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THE SCIENCE OF POSITIVE RELATIONSHIPS AND LOVE

Saeideh Heshmati and Stewart I. Donaldson

“Other people matter.” The late Christopher Peterson would say that in every positive psychology lecture he gave and in every positive psychology workshop he conducted (Donaldson & Donaldson, 2018). He would emphasize that good relationships with other people may be a *necessary condition* for our own happiness, even in a markedly individualist culture like the contemporary United States. The mounting evidence from positive psychological science research over the past two decades strongly supports Chris Peterson’s mantra “Other people matter” in terms of our health, well-being, and optimal positive functioning (see Donaldson & Donaldson, 2018). For example, numerous empirical studies on well-being and life satisfaction emanating from Professor Edward Diener’s subjective well-being lab at the University of Illinois support his claim that the quality of our social relationships most often emerges as the strongest predictor of our well-being (Diener & Biswas-Diener, 2011). That is, the quality of our relationships with significant others, family, friends, co-workers, and work supervisors among others “matters” in terms of our well-being over time and on a daily basis (see Oravecz et al., 2020). Dutton, Roberts, and Bednar (this volume) and Warren, Donaldson, and Luthans (2017) described and summarized research showing that high-quality relationships and high-quality connections at work are central to employee well-being, team flourishing, and optimal functioning at work.

Building on the mounting positive psychological evidence demonstrating the importance of our relationships, Seligman extended his theory of well-being to explicitly include relationships as one of the five most important aspects of human flourishing (Seligman, 2011). His PERMA theory suggests the following five ingredients for a flourishing life:

Positive emotions—experiencing happiness, joy, love, gratitude, etc.

Engagement—using your strengths to meet challenges; experiencing flow

Relationships—connecting with others; love and be loved
 Meaning—connect to meaning; find your purpose
 Accomplishment—pursue and accomplish goals; strive for greatness

Donaldson, Donaldson, and Ko (this volume) reviewed the scientific evidence supporting using the PERMA model to improve well-being and help people flourish in their lives and illustrated new research showing that adding positive physical health, positive mindset, positive environment, and positive economic security (PERMA + 4; 9 components) provides an even more robust framework for understanding optimal positive functioning. One of the most notable features of both of these frameworks is that positive relationships often emerge as the most valued and predictive component of well-being and human functioning (Heshmati et al., 2020).

In an effort to more fully understand the strong scientific link between having positive relationships and well-being, Warren and Donaldson (2018) engaged leading experts from around the world to contribute their latest positive psychological science theory and research to a volume on “*Toward a Positive Psychology of Relationships: New Directions in Theory and Research.*” The authors in this volume attempted to uncover a wide range of ways positive psychological science has and could advance our understanding of well-being, flourishing, and optimal functioning in the future. Some of the main topics explored in depth included:

- Applying positive psychology to advance relationship science
- Positive relationships in early childhood, adolescents, and older adults
- Social flow: optimal experience with others at work and play
- Positive relationships in the context of diversity, culture, and collective well-being
- The positive psychology of romantic love
- Toward a positive psychology of online romantic relationships: a new frontier?

One of the most important ingredients for a positive relationship that has emerged across the positive psychological science literature is the positive emotion of love (including but way beyond romantic love) or positivity resonance (Fredrickson, 2013; Heshmati et al., 2019). That is, positivity resonance and a wide variety of forms of love appear essential for developing and maintaining high-quality relationships or connections with other people. Therefore, the remainder of this chapter will focus on the positive psychological science of love and provide a framework for understanding and extending the science of positive relationships and love.

Positive Psychology of Love

Love has always been a mystery to human kind. Ever since the time of the Ancient Greeks, love has been a topic of wonder. “What is love?” Some have attached the

meaning of love to physical attraction and evolutionary conceptualizations, and others have seen it as a means to spiritual transcendence. In the Western tradition, Plato was the first to begin a dialogue on developing an intellectual conception of love. In his *Symposium*, Plato writes, “Love is born into every human being; it calls back the halves of our original nature together; it tries to make one out of two and heal the wound of human nature” (Plato, trans, 1989). This call for love as a pursuit of wholeness has captured many scientists’ and philosophers’ attention to understand love as a means to reaching fulfillment and satisfaction. Scientifically, psychologists have approached the understanding of love from various points of view. On one hand, relationship scientists have discussed the meaning of love from a relational perspective, a phenomenon occurring between two people, grounded within relationships. On the other hand, more recently, emotion scientists have attempted to understand love as an emotional state. In the following sections of this chapter, we will be reviewing different scientific approaches to conceptualizations of love following with recommended future directions for research on love.

Scientific Conceptualizations of Love

Love has been one of the most difficult constructs in human sciences to conceptualize. This is partly because people use, experience, and define love in various contexts to represent different things when communicating with others. Nevertheless, when love is expressed, the person on the receiving end understands the meaning of love that is communicated based on the context in which it occurs and thus is able to respond accordingly. Hence, while love seems to be polysemic, laypeople seem to have a good understanding of it in context (Heshmati et al., 2019). For example, when we hear the statement “I love you” out of context, we don’t have much information about whether love was communicated between two lovers, a mother and a child, or on a more companionate level between two friends. These types of classifications can only be made when the context in which love is expressed is taken into consideration: what was the circumstance, the relationship of the dyad or people involved, the culture in which it was expressed, etc.

In order to conduct empirical research on how love is communicated and understood in various contexts, the first step for scientists is to clearly conceptualize the phenomenon through a common understanding. In turn, having clear conceptualizations of love can allow researchers to understand how expressions of love in different contexts—as Plato would state—“is directed, in temperance and justice, toward the good, whether in heaven or on earth” (Plato, trans. 1989, p. 212). Thus far, psychologists have taken two different approaches in this endeavor. One direction is through the lens of relationship scientists who conceptualize love as anchored in the type of relationship it occurs in—“love as a social tie”. The second direction is from an emotion science perspective, viewing love as a distinct emotion occurring in our everyday lives, regardless of the relationship type—“love as an emotion”. Here we review some of the main theories and

taxonomies developed within these two approaches to the study of love. Then, we propose a dynamical systems approach to the study of love as a unified framework that encompasses both approaches, in an attempt to derive a common framework to the study of love across different disciplines. We hope this framework will facilitate a more comprehensive understanding of a complex phenomenon such as love and further empirical investigations of love in the context of living a full and happy life.

Love as a Social Tie

Love as a social tie is conceptualized as a phenomenon that encompasses an inter-relationship of emotional, cognitive, and behavioral systems between two or more people formed within specific relationships. Because human beings form various types of relationships in which love is experienced, relationship theorists have classified different types of love into taxonomies incorporating the brain and motivational systems involved in this phenomenon within various relationship types (e.g., Berscheid, 2010; Sternberg, 1986; Fehr & Russell, 1991). One of the first people who developed such a taxonomy for love was Sternberg (1986). He proposed a Triangular Theory of Love that divides love into three components: intimacy, passion, and commitment. When these components of love combine in a variety of proportions, they lead to one of eight different kinds of love: friendship, infatuated love, empty love, romantic love, companionate love, fatuous love, consummate love, and non-love. For instance, infatuated love is a type of love that occurs within a relationship that lacks intimacy and commitment but includes passion. On the other hand, companionate love is a type of love that occurs in relationships with commitment and intimacy but no passion. Non-love is when none of these three components are available in the relationship, and consummate love is when all three are present.

Shaver and Mikulincer (2006) developed a conceptualization of love based on Bowlby's (1969/1982) behavioral system and defined love in accordance with an evolutionary and developmental framework. They claim three behavioral systems of attachment, caregiving, and sex between two people in a relationship as the drivers of romantic relationships and love. Hendrick and Hendrick (1989), on the other hand, proposed six love styles as six dimensions that were independent of each other and could be tested against other relationship variables. In other words, each of the six dimensions could be measured for any individual in a relationship at any moment in time, creating a love style profile for each person in that relationship. These love styles consisted of: eros (passionate), ludus (game-playing, uncommitted), storge (friendship), pragma (practical, calculating), agape (altruistic), and mania (obsessional).

In a more comprehensive manner, Berscheid (1985, 2006) proposed a temporal model of love in which each component in this model is claimed to be associated with different behaviors occurring in a relationship and that each has its own

cause. First is compassionate love, which is the altruistic kind of love that revolves around the welfare of others without expecting reciprocity from them. Second is companionate love, which is the type of love that occurs between friends and is based on reward–punishment principles. Third is attachment love, which is the type of love that occurs between a person and his protector in which the person seeks proximity to the one who protects him in usually threatening situations. Fourth is romantic love, which is the passionate kind of love that occurs with sexual desire.

Although there is a lot of overlap between the different dimensions of love taxonomies proposed by relationship scholars, physiological research has shown associations between each of these unique experiences of love and specific neural processes in the brain (e.g., Aron et al., 2005; Bartels & Zeki, 2000; Beauregard, Courtemanche, Paquette, & St-Pierre, 2009). For example, there is evidence that subcortical motivation and reward system pathways are associated with the experience of romantic love (Aron et al., 2005), whereas the experience of compassionate love is related to the inferior and medial frontal cortices in the brain (Decety & Jackson, 2004). Moreover, biochemistry studies have revealed that the release of oxytocin is linked to behaving in a socially positive manner (Carter, 1998) in addition to hand holding and touch in partners (Grewen, Girdler, Amico, & Light, 2005; Holt-Lunstad, Birmingham, & Light, 2008). This can account for the types of love that contain social attachment. In addition, researchers have found that higher levels of nerve growth factor plasma are linked to the experience of early-stage love or what love theorists would call passionate love (Emanuele et al., 2006). Although these physiological findings are informative and a step forward toward further understanding the love phenomenon, there is still much uncertainty in this domain. Most of the studies related to the physiology of love are correlational, and thus there is a question of causality and how much these physiological changes are actually *caused* by each of the love components.

Despite many attempts of relationship scientists at defining love in various types of relationships, it's equally important to investigate whether laypeople's impression of love in context of relationships is similar to what the scientists have identified. For this purpose, we first have to ask the question: Is there a common conception among laypeople when talking about love in their relationships? One way to do this is to examine whether the concept of love—based on people's own understanding of love—can be structured as a prototype (i.e., a concept organized around its clearest and typical cases)? To explore this idea, Fehr (1988) compiled a list of attributes of love based on laypeople's opinions. In this study, 68 features were attributed to love by laypeople, among which features like honesty, trust, and care were prevalent and features like dependency, sexual passion, and physical attraction were not as prevalent. These results suggest: (1) laypeople have rich and comprehensive understanding of love, and (2) they consider features attributed to the *companionate love* dimension (e.g., honesty, trust, and care) at the center of the concept of love (Fehr, 2006).

Fehr and Russell (1991) took the same prototypical approach, this time looking at common concepts of laypeople of different *types* of love. After running a series of studies, they found that familial and friendship types of love were the types of love that laypeople considered the prototypical types. On the other hand, laypeople considered romantic, passionate, and sexual love as nonprototypical (Fehr & Russell, 1991).

This prototype of the concept of love was also tested in different cultural contexts to examine if the concept of love was understood in the same manner across cultures. Research conducted in various regions in North America indicated that there appears to be consensus on five features of love—trust, caring, honesty, friendship, and respect—that correspond to the companionate conception of love (Button & Collier, 1991; Fehr, 1993; Luby & Aron, 1990)—similar to the initial findings by Fehr (1988) and Fehr and Russell (1991). Unfortunately, not many cross-cultural prototype studies on love have been conducted beyond the borders of North America. Nevertheless, based on prototype analysis of the concept of emotion in various countries with diverse cultures, Fehr (2006) believes there might be an indication of differences in people's conception of love depending on the cultural context. Yet there is much need for the exploration of laypeople's common concept of love across relationship types and across cultures and the question of its universality.

Love as an Emotional Experience

The concept of love is also examined from the lens of emotion scientists who view love as an emotional experience rather than types of love relationships. As opposed to a relationship perspective on love where love is seen as a long-standing social tie infused with and supported by emotions (e.g., friendship, romantic love, parental love, etc.), emotion scientists define love as a feeling state that occurs on a momentary basis between people regardless of the relationship type in which it occurs. For example, this morning you might have once experienced love when your partner brought coffee to bed for you, then experienced love when the bus driver greeted you with enthusiasm and asked you about your day, later experienced love when a co-worker offered to buy you lunch, and again experienced love when your mother called you on the phone to tell you how proud she was of you. All of these examples are *emotional experiences* of love that are felt within different types of relationship ties, where the nature of the loving experience does not depend on the relationship in which it occurred in. In other words, the experience of love as an emotion can occur numerous times within a person's day, making it a momentary experience, and is similarly experienced across all types of relationships.

While the conceptualization of love as an emotional experience has been discussed in research as early as the 1970s by Izard (1977) and 1990s by Lazarus (Lazarus, 1991), most recently, Fredrickson has put forward a formal definition of

“love-the-emotion” infusing perspectives from emotion, relationship, and developmental sciences (Fredrickson, 2013). Formally, she defines love-the-emotion as “a micro moment of positivity resonance, during which three core elements— (1) shared positive emotion, (2) mutual care, and (3) biobehavioral synchrony— emerge with temporal coherence between and among people” (Fredrickson, 2016, p. 852). Based on this perspective, love as an emotion occurs in circumstances that a positive emotion is shared between two or more people, making “shared positive emotion” as one core element of this definition. Moreover, individuals experiencing the positive emotions together should also be invested in the well-being of each other for their own sake and show engagement with and concern for the other party, even though minimally. Finally, with mutual care among two people sharing positive emotions, behavioral and physiological synchrony between them emerges automatically and effortlessly, making this experience a micromoment of positivity resonance known as love. Fredrickson goes so far as to hypothesize love-as-an-emotion as our “supreme emotion,” ranking it higher than other positive emotions that are experienced in isolation. This is due to love’s efficiency in building resources for the individual (see Broaden-and-Build Theory; Fredrickson, 2001) because of the biobehavioral synchrony and mutual care characteristics that emerge with love but are not existent in other positive emotions. However, it should be noted that for this “supreme emotion” to occur, two preconditions need to exist. First, some level of perceived safety has to exist for two people to experience love between them. Threats to safety prevents the ability to experience positivity resonance. Second, a sensory connection such as touch, voice, or synchronization of postures or gestures must exist for a positivity resonance love experience. A sensory connection can be as simple as an eye-contact to be counted as a precondition for positivity resonance.

To further understand love as an emotional experience in people’s daily lives, Heshmati and her colleagues (Heshmati et al., 2019) explored ways in which people may experience love as a momentary positivity resonance in their daily lives and whether there is a shared belief among people within a culture on what those instances might be. They built on the premise that the feeling of love can exist for different people in different situations. For example, a child can feel loved when his mother spends time to play with him; a person can feel loved when a neighbor brings cake to her door; or a wife can feel loved when her husband kisses her. Although this feeling might occur in different circumstances for different people, do people in a specific culture (e.g., Americans) all agree upon which instances in daily life are considered as loving for people and which instances are not? In other words, is there a consensus among Americans on what makes people feel loved? To answer this question, Heshmati and colleagues compiled 60 daily scenarios that had the potential of making people feel loved at that moment. These scenarios included both romantic and nonromantic everyday interactional episodes as well as scenarios that are void of others and are not considered as either romantic or nonromantic (e.g., “their pets are happy to see them” or “the sun is shining”). Using Cultural

Consensus Theory (CCT; Batchelder & Romney, 1988; Romney & Batchelder, 1999) in the Bayesian framework, these researchers found that indeed there is a shared belief among Americans on what daily moments in people's lives are considered as loving signals and what moments are not. For instance, they found that people agree that positivity resonance moments of love occur in daily instances in which a positive and authentic connection with someone or something other than the self emerges, leading to a feeling of significance in the self. Some examples of such moments are: "someone shows compassion towards them in difficult times," "a child snuggles up to them," "their pets are happy to see them." On the other hand, scenarios that consisted of controlling behavior such as "someone tells them what is best for them," "someone is possessive about them," or "someone insists to spend all of their time with them" were the moments that people agreed were non-loving.

Further, Heshmati and Oravecz (2020) examined whether alignments in people's beliefs on what makes *them* feel loved and what they think makes *others* feel loved and the *cultural consensus* on love, would predict their well-being. They found that people whose beliefs of love about themselves were in agreement with the common beliefs of the culture (cultural consensus) on love, indicated higher levels of well-being portrayed via reports of higher positive emotions, positive relationships, sense of flow, meaning, and accomplishment (Heshmati & Oravecz, 2020). This is aligned with the concept of emotional fit and its relation to well-being—the higher conformity of beliefs with the cultural norms of the society we reside in, the higher the internalization of cultural norms, leading to a better emotional fit in the society and higher levels of well-being.

These findings shed a light on Fredrickson's positivity resonance theory of love as an emotional experience, illuminating what these specific moments of positivity resonance entail in people's daily lives and whether people have a common perception of what constitutes a loving moment and what doesn't. Furthermore, the positive link between moments of positivity resonance and well-being is now more evident in the recent research focusing on love as an emotion (Heshmati & Oravecz, 2020; Major et al., 2018; Oravecz et al., 2020)—further highlighting the importance of the momentary experience of love in flourishing in everyday life.

Future Directions in the Study of Love

With the expansion of the study of love from different scientific approaches in the past few decades, there is now a need for the convergence of these approaches in a unified framework. We propose a dynamical systems approach to studying love that will afford the possibility of marrying these frameworks, leading to a more holistic understanding of love on a momentary level (love-as-an-emotion), across diverse relationship types (love-as-a-relationship), and across time (micro- and macro-time scales). Using this approach we can move away from studying love as a static phenomenon and examine love as a dynamic experience that changes across time and relationship types.

Experiences of love naturally vary within each person, over time, across relationship types, and in response to environmental circumstances. In one day, a person (let's call her Sarah) might interact with numerous people across different contexts. For instance, yesterday, Sarah started her day with frequent and intense experiences of love with her partner as he surprised her with a warm breakfast in bed, continued on her day with one or two instances of positivity resonance as she interacted with co-workers, then received a non-loving phone call from her mum with some bad news, and ended her day with a consequential argument with her partner as a result of her phone call. By capturing the dynamics of this experience within persons and across contexts, we can study fluctuations, oscillations, and adaptations in experiences of love that manifest on micro-time scales (e.g., minutes, hours, days, weeks) and how they are linked to long-term change in macro-time scales (e.g., months, years) and across developmental stages (Ram & Gerstorff, 2009).

One way to take a dynamical systems approach and capture a fine-grained picture of love as a context-based and temporally dynamic phenomenon is to use Experience Sampling Method (Larson & Csikszentmihalyi, 1983) or Ecological Momentary Assessment (EMA; Stone & Shiffman, 1994) designs. Such designs allow for repeated measurements within individuals across relationships, which sheds light on the interdependencies in love experiences within and between relationships across time and their association with short-term and longer-term well-being and health. For example, using EMA data, we can investigate the dynamic characteristics or individuals' inherent capacity for change in their experiences of love by calculating central tendency and dispersion to describe the person's diversity of love experiences over time and across situations. Through this, we can assess a person's "flexibility" in the variability of their love experiences and assess the extent to which a person can match loving behaviors with relational circumstances to maintain consistency of loving experiences in the face of relationship challenges. Interindividual differences in people's flexibility in love can also be examined to determine what makes some people more flexible than others in their love experiences.

Furthermore, by adopting a Context Sensitive Ecological Momentary Assessment (CS-EMA; Intille, Stone, & Shiffman, 2007) design that involves event-contingent sampling, researchers can record individuals' psychological and physiological states at the time of any relational conflict and at the time of a first loving moment (reconciliation) following the conflict. Using these event-contingent reports, researchers can then explore systematic changes in love during the course of relational conflict and reconciliation. For instance, by examining the intra-individual variation and inter-individual differences in markers of positivity resonance, researchers can examine whether the processes underlying changes in individuals' experiences of love at times of conflict on a daily basis are (1) stability-maintenance processes (maintaining loving feelings and affection for the other even during or after conflict), (2) incremental change processes (increasing loving

feelings and behaviors during and after conflict), or (3) transformational change processes (reorganization and change in patterns of love during and after conflict) and how adopting each of these processes might have differential psychological and physiological health and well-being consequences for different people.

Lastly, through a dynamical systems perspective, scientists can examine how micro-time-scale dynamical processes (e.g., diversity and flexibility in loving experiences) change over the course of human development (macro-time scale). Based on developmental theorists, individuals go through various developmental stages across their lifespan that might impact their priorities in life and consequently how they navigate their relationships and the frequency and intensity of their loving interactions (e.g., Erikson, 1959). Thus, examining lifetime trajectories of individuals' love experiences for stability (crystallized) or change (fluidity) across developmental stages would illuminate the directional changes in experiencing love across different life spans and aging (Ram & Gerstorf, 2009). In other words, we delve into within-person changes in a specific life span, identify the dynamic characteristics of the individuals' capacity for change, and see how the characteristics of those micro-time-scale changes evolve as people age.

In sum, by gaining access to dynamic characteristics and processes of individuals' love experiences while assessing other psychological and physiological outcomes that accompany those experiences, we can describe dynamic properties of the individuals' momentary experiences of love across different time scales and across relationship ties—combining both approaches of love into one. Simply, we approach love as “a way of being” and not a destination. We do this by viewing every individual as a complex dynamic system that possesses many unique characteristics and intricate processes that are impacted by internal and external influences as they move in their environment. Thus, we examine the experiences of love within those complexities and not in isolation. This leads to a more realistic and fine-tuned picture of how to adopt love as a “way of life” that is unique to each person depending on where he/she stands in life both contextually and developmentally while leading to a flourishing and full life.

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