they will not retrieve young in a novel environment. With maternal experience, such retrieval responses do occur.

Brain Circuits and Maternal Motivation in Women

Recent reviews on the neurobiology of maternal behavior in women (Feldman, 2015; Lonstein et al., 2015; Numan, 2015; Rilling, 2013; Rilling & Young, 2014; Strathearn, 2011; Swain, 2011) have shown that when postpartum mothers are exposed to infant stimuli (usually infant faces or infant cries) while in an fMRI scanner, blood oxygen level dependent (BOLD) signals (a proxy for neural activity) increase in the hypothalamus, ventral tegmental area, ventral pallidum, and amygdala, and such increases have been correlated with increases in peripheral blood levels of oxytocin (peripheral oxytocin release from paraventicular nucleus axon terminals in the posterior pituitary is presumed to reflect its central release into brain sites such as MPOA, nucleus accumbens, and amygdala).

These results conform to the animal research, where infants activate MPOA stimulation of the mesolimbic dopamine and oxytocin systems, so that amygdala input to ventral pallidum can be processed to promote caregiving responses. Because of the small size of the hypothalamus, and the low spatial resolution of fMRI, it is difficult to distinguish between different hypothalamic nuclei, such as the MPOA and paraventricular nucleus, but as fMRI technology advances, such distinctions are likely to be made. Since the animal research stresses the importance of MPOA neurons for maternal behavior, it would be important to verify that this core neural region is also important in humans, which would emphasize the evolutionarily conserved nature of the essential maternal circuitry. Also, different neuronal groups undoubtedly play different roles in human maternal responsiveness. By distinguishing MPOA activity from that of the paraventricular nucleus, one might gain insights into the particular functions of each area.

Although nulliparous women may be attracted to infants (Glocker et al., 2009), this is not the same as devoting one's life to the care of an infant. As indicated above, the physiological events associated with the end of pregnancy coupled with postpartum maternal experience, or the maternal experience associated with extensive mother-infant interactions in those nulliparous women who *choose* to adopt, appear to modify brain circuits to boost maternal motivation. There is support for this proposal. Recall that animal research shows that for postpartum females infant stimuli activate amygdala prosocial circuits, while for most nulliparous females, such stimuli activate amygdala aversion circuits. Relevantly, in postpartum women, amygdala BOLD signals increase when a mother views pictures of her infant (Barrett et al., 2011). With respect to infant cries, such stimuli could promote approach and caregiving responses in mothers, but they might also promote annoyance and avoidance, particularly in nonmothers.

For postpartum women, Kim et al. (2011) reported that own baby cries caused BOLD activations in several brain regions, including the amygdala and ventral pallidum, and that such activations were particularly prominent in women who were breast feeding their infant (suckling stimulation activates the oxytocin system). Behavioral measures of maternal behavior (taken outside the scanner at 3-4 months postpartum) also indicated that better maternal behavior (affectionate touch; vocal clarity; mother-infant eye contact; supportive presence; consistency of style) was associated with greater own baby cry-induced activity in amygdala and ventral pallidum.

One interpretation of these findings is that oxytocin, along with other factors, such as MPOA activation of dopamine release into the nucleus accumbens, promoted amygdala activation of the ventral pallidum, which would lead to either imagined (in the scanner) or overt (outside the scanner) proactive aid-giving responses to infant distress signals. In contrast to these findings in postpartum women, Reim et al. (2011) found that while infant cries activated the amygdala in nulliparous women, intranasal oxytocin administration, which would increase oxytocin brain levels, *decreased*

this amygdala response. Careful studies using advanced imaging techniques will be needed to determine whether the amygdala areas activated by infant cries are the same or different in nulliparous and postpartum women. One possibility is that for nulliparous females, infant cries primarily activate negatively valent amygdala neurons that project to avoidance circuits, with the response of these neurons being reduced by oxytocin, while in postpartum women infant cries activate positively valent amygdala neurons that project to ventral pallidum attraction circuits, with this response being potentiated by endogenous oxytocin.

The importance of this analysis for maternal pathologies in human mothers, such as the occurrence of child abuse and neglect, should be considered (McHenry et al., 2015; Numan & Insel, 2003). If periparturitional physiological events and/or extensive maternal experience downregulate avoidance systems and upregulate attraction systems in women, then if something were to go wrong with such mechanisms, maternal behavior could become abnormal. In support, women with postpartum depression exhibit poor maternal behavior and these mothers also show reduced BOLD responses within the mesolimbic dopamine system in response to hearing their own infant crying (Laurent & Ablow, 2012).

My analysis is also important for an understanding of the intergenerational continuity of abnormal maternal behavior ir humans. Children who have been physically, emotionally, or sexually abused, or neglected by their parents, tend to become abusive or neglectful parents when they have their own offspring (Numan & Insel, 2003). For example, approximately 30% of abused children become abusive parents. These human studies, of course, do not resolve whether the intergenerational continuity of abnormal maternal behavior is due to genetic inheritance, the early adverse effects of poor parenting on the child's development, or both. However, experimental studies on rhesus monkeys emphasize the important role of the early adverse effects of poor parenting on the subsequent parental behavior of the affected offspring. Female rhesus infants that are born to known abusive mothers and are cross-fostered to normal mothers near the time of birth grow up to show normal maternal behavior, while approximately 50% of infant females that are born to normal mothers and are cross-fostered to abusive mothers grow up to show abusive responses to their own offspring (Maestripieri, 2005). Such abuse is characterized by bouts of hitting, biting, throwing, crushing, and rejecting the infant.

Multiple mechanisms are likely to be involved in how exposure to abuse and/or neglect causes an infant to develop faulty maternal behavior in adulthood (Numan, 2015). One possibility is that being abused or neglected by one's parent results in a dysfunctional development of maternal neural circuits in the female offspring, leading to abnormal maternal behavior once the affected offspring have their own children (Champagne, 2008; Numan, 2015; Numan & Stolzenberg, 2009). Animal evidence supports such a view. Rhesus monkeys reared without their mother (a model of maternal neglect) have lower levels of oxytocin in their cerebrospinal fluid than do mother-reared monkeys (Winslow et al., 2003). Importantly, rhesus females raised without their mothers tend to abuse or neglect their own offspring in adulthood (Numan & Insel, 2003).

For rats, infants that receive low levels of licking/grooming from their mothers develop lower levels of estradiol receptors and oxytocin receptors in their MPOA when compared to their counterparts that receive higher levels of licking/grooming (Champagne, 2008). Therefore, the MPOA of rats exposed to low levels of licking/grooming as infants would be less responsive to estradiol and oxytocin in adulthood, and this would presumably result in a lower level of MPOA activation of the mesolimbic dopamine system (Numan & Stolzenberg, 2009; Stolzenberg & Champagne, 2015). Significantly, such rats grow up to show low levels of licking and grooming toward their own offspring. Cross-fostering experiments show that these effects are due to early experience and not genetic inheritance.

Brain Circuits and Maternal Love in Women

While subcortical mechanisms (such as those involving the hypothalamus and its connections to the mesolimbic dopamine system) are critically involved in behavioral control (Numan & Woodside, 2010), research has concentrated on cortical mechanisms when investigating feeling states in humans. Human neuroimaging studies have correlated activity within the orbitofrontal cortex and its connections to the insular cortex with a variety of subjective feeling states, including positive emotions and empathy (Berridge & Kringelbach, 2015; Craig, 2009; Engen & Singer, 2013).

Amygdala projections to the orbitofrontal and insular regions may be one route over which various emotions are subjectively experienced (Barbas et al., 2011). Positive feeling states and empathy may trigger approach behaviors and caregiving responses by interacting with subcortical motivational systems: the orbitofrontal and insular cortex project to the medial prefrontal cortex, which, in turn, projects to the hypothalamus (Nieuwenhuys, 2012; Price, 2005). Therefore, an orbitofrontal/insular cortex-to-medial prefrontal cortex-to-hypothalamus circuit could be a route over which subjective feeling states are translated into caregiving behaviors.

Although a rudimentary circuit similar to the one just described may exist in animals, in my opinion, the driving of caregiving behaviors by positive and empathic feeling states most likely fully evolved in human societies, where high levels of cooperation and mutual aid-giving are essential for survival (Numan, 2015). In fact, because the maternal care system is the most elemental aid-giving system, empathic driving of aid-giving behaviors may have first evolved within the context of human mother-infant relationships, with aspects of this neural system subsequently serving as the foundation for other types of strong cooperative social bonds in humans (Hrdy, 2009; Brown, Brown, & Penner, 2012; Numan, 2015; Numan & Young, 2015; see last section of this essay).

With respect to the human maternal care system, I have proposed that infant stimuli reach the orbitofrontal/insular cortex via the amygdala to give rise to feeling states that we could refer to as maternal love, and subsequent inputs to the MPOA via the medial prefrontal cortex may influence overt caregiving responses toward infants (Numan, 2015). This foundational neural circuitry connecting maternal emotion (love) with maternal motivation (attraction toward, and acceptance of, infants) is depicted in Fig. 2.

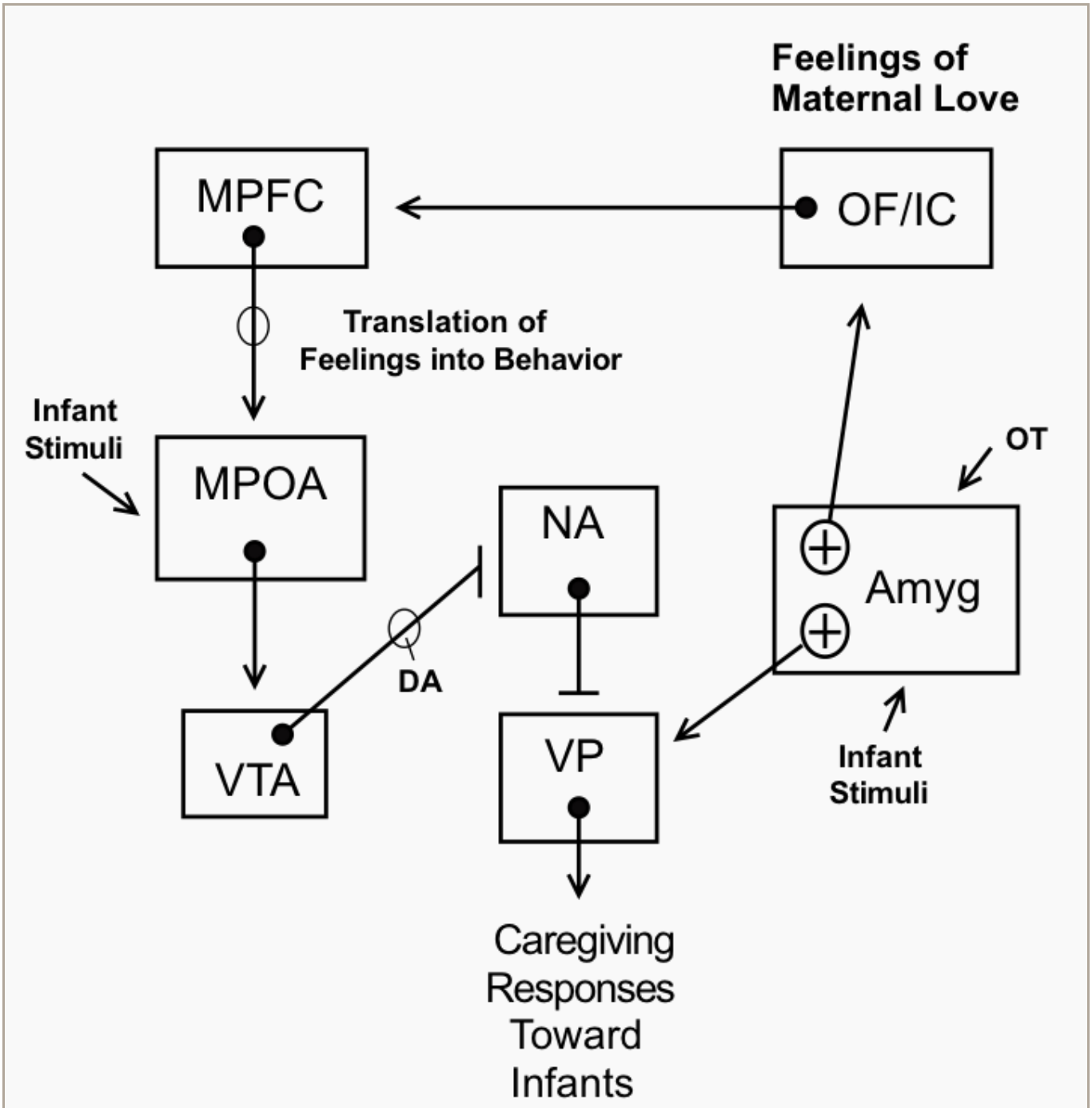


Figure 2: A neural model depicting how feelings of maternal love are translated into overt caregiving responses in human mothers. The maternal behavior part of the model, involving medial preoptic area (MPOA) activation of the mesolimbic dopamine (DA) system, is derived from Figure 1. In the model, positively valent amygdala (Amyg) neurons that are responsive to infant stimuli not only project to the ventral pallidum (VP: part of the behavioral circuit), but also project to the orbitofrontal cortex and insular cortex (OF/IC), and activity at these latter sites is proposed to give rise to feelings of maternal love. In order for such feelings to be translated into caregiving behaviors, the orbitofrontal/insular cortex projects to the medial prefrontal cortex (MPFC), which then activates the MPOA and maternal behavior. Oxytocin (OT) acts on the amygdala to stimulate the output of positively valent neurons, and it undoubtedly acts at other sites as well (see Fig. 1). Neurons ending in an arrow are excitatory, and those ending in a bar are inhibitory. See the text and Numan (2015) for a more information. NA = nucleus accumbens; VTA = ventral tegmental area.

Human neuroimaging studies have clearly shown that the orbitofrontal/insular cortex is activated when mothers are exposed to stimuli from their infants (Minagawa-Kawai et al., 2009; Nitschke et al., 2004; Parsons et al., 2013; Rocchetti et al., 2014), with such BOLD responses being positively correlated with the mothers' reported pleasant mood ratings (Nitschke et al., 2004). Additionally, intranasal oxytocin administration further enhances these BOLD responses (Rocchetti et al., 2014), perhaps because oxytocin potentiates amygdala projections to the orbitofrontal/insular regions.

Finally, when mothers are exposed to their infant's cries, activity within the orbitofrontal/insular regions is associated with increased BOLD responses within the hypothalamus, amygdala, and ventral pallidum (Hipwell et al., 2015). The basic circuit outlined in Fig. 2 is a working hypothetical model. Further, it should be obvious that the full appreciation of the maternal state would be the result of the interaction of this basic circuit with neocortical brain systems controlling higher order cognitive and perceptual processes (Feldman, 2015).

The goal of my analysis has been to show that by integrating animal and human research, one begins to understand the neural circuits and neurochemicals through which maternal love can influence maternal behavior. Dysfunctions within either the motivational or emotional circuitry could have profound effects, leading to abnormal maternal behavior and to the development of pathological feeling states and social behaviors in the infants raised by such mothers (Numan, 2015; Numan & Insel, 2003). Further, by understanding this circuitry, biological (pharmacological) therapies, such as oxytocin administration, might ameliorate certain pathologies of maternal responsiveness.

Paternal Behavior and Paternal Love

In the 5% of mammalian species that are monogamous, the father may directly care for the young. The available animal research shows that when paternal behavior occurs, its neural network matches that for maternal behavior (Dulac et al., 2014; Numan, 2015; Tachikawa et al., 2013; Wu et al., 2014): MPOA, nucleus accumbens, ventral pallidum, amygdala, and oxytocin systems are all involved. Since males are not exposed to the hormones of pregnancy, other factors must activate the *parental* network that males share with females, and these factors include mating and cohabitating with a pregnant female.

The question of paternal behavior and paternal love in men, and whether a paternal neural network matches a women's maternal network is a difficult one. Although many human societies are monogamous (or at least serially monogamous), paternal behavior, involving direct and extensive care of infants, in human societies has historically been considered facultative, that is optional and situation-dependent (Hrdy, 2009). In several human societies, the mother is the primary caregiver, while fathers play a secondary role (see Hrdy 2009 for a detailed analysis). It is possible, however, that when fathers do assume a primary caretaking role, direct father-child interactions ultimately engage many components of the same neural network that regulates maternal behavior and maternal love in women, and such a proposal fits with the animal research on paternal behavior.

As an example, in a neuroimaging study, Abraham et al. (2014) have reported that primary caregiving mothers and fathers show greater amygdala activation in response to infant stimuli than do fathers who assumed a secondary caregiver role. Primary caregivers were defined as those parents who spent the most time directly caring for and interacting with the infant, and in interviews, individuals clearly defined themselves as either a primary or secondary caregiver. In other studies, intranasal oxytocin administration was found to improve father-child interactions during a play session (Naber et al., 2010; Weisman et al., 2012). On the assumption that most of the fathers in these two latter studies were likely to be secondary caregivers, perhaps when fathers assume a primary role in childcare, experience-induced increases in *endogenous* oxytocin improve their parenting. These results suggest that, as for nulliparous women who adopt infants, extensive father-infant interactions may boost paternal motivation. Perhaps MPOA-induced release of oxytocin into brain sites such as the amygdala and nucleus accumbens are involved. For more information about the human paternal brain, see Feldman (2015).

Monogamy and Long-Term Attachment and Love Between Mating Partners

Most mammals are polygamous and mating partners do not form a pair bond. Once sexual activity concludes, the two sexes leave one another and the female rears the young by herself. Therefore, the most common enduring mammalian social bond is the mother-infant bond, which lasts, at least, until the young are weaned. In the 5% of mammalian species that exhibit a monogamous mating system, the partners remain together once mating is consummated, and an enduring bond is formed between mating partners. Because the mother-infant bond occurs in all mammals, while the monogamous pair bond is rare, it has been proposed that the mother-infant bonding mechanism provided the neural foundation for the pair bond (Numan, 2015; Numan & Young, 2015).

Numan and Young (2015) compared the details of the neural mechanisms that underlie the mother-infant bond in animals with the pair bond that forms after mating in monogamous prairie voles. Remarkable similarities were detected, with the amygdala, nucleus accumbens, and ventral pallidum being involved. Evidence also suggests that high levels of oxytocin action within the nucleus accumbens, combined with dopamine release at this site, co-act to promote the synaptic plasticity that allows either infant stimuli or mating partner stimuli derived from the amygdala to persistently activate the ventral pallidum, leading to an enduring social attraction either towards one's infant or mate.

Some of these mechanisms might also contribute to the long-term attachment (and love) that occurs in many human couples (Numan, 2015). Schneiderman et al. (2012) measured blood levels of oxytocin in new lovers 3 months after the initiation of a romantic relationship, and such oxytocin levels were higher than those measured in non-attached single individuals. More importantly, oxytocin levels varied in the new lovers, and those couples that had higher levels of oxytocin at 3 months were more likely to have stayed together in their relationship 6 months later. Further, in an fMRI study, Acevedo et al. (2012) measured the BOLD response in various brain regions when individuals viewed facial images of their partners, or control faces. Some of the subjects were in the early stages of a romantic relationship, while others were in a long-term relationship.

The ventral tegmental area was activated to a greater extent when all couples viewed images of their partner, but the ventral pallidum was more highly active only when subjects in long-term relationships viewed images of their partner. The authors note that this same brain region (ventral pallidum) is active when mothers view images of their own infants. These results fit with the idea that the strengthening of connections between the amygdala and the ventral pallidum, assumed to be due to the inhibitory actions of oxytocin and dopamine on the nucleus accumbens, may contribute to both the mother-infant bond and the monogamous bond. These results also support the view that the maternal bonding system may have provided the basic neural foundation for other types of strong social bonds.

Why do certain spouses remain together for life, while other human couples have more tenuous bonds? Multiple factors undoubtedly influence long-term attachments and love, but genetic and experiential factors are sure to be involved (Numan, 2015; Young & Alexander, 2012). For example, there are different variants of the oxytocin receptor gene (different alleles), and some variants may give rise to oxytocin receptors that poorly bind oxytocin. In addition, as mentioned previously, poor parenting can disrupt the development of neural systems that control parental behavior in the affected offspring. To the extent that the parental circuitry serves as a foundation for other bonding systems, this could lead to the development of weak bonds between an affected individual and his/her partner in adulthood, in addition to poor parental behavior.

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Does True Love Need To Be Unconditional?

Berit Brogaard, Department of Philosophy, University of Miami

January 2016 – Popular movies like *The Notebook* portray heroic old people who continue to love their spouses, in spite of enormous hardship. They love them 'unconditionally', in spite of the fact that an important part of the beloved's brain has become beset with plaques and tangles, in spite of the fact that the beloved thinks the spouse is the pool guy, in spite of the fact that they are incessantly ransacking the fridge for something edible because they don't remember that they just ate a three-course dinner.

But we don't need movies to teach us about unconditional love. We learned it at the first wedding ceremony we attended as little munchkins. "I, Rose, take you, Tiger, for my lawful husband, to have and to hold, from this day forward, for better, for worse, for richer, for poorer, in sickness and in health, until death do us part." This is the love we cherish, indelible love, the love that outlasts permanent changes in personality and bodily function.

Many philosophers view love in this way. One of the most commonly held views in the philosophy of love has it that affection toward another person based on contingent features of the other could not possibly amount to 'true' or 'real love' (Nozick, 1974; Kraut, 1986; Kolodny, 2003; Grau, 2010). Call this the 'transcendent view of love'. Contingent features are features that a person could lose without thereby failing to be the same person, for example, hair color, sense of fashion or wealth.

Contingent features contrast with a person's essential features, that is, features (or a set of features) that a person could not lose without becoming a different person. Which features of persons are essential has been a matter of great controversy, and it is not one we need to resolve here, as we can limit the discussion to features that people on all sides of the debates would regard as contingent, such as superficial physical features.

It is sometimes said that only love that is love of the whole person can be 'true love'. But love inevitably is love of the whole person (Brogaard, 2015). Compare love to fear. Your fear of a Huntsman spider may be based on its hairiness and size. Yet you fear the spider, not simply its hairiness and size. Similarly, your love of your beloved can be based on her chartreuse hair, sensuous eyes or wacky humor. Yet the object of your love is the person, not her features. Yet love can still be based on features.

Two main arguments have been offered in favor of the transcendent view of love, i.e., the view that affection toward another person based on contingent features of the other could not possibly amount to real love. In previous work I have argued that both arguments fail (Brogaard, 2015; Brogaard, in press). One runs as follows (Nozick, 1974):

- Only affection that is unconditional can amount to real love.
- Affection based on contingent features of a person, however, is conditional.
- So, affection based on contingent features of the beloved is not true love.

The first premise, i.e., that only affection that is unconditional can amount to real love, however, is problematic. On the most sensible way of understanding 'unconditional love', love is unconditional only if there are no conditions under which it will fade (as long as you still exist). But on this understanding of 'unconditional love', it is highly questionable that only unconditional love can amount to true love (I shall here set aside the complicated and controversial case of

love for people who don't exist for now).

First, if the beloved were to begin to act in cruel ways toward you, and your affection towards him were to fade, this would hardly be an indicator of whether your affection towards him in the past was really a state of true love. But surely how a person behaves in the future cannot be a guide to the nature of your love for that person now.

Second, besides being plainly counterintuitive, the view that love must be unconditional is at odds with three dominant alternative philosophical theories of love:

1. Love is a union as opposed to, say, a feeling of a union. Aristotle, for example, held this view. He is quoted as saying that 'love is composed of a single soul inhabiting two bodies'. (Diogenes Laërtius, Third Century AD).[1)]The Greek word 'philia' is sometimes translated as 'friendship' rather than the more pertinent '(mental) love'
2. Love is historical, i.e., it involves a belief concerning a relationship (Nozick, 1974; Kraut, 1986; Kolodny, 2003; Grau, 2010). More specifically, love requires a belief to the effect that you are in some sort of relationship with the other person. Niko Kolodny, for example, argues that 'love … partly consists in the belief that some relationship renders it appropriate' (2003, p. 146). That is, according to Kolodny, you do not truly love a person until you believe that you have a relationship with that person that makes it okay to love him or her.
3. Love is a complex emotion (as opposed to a basic emotion), much like grief or jealousy (Rorty (1986/1993), Brown, 1987; Hamlyn, 1989; Baier, 1991; LaFollette 1996; Frankfurt 1999; Badhwar, 2003; Helm, 2009; Brogaard, 2015; Brogaard, in press). Contemporary emotion views hold that emotions, unlike moods, are not a free-floating feeling but feelings or other kinds of attitudes directed at things or events. In this respect contemporary emotions views differ from classic emotion views, such as that defended by William James (1884). According to James, emotions are simply feelings or perceptions of bodily changes. On contemporary emotion views, love is some sort of feeling or emotional attitude towards the beloved, for instance, a deep concern (LaFollette 1996; Frankfurt 1999).

On all three views, love is by definition based on contingent features of the beloved in the sense of being constituted by such features. The feature of being part of a union is a contingent one (union view). So is the feature of being the object of a belief concerning a particular relationship (history view) and that of being the object of an affective state (emotion view). Consider for instance the role played by your contingent memories of the beloved. You cannot have a union with another person that constitutes love without memories of the other person. So, were you to lose all such memories, your union would dissolve. Losing those memories would also mean the end of your beliefs about the other person. So, on the main views of love, love turns out to be conditional: there are conditions under which it will fade. Accordingly, if the first premise of the first argument were true, that would mean that no affection toward another person could count as true love. Hardly a satisfactory result.

It may be thought that 'conditional' should be assigned a different meaning than the one suggested above. It may be proposed that love is conditional just in case it persists only provided that certain events or changes that are specifiable *ex ante* do not happen. For example, you may be the kind of person whose romantic affection towards a partner will persist as long as your partner doesn't cheat on you. This way of articulating the meaning of 'conditional', however, is just a variation of the one provided above. If your love fades following an incident of infidelity, then there is a condition under which your love will fade, which means that your love doesn't transcend all contingent features of the beloved.

Let's turn now to the second argument in favor of the transcendent view of love, which can be articulated as follows (Nozick, 1974; Kraut, 1986; Kolodny, 2003; Grau, 2010):

- If there were such a thing as (contingent) feature-based love, that would make our loved ones replaceable.
- Yet our loved ones are not replaceable.
- So, true love cannot be feature-based.

Here ‘replaceable’ should be understood as follows: if your beloved were replaced by a person with the same contingent features as the beloved, then this should make no difference to whether you love the person or not. Given this understanding of ‘replaceable’, the first premise of the second argument seems correct. If love is based solely on features that others can have, then it should not matter whether the beloved were replaced by a person with those same features.

The problematic premise is the second one (‘our loved ones are not replaceable’). The second premise is consistent only with the union view of love. On the union view, love is a union between two particular people. We can think of a union in the way we think of a set. A set is defined by its members. Sets with distinct members are themselves distinct. Likewise, unions composed of different individuals are distinct. So, on the union view, the beloved is by definition not replaceable.

The union view, however, is fraught with difficulties. Since the union view requires that there are two people standing in a loving relation, the view implies that love cannot be unreciprocated and that there cannot be love of a deceased lover or a hallucinated object. But it is hard to deny that the grief-stricken Anna loves Dr. Malcolm Crowe in the movie *The Sixth Sense*, despite the fact that Malcolm is dead.

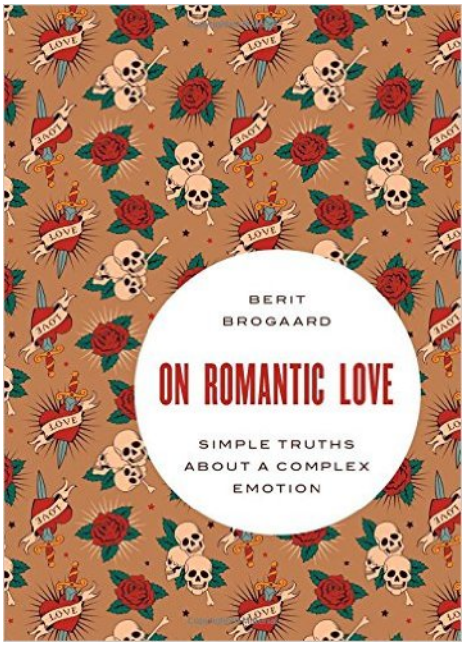
This leaves us with the history view and the emotion view. Both are committed to the replaceability of our loved ones. On the history view, you love another person only if you believe that a particular love relationship exists between you and your beloved. As this sort of belief could persist even if your beloved were replaced by a doppelganger, the history view does not imply irreplaceability. Of course, one could hold a view to the effect that love requires not just a belief about a relationship with a particular person but an actual relationship with another person. This, however, would be a version of the union view, not the history view (as currently defended in the literature).

Turning to the emotion view, it is *not* empirically plausible that our affection for others are emotional responses to essential features no one else could possess (also known as a person’s ‘individual essence’) (Brogaard, 2015). Take the view that a person’s individual essence is the zygote from which we derived (Kripke, 1980). It is rather implausible that your affection is a response to a zygote. Or take the view that a person’s individual essence is a haecceity, a view that was popular among medieval scholars.

A haecceity is an abstract thisness of a person that sets the person apart from other people and that therefore is unrelated to qualities that the person may share in common with other people. It is equally implausible that affection could be a response to an abstract thisness that is not perceivable through the senses. So, on the emotion view, love is a perceived/felt response to either contingent features of the beloved or essential features that others could also possess (e.g., features essential to being a certain type of person, also known as a person’s ‘quiddity’).

But if our emotional responses are based on features others could also possess, this means that we could have the same emotional responses to a replica of our beloved as we do to our beloved. Now, this does not mean that your feelings could not change if you were to learn that your loved one had been replaced by a perfect replica. Over time, your affectionate response toward your beloved may come to be in part a response to your memories of the history you have had together. This would in many cases suffice for explaining why you wouldn’t love the replica (who after all has all the same contingent features as your beloved). But even if love can come to be partially a response to such memories, it could also easily be the case that your love would persist, even if your beloved were replaced by a dop-

pelganger. After all, you might not know about the swap.



In previous work, I have defended a particular version of the emotion view (Brogaard, 2015, in press). On my view, love is a particular (positive or negative) perceived bodily or mental affective response to contingent features of the beloved. This response ordinarily involves a change in physiology (initially, it might involve a change in energy levels, feelings of pleasure and emotional stability) and a percept that the change is caused by a particular person. As in the case of grief and jealousy, the bodily and mental responses people have when they are 'in love' will vary from individual to individual and across time and culture. They will also vary depending on the type of love we are talking about.

Parental love typically feels differently from romantic love, which in turn feels differently from friendship love and attachment love. The valence of love, i.e. whether the bodily or mental responses are represented as good or bad, can vary widely too. Unrequited love can be emotionally, and perhaps even physically, painful. Falling in love, on the other hand, can feel like a state of ecstasy. In fact, love can arise from an underlying brain chemistry that resembles that triggered by cocaine use.

Helen Fisher (2005) conducted a series of fascinating brain imaging studies of the brain chemistry and brain structure underlying new love. She found that serotonin, dopamine and norepinephrine are crucially involved in the initial stages of romantic love in much the same way as they are in cocaine use. When you fall in love with someone, norepinephrine fills you with raucous energy, serotonin boosts your self-confidence and dopamine generates a feeling of pleasure.

If love is a perceived response to a particular rendition of the beloved, as I propose, we can account for unrequired love, love of dead people, love that isn't felt (for instance when the responses are processed below the level of conscious awareness) and inappropriate (or irrational) love (see Brogaard, 2015). I will focus on the rationality of love to exemplify the potential payoffs of my theory. For romantic love to be rational, there must be a good fit between the beloved's qualities and the loving feeling (Goldie, 2010; Brogaard, 2015), and you must accurately perceive the qualities of the beloved that form the causal basis for the love in question. Many different sets of qualities can guarantee this type of proper fit. The set of qualities that I have and the set of qualities that you have may very well make both of us a good fit for the very same partner.

While all qualities of a person are important for determining whether there is a proper fit between the loving feeling and the object of that love, not all qualities are relevant to whether your love misrepresents the beloved in a way that makes it irrational. If you are red/green colorblind, you have difficulties distinguishing red and green. Red and green things look "grayish" to you. So, you may well misperceive your beloved (e.g., her skin color), but your love can still be perfectly rational, despite your color illusion. If, on the other hand, you are in love with a fantastical creation of your beloved instead of your beloved as she really is, your love is irrational.

Consider the 2001 romantic comedy *Shallow Hall*, directed by Peter Farrelly and Robert Farrelly. In the movie Rosemary (played by Gwyneth Paltrow) is morbidly obese, but fat-ist Hal (played by Jack Black) sees her as skinny and falls in love with her. Because Rosemary's being skinny fuels Hal's affection for her, his illusory perception of her therefore contributes to the irrationality of his love for her. So, to emphasize, the idea here is not that there are properties that ought to be irrelevant for love under all circumstances. Which properties are relevant for love will depend on what fuels the affection.

If you have a white supremacist with a peculiar color perception abnormality that makes you misperceive a black person as white, and the person's perceived whiteness is fuelling your love, then your love would be illusory and hence

irrational. This, of course, raises some interesting ethical issues insofar as your love of a white person (perceived correctly) might be rational in the envisaged circumstances. But here we have to keep in mind that saying that love is rational does not imply that the affection ought to happen for the reasons it does, all things considered.

It has often been argued that love cannot be meaningfully said to be rational or irrational (Thomas, 1991; Velleman, 1999; Smuts, in press). Lawrence Thomas, for example, argues that, 'there are no rational considerations whereby anyone can lay claim to another's love' (1991: 474). I agree with Thomas that you are under no obligation to continue to love someone you don't love, even if there is no good reason not to love them. But the view proposed here does not have this latter implication. Love that already obtains is rational if (i) there is a proper fit between the loving response and the beloved and (ii) the love isn't illusory in the relevant respects. If your love for your beloved is irrational, you ought to discontinue the love, make an effort to fall out of love and eschew things that might deepen the love.

These two constraints on rational love, however, don't tell us anything about when it is irrational not to love someone we don't love. They only tell us when it is irrational to love someone we already love. Good reasons for loving your beloved only renders it permissible for you to love her, it does not require that you begin or continue to love her. This is because there never are enough reasons that you ought to love someone, but that there sometimes are enough reasons that you ought not to love or stop loving.

Love is irrational, and hence impermissible, if (i) there is not a proper fit between the loving response and the beloved or (ii) the love is illusory in the relevant respects. But when there is a proper fit and no misrepresentation, then continuing the love is optional, just like it's optional whether or not you want to perform actions that are not wrong. It's optional whether or not you want to raise your hand right now. It's perfectly fine for you to do it. It's a permissible act. Punching someone, on the other hand, is irrational and morally prohibited. Likewise, it's perfectly rational to cease to love a wonderful person but irrational to continue to love someone who isn't worthy of your love.

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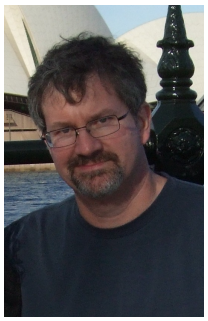
On Emotions And Sentimental Values, With Implications For Affective Science

An Interview With Andrea Scarantino (January 2016)



Justin D'Arms is Professor and Chair of the Department of Philosophy at Ohio State University, Columbus Ohio. He has been a recipient of grants from the National Endowment for the Humanities and the John Templeton Foundation, and of fellowships from the Charlotte Newcombe Foundation, the National Endowment for the Humanities, and the Princeton University Center for Ethics and Human Values. His research on moral philosophy, moral psychology and the philosophy of emotions has been published in leading philosophy journals including Ethics, The Journal of Philosophy, Oxford Studies in Metaethics, Philosophical Studies, Philosophy, Philosophy and Phenomenological Research, Philosophy of Science and The Southern Journal of Philosophy, as well as in many collected volumes. He has been a member of ISRE for twenty years, and has also published in interdisciplinary journals and volumes including Emotion Researcher and The Journal of Consciousness Studies.

Where did you grow up? Did your parents encourage your intellectual pursuits? What were your main interests growing up?

Justin on the beach, circa 1967

I grew up in Ann Arbor, Michigan and Rome, Italy. I loved to read, and my mother was a big influence there. She always had a stack of books to suggest to me whenever I announced I was bored. She is English, and gave me a lot of Victorian books for children or teens that she had read herself as a child. Some of these were pretty weird, in retrospect. I half recommend Hilaire Belloc's *Cautionary Tales for Children* in this vein, though your readers might want to vet it first. As I got older she had me reading a lot of Graham Greene and Evelyn Waugh before I could really understand them, but there was plenty of P.G. Wodehouse too. My father got me interested in history from an early age. He took me all around southern Italy to the archaeological sites he was visiting for his work. We had lots of good picnics at old aqueducts and amphitheaters.

You lived in Italy for five years over the course of your childhood. Do you still speak the language? What are your memories of life in Italy? Have you been influenced by this Italian experience in some important ways?

I do still speak Italian pretty comfortably after a day or two in Italy, though it takes a while for some of the vocabulary to come back. The period I remember best was 1977-79, when I was in my early teens, excited to be independent. It was an incredible place to go through that transition—I was really conscious of the beauty and the history of my surroundings. I wandered all around Rome on my own or with friends, going to museums, parks and cafes, discovering ruins and churches, and trying to flirt with Italian girls. I felt very grown up doing these things on my own as a kid in a foreign language and a big city.

That was a great time for me, but it was a difficult time for Italy. No one could form a stable coalition in parliament, and it seemed as though the government fell every few months. There was political graffiti all over Trastevere, much of it fascist, and sometimes violent demonstrations throughout Rome. This was also the era of terrorist attacks by the Italian Red Brigades. They killed Aldo Moro, the former prime minister, and left his body in the trunk of a car in the middle of Rome. I remember one day when I was thirteen or fourteen the police were fighting with demonstrators blocking the tram I took home from school. I had to get out and find a way home around tear gas and people running

from rubber bullets. This was very scary, but exciting too. When I think about how we parent in the US today, the difference is striking: it's amazing to me what I was allowed to experience growing up in Rome in the 70s.

Young Justin in 1969

What led you to become a philosopher? Are you happy you did? Would you recommend life in academia, and specifically life as an academic philosopher, to your own children?

I was turned on to philosophy during high school, when I visited a friend who had just started at Harvard, and attended his Introduction to Philosophy class taught by Robert Nozick. One hour in that class and I went to University with at least an inkling that I wanted to study philosophy.

From high school on I tended to be more interested in ideas and arguments than in facts about how things work. I was not terribly interested in science until I started to see it as relevant to the questions I cared about, during graduate school. I managed to avoid learning any chemistry in school, because who cared about how things stick together? In retrospect I very much regret not learning more at the stage in my life when things stayed in memory more easily.

Justin with his sister Helena in Rome, circa 1979

Being a professional philosopher has been a wonderful job for me. I love the things I get to think about, write about and teach. And I love being in a discipline in which, for the most part, I can listen with interest to talks across different areas of specialization and appreciate and engage with them. I also love it that I can talk about my work with colleagues who do not read anything in the areas I work on, and get valuable feedback. These are among the things that make philosophy a great discipline.

I wish I could recommend this path to a next generation, but I think the working conditions for most philosophers are not very good, and even at traditionally strong public research universities like mine, they are hiring fewer tenure track faculty who do research in the humanities. Graduate programs are shrinking and there is pressure to hire adjunct faculty. I would like to think that this is a passing moment, but I don't.

Justin at high school graduation with his parents in 1981

You got your PhD in philosophy at the University of Michigan in 1995. What did you write your dissertation on, and what were the most significant influences on your philosophical upbringing at the University of Michigan?

My dissertation was entitled "Evolution and the Moral Sentiments." It defended a sentimentalist approach to evaluative thinking, which I will discuss in more detail in what follows, and an evolutionary understanding of the emotions. My advisor was Allan Gibbard, and I was heavily influenced by his work. But there were a lot of other wonderful philosophers at Michigan at that time, including Stephen Darwall and Peter Railton who were important members of my dissertation committee. I also learned a lot from David Velleman, Elizabeth Anderson, David Hills, and Jim Joyce. Allan and Peter were very naturalistic in their (very different) approaches to metaethics, and encouraged me to make contact with people in other disciplines at Michigan.

At that time, University of Michigan had a very active interdisciplinary research group called Evolution and Human Behavior. I went to all their talks, and most of the influential evolutionary psychologists came through. I also took several classes from Richard Alexander in the biology department, who was great. Randy Nesse from psychiatry was a read-

er on my dissertation, and a very helpful person to talk with about emotions and evolution. I also benefitted from the terrific people in Psychology at UMich: Phoebe Ellsworth, Dick Nisbett, and the late Bob Zajonc who set me on a useful path in my work on empathy. The late 80's and early 90's were a great time to be in graduate school at Michigan.

Your main research interests are in ethics. What sorts of questions do contemporary moral philosophers worry about? What sorts of moral questions are you most interested in?

In the broadest sense, ethics is about the question of how to live. I mean that very broadly, so as to include questions about what to do, what to think, what to want, and what to feel. Ethical judgments are thus practical in two senses. They concern practice—what to do with your actions and attitudes. And these ethical judgments make a practical difference— at least to the extent that our actions, thoughts, desires and emotions are responsive to our conclusions about reasons in favor of or against them. It is partly a psychological question to what extent these actions and attitudes are responsive to ethical judgments. But it is partly philosophical too, inasmuch as it is not just an empirical matter to determine which judgments and attitudes to count as "moral."

Much contemporary discussion in moral philosophy is concerned with debates over what are the fundamental normative concepts. Some think the concept of a *reason* is basic. Some think *ought* is basic. Some think *rationality* is basic. And there are various views about the relations among these. Another big topic is how to understand various apparent norms of rationality, such as a putative rational requirement to do what you believe is necessary in order to achieve your ends or goals. And moral philosophy tends to have a special interest in moral judgment in particular, which is a narrower subject than ethics. Moral judgment concerns the notions of moral obligation and moral right and wrong.

I have been working more on value and ethics in general than on the narrower questions about moral obligation, and right and wrong. Among other things, I am interested in questions about the relationship between psychological facts and ethical judgments. Here are a few: What kinds of psychological states correspond to a person's reaching an ethical conclusion about what to do or an evaluative conclusion about what is good or bad in various ways? How do psychological facts about what people want and feel bear on questions about what they should do? How responsive are various different kinds of attitudes and other psychological states, including emotions, to different kinds of ethical and evaluative judgment? (It is sometimes suggested that ethical judgments are largely idle—that they are just post hoc rationalizations of "alarm-like" emotional responses. I think that is false, though it springs from overstating a grain of truth.)

You have had a long lasting and very fruitful collaboration with philosopher Dan Jacobson from the University of Michigan. Why did you decide to start working together, and have continued doing so over the past 20 years? Do you find it easier to write with Dan than alone at this point? Is there a secret to a successful and long-term intellectual collaboration?

Dan and I were friends before graduate school and we talked about philosophy a lot from the time I arrived in graduate school. Our first joint paper came out of a reading group that we were in together while working on our dissertations. What had initially seemed like a small point got more complicated as we talked it through, and eventually led to a co-authored article:"Expressivism, Morality, and the Emotions" *Ethics* 104 (July 1994): 739-763.

Dan Jacobson and justin D'Arms

Working with Dan is great. What I like most about philosophy is thinking and talking it through with someone in a collaborative spirit. And I love talking philosophy with Dan in particular. I think the fact that we started while we were in graduate school made this easier, because we were both at formative stages in our philosophical thinking, and were being influenced by a lot of the same people and ideas. So we started with a common stock of background knowledge and some shared assumptions—some of which we subsequently came to question in mutual discussion.

I would not say that it is easier to write together, though. Writing goes slower when you have to form a group mind about it. And of course over the years we've had other different influences and come to see some things very differently. But collaborative work remains especially gratifying and enjoyable. I feel very lucky to have such a great collaborator and such a good working relationship.

In a number of influential publications, Sarah Brosnan and Frans de Waal have argued that non-human primates are inequity averse, at least in the sense that they expect equal pay for equal work. In a 'token exchange' experiment, capuchin monkeys were shown to reject a lower quality reward (a cucumber) if their cage neighbor was given a higher quality reward (a grape) for the same work they did. Do you think that the human sense of justice is an evolutionary adaptation from this sort of primitive inequity aversion?

No, I don't, although I have not followed the discussion of these studies closely. My impression is that some follow-up studies have called into question whether inequity aversion per se is the best explanation of what is going on. But in any case, from what I know of it there seems to me to be a problematic conflation going on here. I am sure that various relevant tendencies in our primate relatives are homologous to some tendencies in our own psychology.

But I don't think that this is a good way of thinking about the evolution of *justice*. Anger or frustration at not getting what one saw someone else get is entirely compatible with having no interest in equality at all, much less in justice. A question that would go closer toward seeking an explanation of justice is why we are interested in patterns of distribution in ways that go beyond a concern for our narrow self-interest. (Why are we concerned about *other* people getting equal pay for equal work, for instance?)

Let me offer an analogy. There is a good adaptive explanation for why various animals, including us, care about the well-being of their offspring. Human concern for our offspring is surely caused in part by an evolved psychology some of which we share with other primates and some of which we share with other mammals too. It's also true that we humans moralize parental obligations. We think we and other people ought to care for our offspring. But is the human sense of parental *obligation* an evolutionary adaptation from the primitive impulse to care for one's young? I think that would be an unhelpful way of thinking about it, because it misses what is interesting about adding a moral dimension to a pattern of behavior.

Explaining why we moralize child-rearing seems to require something very different from explaining why we are moved to care for our children. Among other things, it requires explaining why other unrelated people are prepared to invest any interest or resources in sanctioning me if I fail to properly care for my children. What needs explaining is why, over and above generic tendencies to invest in offspring, we have superimposed moral requirements. (I am not saying that this is terribly mysterious—my point is just that this moralization is a separate thing that should get a separate explanation.)

It is quite common for people thinking about the evolution of morality to conflate evolutionary explanations of behavior that we *also* have moral convictions about with evolutionary explanations of our having those moral convictions. I made some of these points a while ago in some papers about certain evolutionary game theoretic explanations of justice that I think had similar problems. Consider a simple bargaining game, described by John Nash. Two players must divide a cake. Each submits a demand for how much to claim. If their claims sum to more than 100% of the cake, neither gets anything. If they sum to 100% or less, each gets what she claimed.

Brian Skyrms showed with some elegant modeling that if you start with a mixed population of different strategies, and you allow strategies to reproduce according to their payoffs, then many (but not all) populations will evolve toward the tendency to demand half the cake. Skyrms called this equilibrium "share and share alike" and suggested that it might be the beginning of an explanation of justice. But if demanding half evolves in a population because it pays best, then it does not need the backing of any social sanctions. It does not need to be moralized. [for more, see "Sex, Fairness and the Theory of Games" *Journal of Philosophy* 93 (December, 1996): 615-627. And "When Evolutionary Game Theory Explains Morality, What Does it Explain?" *The Journal of Conciousness Studies* 7:1,2 (2000) 296-300].

I think that the evolution of justice is best thought about not just in terms of the evolution of tendencies toward certain patterns of behavior. We need to be looking at the psychology underlying the behavior—specifically at the psychology that explains our tendencies to accept and abide by certain kinds of social norms. But even that is not enough, because some social norms are not moralized—for instance because they are treated as merely conventional So an evolutionary explanation of justice, I think, should be investigating our tendencies to back those norms with sanctions of particular sorts. An important difference between moral norms and other social conventions has to do with how we treat violations. Violations of justice are subject to punitive psychological responses, whereas violations of other social norms that are superficially similar will be subject to quite different responses—such as social withdrawal. I believe that there probably are relatively discrete psychological structures that are there because they assist in reciprocal norm enforcement. And I think that this must be because these structures were advantageous to the individual—not just to groups that had norms of reciprocity.

I think the token exchange experiment and the literature surrounding it are very interesting. But more would need to be shown before we treat wanting to get some salient reward that others got as a proto-moral concern. We should not be too impressed by the simple fact that the reward rejected is unequal (if indeed that turns out to be the causally relevant feature). Unless we can see the primate's frustration or disappointment as connected to norms to which the rewarder is somehow being held accountable, I don't think we are dealing with anything like justice.

You have been articulating for several years now, in collaboration with Dan Jacobson, an influential research program in the philosophy of emotions labeled Rational Sentimentalism, which is also the title of your forthcoming book with Oxford University Press. Could you briefly explain what Rational Sentimentalism tries to explain, what are its fundamental tenets and what are its main alternatives?

Some very familiar evaluative concepts clearly depend in some way on emotional responses. Call them "sentimental values." These concepts include *funny*, *disgusting*, *shameful*, and *fearsome*. These are evaluative concepts because thinking that something is funny or shameful is thinking it is good or bad in some way. They are sentimental because the particular ways in which they evaluate things as good or bad have to be understood by way of amusement, shame and so on. Rational sentimentalism aims to explain these sentimental values through understanding their dependence on the relevant underlying emotions.

According to rational sentimentalism, sentimental values are response dependent, and the emotional responses on which they depend are conceptually and explanatorily prior to the values. So we claim that the concepts of being funny and shameful depend on amusement and shame, not vice versa. Likewise for danger and fear—the category of dangerous things is constructed because of the human propensity to fear. Danger is not an explanatory category independent of our emotional responses (for reasons I explain later).

These concepts arose because we humans are prone to those emotions and find ourselves thinking and talking about what things are and what things aren't proper objects of amusement, fear and shame. But these are not just judgments of psychological or sociological fact, about what the speaker or the community tends to be ashamed of, or afraid of. The temptation to interpret evaluative judgments as judgments about the dispositions of a speaker or a community is understandable, but misguided. It is understandable because it offers a clear meaning for these evaluative judgments. If judgments about shamefulness were about what people tend to be ashamed of, there would be ways of measuring when they were correct—and that would be nice, especially to social scientists. But if they were about those questions, then they would not be disputed in all the ways that they actually are.

For instance, when people disagree about whether something like backing down from a fight is shameful, their dispute is not normally an empirical matter, but a disagreement over how to feel about things. They are not arguing about whether they themselves, or some social group or culture, tend to be ashamed of such behavior. They are arguing about whether it is something to be ashamed of. As I would put it, the dispute is best understood to concern whether shame is a fitting response to backing down.

And that is not a question that the disputants would take to be settled by facts about peoples attitudes, not even their

own. (If that sounds odd, consider a teenager who has become convinced that being gay is no worse than any other sexual orientation, but who still feels deeply ashamed of his homosexuality because he lives in a family and society that condemn it. He thinks it is not shameful, but this is not an empirical claim about how he or his culture feels. It's a view about whether this is something to be ashamed of—whether shame is fitting.)

So, according to Rational sentimentalism, judgments of what is and isn't funny or shameful are best understood as devices of emotional regulation. They are about, roughly, what to be amused by or ashamed of. Notice that is a perfectly reasonable topic, and something that it is very much worth discussing and trying to agree upon, even if it is not a matter that can be settled by a survey.

Sentimental values are special because they are tied to emotions that are part of the common human repertoire. These emotions need not be "basic" in various senses—they may be quite complex, open programs in terms of their elicitors, and they need not issue in stereotypical behaviors. Jacobson and I believe that there are some pretty complex pancultural emotional types, including all the examples I have been using so far, and others such as disgust, envy, anger, pride and regret. The fact that these emotions are pancultural ensures that all human beings are invested in their paired values—they are not culturally specific or parochial values. Of course, different cultures and different individuals have different standards of what is shameful, funny and so on.

But the panculturality of shame ensures that these different standards are competing answers to a common question: what conditions or circumstances give one reason to feel and be moved by this specific syndrome of urgent withdrawal, felt social inferiority, motivation to eliminate or conceal the offending trait, and so on. So sentimental values are universal human values, in an important sense.

Of course it is possible to adopt various kinds of philosophical skepticism about sentimental values, but that is true about all values. At least in the seminar room, one can doubt whether anything is truly shameful, or funny, or outrageous, just as one can doubt whether anything is really rationally or morally obligatory. But these sorts of theoretical doubts can be hard to internalize in your life and choices. And in some respects it is even harder to adopt that skepticism as a practical matter about the sentimental values than about morality, for instance. Because of their link to emotions that will be with us whatever philosophical positions we adopt, sentimental values have a special kind of import to us all. So I doubt that any philosophical skeptic can stop using these sentimental value concepts, because of the role they play in regulating and making sense of one's emotional life. In other words, sentimental values can't be fully shrugged off in the way that many philosophers have thought various other values can be.

You have described the *moralistic fallacy* in your work with Dan Jacobson. Can you explain what that is and why it is important?

The moralistic fallacy is the mistake of supposing that reasons why it would be morally good or bad to feel some emotional response toward an object bear on whether that emotional response is fitting (i.e. on whether the object has the particular evaluative feature that it seems to you to have when you are feeling some particular emotional response toward it). For example, suppose you think it would be bad to be amused by a cutting joke made by some wit at the expense of your friend. You think that a good friend should be angry, not amused, at this quip. If you concluded on that basis that the joke was not really funny, that would be an instance of the moralistic fallacy. Maybe it's funny, maybe it isn't, but your moral reasons not be amused by it are irrelevant to that question. Or suppose you have to clean a disfiguring wound on a young soldier. It would be better not to be disgusted by it, for his sake. But that does not diminish how disgusting it is in the least.

The moralistic fallacy is important in two different ways. One is that people actually make mistakes of this sort surprisingly often in thinking about various values. Such mistakes show up in the work of philosophers, and in casual conversations about grounds for amusement, anger, envy and jealousy. People think that it is bad to be envious, and conclude that envy is unfitting—that there is some error in the idea that other people having something can be bad for you, as it seems to be when you are bothered by in the way characteristic of envy. But even if it is bad to be envious, it does not follow that you are not made worse off when your rival gets some award. And this is what would need to be

shown in order to show that envy was not merely ugly but mistaken, or unfitting.

Similarly, even if it is better to turn the other cheek than to be angry, it does not follow that you have not been transgressed against in a way that makes anger fitting. Accusations of irrationality or unjustifiedness of emotions are often based on these sorts of moral views about the emotion. Sorting out the difference between moral complaints about emotions and complaints that are more internal what the emotion itself is concerned with is important to appreciating different kinds of evaluative issues that run through all our lives.

Another reason the moralistic fallacy matters is a little more in-house. It has to do with a popular class of philosophical theories of value. So called Fitting Attitude theories try to understand being valuable in terms of the idea that to be valuable is to be the fitting object of some kind of evaluative attitude. (That is what Rational Sentimentalism says, too. RS is a kind of fitting attitude theory that focuses specifically on emotions rather than other types of evaluative attitude.) The moralistic fallacy creates a problem for all fitting attitude theories, which is a special case of what has come to be called the Wrong Kind of Reason Problem. A standard example concerns admiration, which might be an attitude rather than an emotion. For a person to be admirable is for admiration of him to be fitting, for instance.

People used to think that this idea of fittingness could be cashed out in terms of some simple normative notion. So for instance A.C. Ewing did it in terms of "ought"—he analyzed 'good' in terms of what you 'ought' to have some sort of pro-attitude toward. More recently people have been trying to do it with the idea of there being 'reasons' for the relevant attitude. The moralistic fallacy shows that these proposals won't work without some extra materials, because there can be moral reasons against being amused at the joke that do bear on whether you ought to feel it, but do not bear on whether the joke is funny. (Similarly, there could be moral reasons for admiring your child's musical performance—he needs your sincere admiration—that do not bear on how admirable it is.)

This means that Fitting Attitude theories need a way of saying what kinds of reasons bear on the fittingness of attitudes. And they need a way of doing this without appealing to the values they are trying to explain, on pain of making the theory circular. If you want to explain being shameful by appealing to the fittingness of shame, you had better not explain reasons of fit for shame by saying that they are the ones that bear on whether the thing you are ashamed of is shameful. So Fitting Attitude theorists need to say more about what kinds of considerations are reasons of fit for shame, admiration and so on without appealing to the values we aim to explain. Dan and I have some suggestions about this in the book we are working on. Our initial discussion of the moralistic fallacy is in "The Moralistic Fallacy: On the "Appropriateness" of Emotions" *Philosophy and Phenomenological Research* LXI No. 1 (July 2000): 65-90.

Do you see any areas of overlap between your work on Rational Sentimentalism and standard debates in affective science? More generally, in what ways can the work of philosophers of emotions be of relevance to affective scientists?

Of course philosophers have been learning a lot from work in the affective sciences over the last thirty years or so. I also think there are many ways in which the work of philosophers is relevant to affective sciences, both with respect to theory construction and assessment, and in raising further possibilities for empirical study. I will say a little about an area in which I think that my own work is relevant.

I discussed this a bit in my lecture at ISRE 2015 last summer in Geneva. It concerns relationships between emotions, appraisals and what Richard Lazarus called “core relational themes.” Sentimentalists like me argue that various evaluative concepts are response-dependent—they must be explained by appeal to emotions. But certain strands of thinking in psychology sometimes seem to want to adopt the opposite direction of explanation. They want to suggest that we should explain the occurrence of various emotions by appeal to appraisals that are (typically said to be) temporally prior to the emotion—or at least to those elements of an unfolding emotional episode that the appraisal supposedly explains.

As I understand it, appraisal is supposed to be an emotion-independent psychological event that provides substantive theoretical understanding of what that emotion is in light of what causes it. I have no objection to this general idea. But it can get problematic depending on how you understand what an appraisal is, and in particular on whether you pack evaluative content into it. It’s when appraisals are understood evaluatively that I think appraisal theory gets into trouble. Let me elaborate.

Readers of *Emotion Researcher* know that appraisal theories are various, and often appeal to many different kinds of appraisals. There are some very basic kinds of appraisals, like whether some motion in the environment has an agential (which sometimes just means ‘animate’) cause. Then there are appraisals that relate what is going on to the subject’s background beliefs and aims—such as ‘novelty’ and ‘goal congruence.’ I have no problem with any of these sorts of ideas—of course some interpretation of stimuli, and some sense of their relation to the organism, has to be part of the explanation of the onset of various emotions.

Notice that in each of these cases, the thing that is putatively being appraised—the cause of the emotion eliciting event, or how that event relates to her goals, or whether she has seen it before—is a factual matter the occurrence of which can be fully understood and explained in emotion-independent terms. And that is part of what makes these claims informative, empirical and falsifiable. But talk of ‘appraisal’ is ambiguous, and psychologists sometimes suggest that the *value* assigned to the stimulus, the particular way in which it is taken to be good or bad by someone who is proud or ashamed, angry and so on, is itself a prior cause of emotions. This entails that these evaluations can be understood independently of the character of the emotions themselves. I think that in many of the central cases of emotion, this is a big mistake. It imports a lot of commitments that I don’t think are well thought through, or ultimately defensible. The distinction between evaluative and prosaically factual appraisals is an area where I think the philosophical literature is much better developed than the psychological literature.

So, for instance, lots of psychologists cite Lazarus approvingly for analyzing emotions as involving core relational themes that are a kind of evaluative interpretation of environmental stimuli. Lazarus seems to have thought that in order to get into a given emotional state, one must first “gestalt” the object in terms of one of his core relational themes. To be afraid of something one must first appraise it as an “immediate, concrete and overwhelming physical danger;” to feel guilt for something one did one must take oneself to have “transgressed a moral imperative,” and so on.

Notice that in order for these to be the informative and substantive proposals that they appear to be, you have to think that appraising something as a transgression of a moral imperative, or an immediate physical danger, is a state that can be fully explained without appeal to the emotion it elicits (and, perhaps, that it is a necessary precursor in order for the emotion to be elicited). But when you start trying to explain the content of those evaluations, this turns out to be highly questionable. It is not at all clear what thoughts of moral transgression are about—this is a debated question. One venerable view on the matter is that their content depends essentially on moral sentiments, including guilt. If that is true then Lazarus’s proposal would be highly problematic. Maybe it is not true, but the point is that this is a place where the psychology of emotion is making a bet on the content of moral concepts that its practitioners seldom seem to appreciate.

To see this, suppose that the best theory of morality were a sentimentalist theory according to which the concept of moral transgression is explained as "action befitting guilt." If that were true, then an appraisal theory of guilt in terms of moral transgression would be no more informative than an appraisal theory of disgust that said that disgust requires an appraisal of something as disgusting, or a theory of surprise that says surprise involves a surprisingness appraisal. Notice that while there are a great many appraisal theories, no psychologist to my knowledge has ever offered such a proposal.

Why not, you might ask? Presumably because no one thinks that would be a substantive and interesting theory that told us something important about the nature of surprise or disgust—it would be too circular. I am suggesting that Lazarus's theory of guilt might be equally unsubstantive, and that whether it is or not hangs on a philosophical question about the concept of moral transgression. So appraisal theorists who want to be making interesting, substantive proposals (not circular ones) need to pay attention to the concepts they invoke in describing their appraisals.

Can you say a bit more about how the problem extends to fear, which does not seem to have a content that depends essentially on moral sentiments?

I do think Lazarus's proposal about fear runs into a problem along similar lines. Either "immediate concrete and overwhelming physical danger" turns out to be tacitly response-dependent (and thus not the substantive restriction it aspired to be), or it's demonstrably false that you need to appraise something that way in order to be afraid of it. Demonstrating that takes a long argument, so I will just gesture at part of it. [Interested readers can find a longer version of it online here: http://peasoup.typepad.com/peasoup/2014/02/featured-philosophers-darms-and-jacobson.html.]

The basic thoughts are these: first, Lazarus's talk of 'physical' danger is either empty or mistaken. People can be very afraid that their infidelity will be discovered or that a cybercriminal has accessed their bank account but if those count as physical dangers then we need to remember that physical dangers are not restricted to anything like bodily damage. And, people can be terribly afraid that they will go to Hell for something they have done. So probably we should just agree that fear does not require an appraisal of a physical danger at all.

What about "immediate, concrete, and overwhelming"? That sounds like it is supposed to impose some substantive restriction, but I am not sure what the restriction is, really. People seem to be capable of fearing a lot of different sorts of harms, including some that are pretty unlikely or pretty far off. Moreover, and perhaps more surprisingly, I don't even think the basic idea that fear requires an appraisal of danger is the substantive claim it appears to be.

Once we recognize the great range of things that people do actually fear, we need to wonder what the concern for 'dangers' is really about. You can choke on a cherry. So is eating cherries dangerous? A madman can assault you on the street. Is it dangerous to go outside? If you say yes to these sorts of questions then the concept of danger is trivialized, because everything now counts as dangerous; so the right answer would seem to be no. In order to be dangerous a prospect has to be not just harmful, but sufficiently likely and sufficiently bad. But how bad does a harm have to be, and how likely does it have to be, in order to count as a danger? And how immediate does the prospect of its occurrence have to be? It's not just that these questions don't have sharp answers. It's that it's not even clear what they are about until you remember that we are creatures who fear things and who are capable of thinking about what it makes sense to fear. Without a sense of fear, we would have no interest in categorizing things as dangerous or not, I suggest.

A rational but emotionless alien might be pretty puzzled by our concept of danger. He would see the point in talking about harms, and the probabilities of their occurrence, but he'd wonder why we want to privilege some specific threshold of expected harm as especially salient. He thinks it's rational simply to adjust one's actions smoothly to their expected values, ordering them in a way that maximizes the satisfaction of one's preferences over time. From that point of view, the concept of danger looks to be an arbitrary and irrational one—drawing a bright line somewhere on a continuum of risks that ought instead to be treated as the continuum that it is.

So I doubt that there is a sensible, emotion-independent notion of danger that can be used to explain fear. And if that is right, then the claim that fear involves a danger appraisal is not the substantive, falsifiable claim it appeared to be. It is more like the suggestion that disgust involves appraising something as disgusting—which might be true but is not the sort of claim the appraisal theorist seems to want.

I would argue, instead, that the concept of danger is really about where to set the thresholds for fear—thinking something dangerous is best understood as thinking that it merits fear—that it is fitting to fear it. That is not to dismiss talk of danger at all. There is a real question to be discussed when deciding whether the probabilities of concussion associated with heading the ball in soccer make it dangerous for children. Even once people agree about the probabilities and the damages, they can disagree about whether the numbers are large enough to count as dangerous. But what those disagreements amount to is fundamentally a question about fear, not some fear-independent appraisal. They are disagreements over what merits the syndrome of attention, control precedence, action tendencies and prioritized goals that are characteristic of fear.

Competing views about what's dangerous in such cases are best understood as competing attempts to regulate fear with standards that apply to both parties. So we should not think that we understand fear better when we say that fear requires an appraisal of something as dangerous. Instead we should understand appraisals of danger to be assessments of something as meriting fear. Of course it is possible that I am wrong about all that. But the more general point is that psychological theorizing about fear that takes the idea of a danger appraisal for granted is risky, and likewise for a range of other evaluative appraisals. Such claims are at risk of being trivial in ways that are not immediately obvious. Determining whether they are trivial or are instead the substantive, falsifiable proposals they aspire to be requires getting clearer about the terms in which the appraisals are described. I think that more engagement between philosophers who think about evaluative concepts and psychologists who think about the role of evaluative thinking in affect would be salutary.

That's helpful, thank you. Do you see other points of contact between your philosophical work and the concerns of contemporary affective scientists?

I do. The topic of emotion regulation has been gaining lots of traction in affective sciences lately, and this is something I have interests in as well. Much of the extant literature is about regulating emotions for utility—whether to feel better, to feel emotions that motivate adaptive behavior, or to get along better with others. James Gross's paper "Emotion regulation: Affective, Cognitive and Social Consequences" (Psychophysiology, 39 2002, 281–291. Cambridge University Press) is a good entry point into this literature, which looks at many different ways in which people can regulate, most of which assume some sort of utility-based goal for the different forms of regulation.

I am interested in some other kinds of regulation that are not regulation for utility. In particular I am interested in emotional regulation by values. Let me explain what I mean by that. [I discuss these issues further in a recent paper: "Value and the Regulation of the Sentiments" *Philosophical Studies* Vol. 163 (2013)]

You might be better off if you were not ashamed of anything. Or you might be better off if you were ashamed of some things that you are not ashamed of—perhaps because other people are contemptuous of those things and a bit of

shame would make you more likely to conceal them and thus to avoid certain social costs. Of course those considerations of utility matter to what steps it makes sense to take in order to regulate your shame. But most of us also have an independent interest in being ashamed only of those things that we think are actually shameful.

Moreover, it matters to us to be ashamed of those things—not to be shameless under all circumstances. At least I think it does—it certainly matters to me. So I, at least, have an interest in regulating my shame not just on the basis of what is best for me, but on the basis of what is shameful by my own lights. This is one version of what I am calling *regulation by values*.

It also matters to me to be right about which things are shameful—I want to be ashamed of the things that are actually shameful, not ones that I mistakenly think shameful due to social norms that would not stand up to scrutiny. So I am interested in having an emotional sensibility that is sensitive to good reasons for feeling some ways rather than others. In other words, I am interested in trying to see to it that my emotional sensibilities, or perspectives, are not mistaken—that the things I am prone to be ashamed of are shameful. This is a second kind of regulation by value. (Compare two regulative issues for a cooling system: 1) Does the system succeed at maintaining the target environment at the system's set point? 2) Is the set point that the system is trying to maintain correct—i.e. is it set to the right temperature?)

These points raise several questions that are ripe for more study. To what extent are people in general concerned with regulating their emotional responses for value in either or both of these ways? I would love to see more empirical work on that question. And, how effective is such regulation? In particular, how effective is ethical reflection on the norms that one has internalized in changing a person's propensities to shame? I know of some work on this topic, by Jonathan Haidt and his collaborators, that takes a pretty pessimistic view of the prospects for thinking to unseat affective tendencies. (Haidt, J., & Bjorklund, F. (2007). Social intuitionists answer six questions about morality. In W. Sinnott-Armstrong (Ed.), Moral psychology, Vol. 2: The cognitive science of morality (pp. 181-217). Cambridge, MA: MIT Press.) But their evidence for this claim is very limited, and the main part of it (Haidt's "dumbfounding" studies) has been widely criticized on a variety of methodological grounds.

Shame is just one example of regulating by values, and we can think of all of the questions I have been raising above in more general ways. We can ask about the regulation of fear—to what extent can we shape it so as to make it more responsive to what we think about dangers? We can also ask how widespread, and how effective, the phenomenon of regulation by value is across the range of affective states. And I think some cross-cultural comparative work on this topic would be very interesting for building a general theory of different kinds of emotion regulation.

In my own case, regulation by values plays a central role across a broad range of emotions. For instance, I am even interested in being amused and disgusted by the right things—things that are funny or disgusting, respectively. In this respect I may be more unusual—this may be a kind of gourmet sensibility. But that too is an empirical question—to what extent people care about having fitting feelings with respect to amusement, disgust, and other feelings that are (typically) more aesthetic than moral. Note that regulating one's amusement for funniness is quite different from regulating it for utility. Of course one can do both, but they sometimes compete.

Reflecting on how amused you were by the boss's joke at the party, you might realize in retrospect it was not that funny. Your amusement was adaptive. It need not have been insincere; it's just that in retrospect you realize that the joke was pretty weak. In one way you might be disappointed in yourself—feeling that you ought to be more discriminating. In another respect, though, you could be glad that you reacted as you did, insofar as your sincere amusement pleased your boss.

You have written on empathy, envy, and regret. Why did you get interested in these emotions in particular? How do you define them? Do you think empathy is always good and envy and regret always bad?

The way that I think about empathy is not as an emotion but as a way of acquiring various different emotions. I define mechanisms of empathy as ones that function to influence the emotions of one person—the observer—so as to produce some kind of congruence between these emotions and those of another person—the model. To say that someone is empathizing with another person, then, is to say that she is being influenced by such a mechanism. Some em-

pathy involves perspective taking, including simulating the model's position and thereby coming to feel from, as it were, her perspective—this is the kind of empathy most philosophers have been interested in. But other empathic mechanisms involve contagion—catching the emotions of others, for instance through unconscious mimicry and feedback.

My interest in empathy came from the idea that, as a general matter, emotional responses to the world are better informed to the extent that the subject has actual or imaginative acquaintance with a variety of different humanly possible ways of feeling about things. If you are acquainted with what it is like to offend someone accidentally, and also acquainted with what it is like to be offended by someone who did not intend to offend, your responses are to that extent better informed than they would be if you have only inhabited one of these perspectives.

I argued ("Empathy and Evaluative Inquiry" *Chicago-Kent Law Review*: Symposium on Law, Psychology and the Emotions 74 No. 4 (2000): 1467-1500) for the somewhat surprising thesis that emotional contagion creates pathways to evaluative knowledge that simulation can't, by playing a positive role in developing better informed emotional sensibilities. Bringing your own sensibility to bear on someone else's circumstances through simulation limits the range of possible responses you could have to the ones that your sensibility would generate in those conditions. If you would not be offended, in her circumstances, then you will not know what it is like to be her in her circumstances simply by simulating.

Whereas contagion gives you vicarious access to the sensibilities of another, and that opens up some novel possibilities. You can feel what it is like to be offended by something that you yourself would have shrugged off, for instance. Appreciating that can put you in a better position to think about whether the treatment merits offense—whether it is really offensive. That's not to say that either simulated or vicarious empathy is always good, of course. It can generate ugly or unjustified responses too.

Now to envy. I understand envy as an aversive emotion that focuses the envier on something that a rival has, and motivates the envier to outdo or undo the rival's advantage. I suspect that this is a natural emotional kind that will prove to be a pancultural emotional syndrome involving some of the classic Frijdan features of control precedence anc goal prioritization. One result of thinking about envy in this way is that some of what gets called envy is left out.

Some people say that they envy someone's house when all they mean is that they wish they had such a nice house. If it doesn't pain you that he has it, it is not envy in my sense. And if you would not feel better were he to lose it, even though you gained nothing, then it is not envy. That's not to say that everyone who envies would actually take steps to destroy the rival's advantage, or even that they must experience a desire to do so. But that's because well-socialized people don't act on all their motivations, and sublimate some of them.

So understood, envy is essentially rivalrous, and it only seems to make sense insofar as positional goods like status matter. Put in terms of fittingness, envy is fitting only if the difference in position or possession between the envier and the rival is bad for the envier. Some philosophers think that positional goods don't matter, and thus that envy is never fitting. But I find that hard to believe. If it were really true that positional goods don't matter, then it would not matter to be the best, or among the best, at anything. I think that we should accept that positional goods are of value for humans, and that envy can sometimes be fitting.

I grant that, on the view I am offering, envy is somewhat morally unattractive. It involves being bothered by what other people have, not for moral reasons but for competitive ones. And it involves a desire that others lose something even if you get nothing else as a result. That's ugly. But just because envy is morally ugly does not mean that it is unfitting: it does not mean that the envier is making a mistake in feeling that the rival's position is bad for him. To infer the unfittingness of envy from its ugliness would be another example of the moralistic fallacy! I actually made a couple of these points in an old issue of Emotion Researcher, dedicated to "Nasty Emotions." A somewhat less opinionated discussion of the topic is my entry on Envy in the online Stanford Encyclopedia of Philosophy.

The work I have published on regret, with Dan Jacobson, relates to its connections with rational choice. We are

focused on the emotion that is directed at one's own past action and involves tendencies to chastise oneself for a mistake and form intentions to act differently in like occasions in the future. Is regret bad, so understood? I don't think so. Rudiger Bittner has argued, following Spinoza, that regret in this sense is always "irrational" because there is no point in adding the further misery of regret to the costs of one's error. But even if that were true, there is an important respect in which regret would make sense when in fact one has made a mistake—it would be a fitting reaction, even if an unfortunate one. Moreover Bittner's claim is surely not true. In fact. he offers no evidence for his assumption that we could learn from our mistakes just as well without the reinforcement of regret. I suspect this Stoic idea of a regret-free existence would be a recipe for disaster for human beings.

Dan and I were interested in the question of whether and how the (correct) anticipation of potentially irrational regrets affects the rationality of choices. Suppose you face a choice situation where the expected value of options A and B are (as nearly as you can tell) tied on the merits. But option A is also such that if you don't choose it, you know you will regret that (reasonably or not), whereas option B is not like that. This could be because A is a once in a lifetime opportunity, but it's quite unclear whether you will actually enjoy it. (For me, the prospect of a trip to work with a marine biologist friend collecting specimens for a month on a South Pacific atoll had these features, but obviously these things are personal.) Whereas B offers lots of predictable but familiar goods. The question is, if the options seem to be otherwise tied, all things considered, does it make sense to let the anticipated regrets swing the balance in your decision?

Suppose that you think it can make sense, as we do. Then the funny thing is that the regrets become self-justifying. For consider: I stipulated that the options are roughly tied, on the merits. This means that neither would be a mistake. So it seems that it does not make sense to feel regret, whichever choice you make. But I also stipulated that as a matter of fact you know you will feel regret unless you take option A—it is just that kind of case. So far, then, we are just anticipating a predictable but unjustified feeling. Predictable but unjustified feelings are common, like the tendency to blame the messenger or to be embarrassed even by positive social attention.

But now consider that, if the options were tied on the merits, and we then *add in the regret you will predictably feel if you forego option A*, then it seems that it actually becomes better to take option A than option B after all. So it would be a mistake to take B after all, and you would be right to regret choosing it, if you did! This means that the predictable regret justifies itself, in a sense. Were it not for the fact that you know you would feel it for choosing B, you would have no reason to prefer A. But since you do know you will feel it, it really is a mistake to choose B, and thus the regrets you will feel are fitting after all.

We use this argument as a springboard into further discussions of how regret can make actions choiceworthy or mistaken in our paper "Regret and Irrational Action" in David Sobel and Stephen Wall, eds., *Reasons for Action* , , eds. (New York: Cambridge University Press, 2009) pp. 179-199.

Has the experience of being a father and a husband affected how you think of emotions and morality, and if so how?

I am in the thick of it, with two teenage daughters. What I think about it today is this: My children are not entitled to equal Kantian moral respect—they are not autonomous self-governing agents even to the extent that most adults are (whatever extent that is). But they are already fully equipped to make me feel guilty for saying that, thinking it, or acting upon it. They can debate about what they ought to be allowed to do with the best of us.

Another thing about parenthood: I lost the ability to appreciate certain kinds of dark fiction and sick humor involving bad things happening to innocent children. Some would say this is an improvement in my sensibilities due to greater maturity, but I disagree. I think my new patterns of response are good to have under the circumstances, but involve a kind of blindness to certain sorts of aesthetic and comic value. (My wife wandered by as I wrote that, and says I am a lunatic.)

What is your view on the increasing competitiveness faced by philosophers when they try to be admitted to a PhD program, get a tenure-track job, and get tenure? Do you think more competitiveness has led to better

philosophy being produced on average? Do you think some changes are required in the way academic philosophy is organized at various career levels?

Good questions. I don't know. I am hugely impressed by the high quality of so many of the young PhDs in philosophy these days. They are really great. They seem to emerge from graduate school with a much better sense of how to write a paper that constitutes a contribution to a debate, and how to construct an engaging talk, than most of us did when I got my degree.

I do worry a little that pressure to publish more at earlier stages leads to too much philosophy being published and to ever more specialized debates. But I am not one of the pessimists who think that we are no longer a profession that can recognize or welcome new voices or insights. Philosophy seems to me vibrant and increasingly open to different kinds of projects. It is in some trouble in the United States due to various cultural and economic forces at work here, so I am not at all convinced it affords good professional opportunities to many people going forward. But that is a different issue.

You were one of the three keynote speakers at the recent ISRE 2015 conference in Geneva, jointly with Tania Singer and Jennifer Lerner. What sense did you get of where emotion theory is heading from attending talks at the conference?

One main impression is of the breadth of work being done and the diversity of topics. Neuroscience of affect is clearly expanding, as it should be. There continues to be a great deal of work on emotion expression. And there were lots of talks on emotion and language, on regulation, and on appraisals. I really enjoyed Jennifer Lerner's talk, but did not get to see much else on emotion and decision research. That's a really lively area, and I have long been a big fan of her work.

There also seemed to be a lot of people working on emotion in relation to identities in various different senses, from very different directions and disciplines. There is talk of emotions in relation to a sense of self, a sense of personal responsibility, as well as various "social identities" and forms of "identification" with others. My sense at the moment is that while there is a lot of interesting work being done there, much of it is in distinct intellectual silos. If someone works out how to map the conceptual interconnections of those research projects, I think emotion and identity might prove to be an interesting interdisciplinary subfield. But perhaps that has already been done well and I am just behind the curve here.

Once I looked at the whole program it was clear that my aspiration of trying to drop in all over the place to get a sense of the field as a field was not really realistic. I tried to stretch myself a little, and go to some talks outside the areas I know best. But the poster sessions were an easier way to get a sense of the variety of things going on in a quick way. I thought a lot of those posters were terrific, and it looks like the future is bright. Most of the talks I attended were by philosophers, and there was a lot of very interesting material on emotion and perception, emotion and knowledge, and emotion and value.

What are your hobbies?

I like cooking and finding good food made by others, and I like trying to match wine to food. I cook a lot of different sorts of things, but Italian food is my home base and the area where I feel most comfortable throwing things together without a recipe. I also like to play squash, which I thought was better for my health than those other hobbies. I started playing in tournaments in my forties and have enjoyed that a lot, but injuries have slowed me down recently. Reading fiction is still a hobby, when there is time.

I also enjoy traveling very much, especially with my family. I've tried to include them in some of my professional travel. Family highlights include trips to Italy, Australia, Korea and Cambodia. My oldest daughter has been studying Chinese for a few years now, and we are going to take a trip to China in 2016.

You have lived in Columbus, Ohio since 1995, and you now hold the position of Professor of Philosophy and

Department Chair at Ohio State University. What do you like and what do you dislike about living in Columbus? What are a handful of your favorite restaurants in town? Do you enjoy cooking, and if so do you have a favorite recipe to share?

Justin tasting a green ant in Queensland 2008

Columbus has lots of important but unglamorous virtues. It's easy to get around, people are friendly, and it is big enough that there are interesting new social groups to discover and new restaurants opening up all the time. It is one of those cities that allowed its center to be gutted and freeways to occupy its riverfront, but it has undergone a huge redevelopment and it is a lot more attractive now than when I moved here in 1995. Living in the middle of the city I can bike to work easily and walk to lots of restaurants, bars and coffee shops. The local and artisanal food scene has been growing like mad, and new craft breweries open all the time. I do wish we had more direct flights to the west, though. And while we have a lot of good Asian, African and South American places, we need more good Italian food.

For a visitor to town, I recommend the Northstar as a high quality casual place, or its sister Third and Hollywood for something a little nicer. Locals should check out La Tavola, the closest thing I know here to authentic Italian cooking.

My recipe is for a meat sauce for pasta—sorry, Andrea, I know this means you won't be trying it. This sauce makes for a delicious meat lasagna, in combination with béchamel sauce and Parmigiano Reggiano. That's my family's favorite dish that I make. And it is also nice just served with pasta and the cheese. I make it in large batches so as to do both, and because it is a bit of a pain to make. It freezes well for three to six months if you don't use it all, or the quantities below can be reduced. Here is the recipe:

Justin's Meat Sauce

I cup each of finely diced onion, carrot and celery

2/3 lb of chicken livers (the secret ingredient)

a large handful of dried porcini mushrooms, reconstituted with boiling water

½ bottle white wine

2 cups chicken stock

1-2 cups whole milk

a 6 oz can tomato paste

salt & pepper

nutmeg

Brown the meat in separate batches in the heavy bottom pot, removing when browned to separate bowl. Soften the onions in butter or olive oil (both is best) on medium low heat. When they are beginning to soften add the carrots and celery, cook another five minutes until all are starting to soften. Add all the browned meat and turn up the heat. Brown this all together, stirring occasionally. When it starts sticking to the bottom of the pan, add half the wine and deglaze. Repeat that process with the other half the wine and then with the stock, half the stock at a time. This usually takes about half an hour.

Meanwhile, sauté the chicken livers in a separate pan. When the chicken livers are firm, remove from the pan and dice

them up. Dice up the reconstituted porcini.

Once all the stock has been added and the pan deglazed several times, turn down the heat, add the milk, the chicken livers, the porcini, and cook at medium low for five minutes. Stir in the tomato paste. Add salt, pepper, and a little nutmeg. Turn down to low, partially cover, and allow to simmer for about an hour, stirring occasionally.

One mustn't make this very often, but we like it when we do.

What are you working on these days?

I'm trying to finish up that Rational Sentimentalism book with Jacobson, while wrangling with my University to get more support for our department's research and graduate programs. We are working on a chapter on emotions right now, which will defend a theory of certain natural emotions as a special kind of motivational state. This is very close in spirit to your motivational account, Andrea, though we disagree on some of the details. Our thinking was influenced by our conversations with you, and by the wonderful work of Nico Frijda that you first introduced us to many years ago now.

Please list five articles or books that have had a deep influence on your thinking

The Emotions, Nico Frijda

Wise Choices, Apt Feelings, Allan Gibbard

Reasons and Persons, Derek Parfit

*"*Freedom and Resentment" P.F. Strawson

Various essays by Bernard Williams, including *"*Moral Luck"

What do you think are the most pressing questions that future philosophy of emotions should be focusing on?

I'd like to see more work on the motivational role of emotions. I agree with your diagnosis that the main rivals in philosophy have been some kind of cognitivism and a feeling theory, and that neither explains some of the central emotional phenomena, which are motivational.

I also think philosophy of emotions needs to be better integrated with more areas of philosophy. Connections tend to run more toward moral philosophy, and we need to be learning more from other areas, especially philosophy of mind and perception, and epistemology. That is starting to happen, but in some ways I think that philosophy of emotion has been a bit insulated from the most sophisticated developments in those other areas. It will make more progress as we bring over more tools from other parts of the field. At the same time, we need to continue to look outside philosophy to the affective sciences. It is hard to keep abreast of all of this at once, but I think those who come closest to doing so will be writing the work that I most want to be reading in philosophy of emotion over the next decade.

On Emotions and Their Role in Morality

Piercarlo Valdesolo, Department of Psychology, Claremont McKenna College

January 2016 – The research my students and I conduct at the Moral Emotions and Trust (MEAT) Lab at Claremont McKenna College centers primarily on the influence of specific emotional states on social or moral judgment and behavior. My interest in this topic began early in graduate school when I first read Jon Haidt's paper on the Social Intuitionist Model (Haidt 2001) and Josh Greene's paper on emotional engagement in moral decision making (Greene, Sommerville, Nystrom, Darley, & Cohen, 2001).

These papers argued that intuition and emotion play a major role in shaping moral decisions and represented a paradigm shift in a field traditionally dominated by rationalist models (e.g. Kohlberg). As someone who had entered graduate school interested in exploring the nature and function of social emotions like jealousy and gratitude, I saw an opportunity to link these emerging views in moral psychology with emotion research. As a result, my earlier work focused on demonstrating the causal power of emotion in moral decision-making, specifically in the context of a dual-process model of moral judgment wherein intuitive and deliberative processes interact to predict moral judgment.

For example, in my first publication (Valdesolo & DeSteno, 2006) I reported the effects of manipulating participants' emotional states prior to responding to the well-known trolley problems. These fictional problems have customarily been used to test the mechanisms underlying moral judgment, specifically the relative influence of intuitive and emotional processes compared to more deliberative and reasoned processes. In the standard trolley case, a runaway trolley is hurtling down the tracks towards five workmen. If it continues on its present course it will strike and kill these five men. Participants are then asked whether or not it would be morally appropriate for an observer to try and intervene to save the five workmen.

In the "switch" case, the observer is standing next to a large switch that would redirect the trolley onto a separate track where it would strike and kill just one workmen. In the "footbridge" case, the observer is standing next to a large individual on a footbridge overlooking the track and could save the five workmen by pushing this stranger into the path of the oncoming trolley, killing him while also blocking the train. In the switch case participants generally indicate that it would be appropriate to divert the trolley, saving the five and killing the one. But in the footbridge case, participants generally indicate that it would be inappropriate to kill the large stranger to save the five workmen.

Josh Greene's work had previously argued that participants' switch from utilitarian decision-making in the switch dilemma (saving the maximum number of lives) to deontological decision-making in the footbridge dilemma (respecting an individual's right not to be killed) was rooted in an intuitive/emotional aversion for the particular kind of action required in the footbridge case, namely pushing a large stranger to his death. It just *feels* wrong to push a stranger, and this aversion to direct harm trumps the utilitarian concern of saving more lives. But it doesn't feel wrong to flip a switch, so utilitarian concerns win out in the switch case.

I took this general explanatory strategy for granted, and started exploring the effects of manipulating the decider's baseline emotional state on the decision taken. In particular, building off insight from the affect-as-information model (Schwartz & Clore, 1996), I hypothesized that manipulations of emotional context could temper the intuitive/emotional aversion people have towards pushing a large stranger to his death, and consequently affect participants' willingness to endorse harmful actions.

On the affect-as-information model, people consult their emotional states as cues towards how they should decide or behave, since their emotional states are assumed to inform them of the value of possible alternatives. This raises the possibility that emotions that emerge in one context may affect decisions in a completely unrelated context, potentially leading to inappropriate decisions. For example, the anger and frustration elicited by a long and difficult workday can spill over and lead to inappropriate behavior towards our spouse when we get home.

In line with this idea, I tested whether eliciting contextual positivity prior to making a moral judgment would bleed over into subsequent moral judgments and cause participants' to be relatively less averse to the thought of directly harming a stranger. In short, we had participants watch either a neutral documentary film or an amusing Chris Farley sketch from Saturday Night Live prior to responding to the trolley dilemmas, and found that participants in the positive mood condition showed significantly greater proportion of utilitarian judgments than in the control condition. Giving people a feeling of positivity prior to judgment significantly increased their willingness to push the stranger (they didn't *feel* as bad about it when consulting their emotional states), revealing the causal influence of emotion on moral judgment.

My subsequent work in this area explored the phenomenon of *moral hypocrisy*. Why is it that people so readily excuse their own or their in-group members' immoral actions while condemning the identical actions of others? I suspected that it had to do with the overriding motivation to preserve an image of the self or one's group as moral, and the effect such motivation has on reasoning about moral transgressions. In other words, our desire to see ourselves and our in-group as "good" no matter what motivates us to justify our failings, a courtesy we do not extend to the identical moral transgressions of others.

Across two studies we demonstrated that moral hypocrisy, instantiated when individuals' evaluations of their own moral transgressions differ substantially from their evaluations of others' identical transgressions, extends to the group level (Valdesolo & DeSteno, 2007) and is primarily driven by differences in consciously motivated reasoning when judging self vs. other (Valdesolo & DeSteno, 2008). In other words, hypocrisy exists both for judgments of self vs. other and for judgments of in-group vs. out-group and it results from a discrepancy in how we *reason* about transgressions and not how we *feel* about transgressions.

Though it may not be particularly surprising that people judge hypocritically across groups that are defined by long-standing conflict (e.g. liberals vs conservatives), we showed that this tendency towards self and in-group leniency exists even in minimal groups created in the lab (people wearing red wristbands vs. blue wristbands; see Figure 1). Furthermore, a dual process model of moral judgment leads to competing predictions regarding how hypocrisy might emerge. The first possibility is that hypocrisy could be driven by discrepancies in our intuitions about moral actions committed by different targets. We might have an automatic aversion towards unaffiliated and outgroup others' morally questionable actions but have an automatic positivity bias when it comes to our own or our group members' actions.

Alternatively, we might have automatic aversions to morally questionable actions regardless of the identity of the actor but only engage in conscious justification and rationalization of our own and our group members' transgressions. Manipulating cognitive load during moral judgment allowed us to tease apart these competing possibilities, and the data supported the view that hypocrisy is driven by differences in the degree to which we engage in motivated reasoning, as opposed to differences at the intuitive level (see Figure 2). In a nutshell, constraining people's ability to reason about the moral transgressions eliminated hypocrisy.

More recently my work has focused on the structure and function of specific moral emotions. For example, in a study looking at the role of low-level cues towards similarity in triggering compassion and altruism, we found that merely moving in synchrony with a novel interaction partner in the lab (compared to moving asynchronously) was enough to elicit greater compassion and helping behavior when that partner was later in need (Valdesolo & DeSteno, 2011). In a study exploring *awe*, we supported previous research tying this state to the experience of feelings of uncertainty (Griskevicius, Shiota & Neufeld 2010; Shiota, Keltner & Mossman 2007).

Generally speaking, awe is thought to be evoked when in the presence of stimuli that are perceptually vast and that

existing mental structures fail to make sense of (e.g. gazing at the stars and contemplating the vastness of the universe, witnessing the destructive force of a natural disaster; c.f. Keltner & Haidt, 2003). Such stimuli tend to trigger feelings of uncertainty and ambiguity, and motivate individuals to search for explanations and meaning. One means through which individuals satisfy these motives is a greater belief in the power of causal agents i.e. *agency detection.* In our studies, we demonstrated that awe decreases tolerance for uncertainty and increases belief in the power of causal agents (Valdesolo & Graham, 2014). This relationship between awe, uncertainty, and agency detection was reflected in both an increased belief in the power of supernatural forces (i.e. karma, God) as well as an increased tendency towards perceiving numerical digit strings as generated by humans, as opposed to being randomly generated.

While I continue to explore both the processes underlying moral judgments and the structure and function of specific moral emotions, I have also become interested in the relationship between recent dominant theories of morality and long-standing theories of emotion. Moral Foundations Theory (MFT) (Haidt and Joseph 2004; Graham, Haidt & Nosek 2009) suggests that morality can be explained through a set of distinct foundational intuitive concerns (e.g. harm, fairness, loyalty, authority, purity). These concerns are thought to be universal (though variably expressed across cultures) and the result of evolutionary pressures relevant to adaptive social living.

This perspective shares some theoretical roots with Basic Emotions Theory. BET argues for emotions as distinct and universal psychological processes shaped by evolution to respond to particular kinds of adaptive concerns. Just as BET defines emotions as distinct causal mechanisms that demonstrate consistent and specific relationships with inputs and outputs (e.g. innate and universal affect programs for disgust, anger, fear), MFT defines morality as resulting from specific correspondences between moral content and psychological experiences (e.g. innate and universal responses to violations of purity or loyalty). In short, MFT and BET share the view that understanding the evolutionary challenges faced by our ancestors can shed light on the emergence of, respectively, moral concerns and emotional responses.

As a result of this similarity, recent constructionist critiques of BET (Barrett 2006; Lindquist, Wager, Kober, Bliss-Moreau & Barrett 2012) have been coopted by moral psychologists to argue against the viability of the MFT approach (Cameron, Lindquist & Gray, 2015; Gray, Young & Waytz 2012). Constructionists in affective science argue that emotions are best described by general combinatorial processes (e.g. core affect and conceptual knowledge), as opposed to being discrete packages evolved as solutions to specific adaptive problems. Similarly, constructionists in moral psychology have described the processes underlying moral judgment as a combination of affective responses and conceptual knowledge relevant to moral concerns (e.g. core affect and knowledge about interpersonal harm), rather than as domain-specific mechanisms designed to solve distinctive moral problems.

I think this is largely a good thing for the state of theorizing in moral psychology, since the field has long lacked theoretical specificity regarding how emotions interact with moral concerns. However, these views can often either misconstrue the opposing view or portray only its most extreme version. Indeed, there seem to be ways to reconcile these competing theoretical approaches without the wholesale abandonment of one or the other (Scarantino & Griffiths, 2011; Scarantino 2012). I have recently advocated for moral psychologists to consider a version of these arguments (Valdesolo, in press). I very much look forward to seeing how this debate unfolds over the coming years.

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