

Understanding Limerence: An Integrative Review of the Etiology, Neurobiology, and Treatment of Obsessive Romantic Infatuation

Shreshtha Singh^{1*}

ABSTRACT

Limerence is a state of involuntary, obsessive romantic infatuation first named by Dorothy Tennov (1979), it remains under-recognized in clinical practice despite its considerable overlap with recognized psychiatric constructs. This review synthesizes research on the phenomenology, neurobiology, and treatment of limerence. It traces the construct from Tennov's original interview-based studies through contemporary neuroimaging work linking romantic passion to reward-system activity resembling substance and behavioral addiction (Fisher et al., 2005, 2010), and to serotonergic findings that liken early romantic preoccupation to obsessive-compulsive disorder (Marazziti et al., 1999). The review examines the role of uncertainty and intermittent reinforcement in sustaining limerent preoccupation, compares limerence to manic and hypomanic states, and presents a cognitive-behavioral case-conceptualization framework linking core beliefs, conditional assumptions, coping strategies, and ritualistic behavior. Two composite, de-identified case illustrations are presented alongside an overview of exposure-based and cognitive interventions (Wyant, 2021). The review closes with a discussion of culturally specific considerations for limerence in the Indian context, including age-disparate limerent attachments, and outlines directions for indigenous empirical research, given the near-absence of India-specific data on this construct.

Keywords: *Limerence, Obsessive Love, Romantic Infatuation, Cognitive-Behavioral Therapy, India, Obsessive-Compulsive Disorder*

Falling in love is ordinarily described as a joyful, if disorienting, experience. For a subset of people, however, romantic attraction develops into a preoccupying, involuntary, and often distressing state that dominates thought, mood, and behavior for months or years. This experience marked by intrusive thinking about a specific person, acute longing for reciprocation, and mood that rises and falls with perceived signs of interest was named limerence by the American psychologist Dorothy Tennov, who first proposed the concept in the 1970s and detailed it fully in her 1979 book *Love and Limerence: The Experience of Being in Love* (Tennov, 1979). Despite nearly five decades of lay and clinical interest, limerence still has no formal place in psychiatric nosology, no validated diagnostic criteria until very recently, and only a small empirical literature (Wyant, 2021). This review draws together historical, neurobiological, and clinical work on limerence, situates it in

¹Department of Applied Psychology, Gargi University

*Corresponding Author

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relation to obsessive-compulsive and manic phenomenology, outlines a cognitive-behavioral model for case conceptualization, and considers its expression within the Indian socio-cultural context, including in age-disparate attachments.

Tennov's Foundational Work

Tennov coined the term limerence specifically to avoid the ambiguity of the word 'love,' which conflates companionate attachment, sexual desire, and the intense infatuated state she was attempting to isolate as a distinct psychological phenomenon (Tennov, 1979). Her conclusions were drawn from several hundred interviews and thousands of questionnaire responses collected over roughly a decade, in which she identified a recurring cluster of experiences: intrusive and involuntary thinking about a specific person (the 'limerent object,' or LO); acute longing for emotional reciprocation rather than for physical intimacy alone; marked mood dependency on the LO's perceived attention or indifference; idealization of the LO that persists despite disconfirming evidence; and a fear of rejection intense enough to produce shyness or behavioral inhibition around the LO (Tennov, 1979). Tennov argued that limerence, while it can initiate a lasting partnership, is distinct from the attachment-based love that sustains long-term relationships, and that it typically resolves through reciprocation, rejection, or the passage of time within a period of months to a few years.

The Role of Uncertainty and Intermittent Reinforcement

A consistent theme across the limerence literature is that ambiguity about the LO's feelings does not weaken limerent preoccupation but intensifies it. Clear reciprocation tends to allow limerence to settle into calmer attachment, and clear rejection tends eventually to extinguish it; it is the space in between, where the LO is sometimes warm and sometimes distant, that appears to sustain limerence longest. This pattern is consistent with the behavioral principle of intermittent (variable-ratio) reinforcement, the same schedule that makes gambling behavior so resistant to extinction: rewards that arrive unpredictably maintain approach behavior more powerfully than rewards that arrive on a fixed or certain schedule. Framed this way, the obsessive checking, re-reading of messages, and rumination characteristic of limerence can be understood as reward-seeking behavior directed at an intermittently reinforcing social stimulus, which helps explain why limerence is difficult to resolve through willpower or simple distraction alone.

Neurobiological Correlates

Contemporary neuroimaging and biochemical research, though largely conducted on romantic love rather than on limerence as a named construct, offers converging evidence for why the state feels so consuming and so difficult to regulate voluntarily.

Reward Circuitry and Similarities to Addiction

Functional MRI studies by Fisher, Aron, and colleagues found that viewing a photograph of a romantic partner activates dopamine-rich regions of the brain's reward system, including the ventral tegmental area the same circuitry implicated in substance and behavioral addiction (Aron et al., 2005; Fisher et al., 2005). A related study of individuals who had recently been romantically rejected found continued activation in these reward and craving-related regions when viewing images of the person who had rejected them, alongside activation in areas associated with emotion regulation and loss (Fisher et al., 2010). Long-term couples studied years into a relationship showed some of the same reward-related activation seen in newly formed romantic attachments, together with activation of regions associated with attachment and pair-bonding (Acevedo et al., 2012). Taken together, this

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body of work supports Fisher's broader argument that romantic passion recruits neural systems that overlap substantially with those recruited by substance dependence a claim with direct relevance to limerence, given that limerent preoccupation is, if anything, a more intense and more prolonged version of early-stage romantic infatuation.

Serotonergic Findings and the Link to Obsessive-Compulsive Disorder

The most striking biochemical parallel comes from Marazziti and colleagues, who compared platelet serotonin-transporter density a peripheral proxy for central serotonergic activity across three groups: individuals who had recently fallen in love, individuals diagnosed with obsessive-compulsive disorder, and healthy controls with no current romantic preoccupation. Both the newly-in-love group and the OCD group showed comparably reduced serotonin-transporter density relative to controls, a pattern the authors interpreted as a shared biological substrate for the obsessive, intrusive quality of early romantic preoccupation and of OCD symptomatology (Marazziti et al., 1999). A related line of work from the same group found elevated cortisol and altered testosterone levels in newly-in-love men and women relative to single or long-partnered controls, consistent with a stress-linked, arousal-heavy physiological profile during this period (Marazziti & Canale, 2004). These findings do not establish that limerence and OCD share a common cause, and Marazziti's sample captured early romantic love broadly rather than limerence specifically; however, they lend biological plausibility to the clinical observation that limerent preoccupation can feel involuntary and intrusive in a manner closely resembling obsessional thinking.

Limerence and Obsessive-Compulsive Phenomenology

Beyond shared biochemistry, limerence and OCD show phenomenological overlap that has direct treatment implications. Both conditions are characterized by intrusive, unwanted, repetitive cognitive content that the person finds difficult to suppress; both generate anxiety that is temporarily relieved by a compulsive behavior (in OCD, a ritual such as checking or washing; in limerence, checking a phone, re-reading messages, seeking reassurance, or mentally rehearsing interactions with the LO); and in both conditions the relief is short-lived, which drives repetition of the behavior and, over time, strengthens the obsessive-compulsive cycle. Wyant (2021) made this parallel explicit in a published case study, treating a client's limerence-related rituals with exposure and response prevention (ERP) the first-line behavioral treatment for OCD and reported a measurable reduction in ritualistic behavior and in dysfunctional LO-related thought patterns at nine-month follow-up. It is worth noting, as clinicians who work with limerence have cautioned, that the OCD comparison is a phenomenological and partly biological analogy rather than evidence that limerence is a subtype or direct consequence of OCD; no controlled trials have tested that causal claim, and the parallel should inform treatment technique rather than diagnostic labeling.

Limerence and Manic or Hypomanic States

A second point of clinical comparison is mania and hypomania. Both limerent infatuation and hypomanic episodes can involve elevated mood contingent on external cues, racing or intrusive thoughts, reduced need for sleep, inflated appraisal of the object of focus (a person, in limerence; a project or plan, more generally, in mania), increased goal-directed energy, and impaired judgment about risk. An empirical thesis by Sutton (2003) directly tested this resemblance, comparing symptom profiles reported by adults with bipolar disorder during manic episodes to symptoms recalled during episodes of intense love in a non-clinical comparison group, and found a striking correlation between the two symptom profiles, with

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love-related symptom severity resembling hypomania more closely than full mania. Sutton proposed that emotion-regulation capacity may determine how far an episode of passionate love travels along a mania-like spectrum, and suggested attachment theory as a framework for understanding why this shared symptom profile emerges. As with the OCD comparison, this should be read as an analogy useful for understanding symptom severity and self-regulation strategies, not as evidence that limerence is a variant of bipolar spectrum illness.

A Cognitive-Behavioral Model for Case Conceptualization

Because limerence is not a formal diagnosis, clinicians who work with it typically borrow case-conceptualization tools from cognitive-behavioral therapy (CBT) for anxiety and OCD. A standard CBT formulation links core beliefs, conditional assumptions, coping strategies, and the moment-to-moment cycle of triggers, thoughts, emotions, bodily sensations, and behaviors (including rituals). Applied to limerence, this framework typically takes the following shape:

Core Beliefs: Underlying schemas commonly reported by limerent clients include beliefs such as 'I am unlovable unless someone exceptional chooses me,' 'My worth depends on being desired,' or 'Being alone means something is wrong with me.' These beliefs are often long-standing and predate the current limerent episode, frequently tracing back to early attachment experiences or periods of emotional neglect.

Conditional Assumptions: Core beliefs generate 'if-then' rules that structure the limerent person's interpretation of the LO's behavior: 'If the LO responds warmly, then I am valuable'; 'If I can secure this person's love, then my anxiety will finally resolve'; 'If I stop thinking about them, I will lose the connection.' These assumptions keep attention locked onto the LO as the sole route to emotional relief.

Coping Strategies and Rituals: To manage the anxiety generated by uncertainty, the limerent person develops safety behaviors and rituals: repeatedly checking the LO's messages or social media activity, mentally replaying interactions for hidden meaning, seeking reassurance from friends about the LO's likely feelings, engineering chance encounters, or rehearsing future conversations. As in OCD, these behaviors provide short-term relief but reinforce the underlying anxiety cycle over time.

The Moment-to-Moment Cycle: A trigger, a text message, a period of silence, an unexpected sighting of the LO, activates the conditional assumptions, producing intrusive thoughts ('Why haven't they replied? What does this mean?'), intense emotion (anxiety, longing, elation, or despair depending on the perceived signal), and bodily sensations (a racing heart, stomach tightness, restlessness). The person then performs a ritual to reduce the distress, which briefly succeeds and thereby strengthens the entire cycle. Mapping this cycle explicitly, in the client's own words, is typically the first step in CBT for limerence, since it externalizes a pattern that otherwise feels indistinguishable from 'just being in love.'

Illustrative Case Vignettes

The following vignettes are composite illustrations constructed for pedagogical purposes, drawing on patterns reported across the limerence literature and clinical commentary rather than describing any single identifiable individual. They are included to demonstrate how the model above translates into a presenting history.

Vignette 1: Limerence Following Life Transition

A woman in her late twenties sought therapy for anxiety and poor sleep six months after a job relocation had left her socially isolated. She described intrusive, hours-long preoccupation with a co-worker who had shown her occasional kindness, alternating between euphoric anticipation before their scheduled meetings and despair on days he seemed distracted. She reported checking his workplace-messaging status dozens of times a day and rehearsing conversations with him before sleep. Her core belief, elicited in the first sessions, was 'I am only interesting to people if they choose to notice me.' Treatment combined behavioral experiments that tested this belief against evidence from other relationships, ERP-style delay-and-resist practice targeting the checking ritual, and work on rebuilding a wider social network to reduce the LO's outsized emotional importance.

Vignette 2: Limerence in a Long-Distance, Age-Disparate Relationship

A man in his early twenties presented with distress about an unreciprocated attachment to a woman more than fifteen years his senior, whom he had met through professional networking and had seen in person only a handful of times. He described idealizing her judgment and life experience, interpreting her professional mentorship as evidence of romantic interest, and structuring major life decisions around the possibility of eventually being with her. The age and status gap intensified both the idealization (she was framed as wiser and more complete than age-similar peers) and the shame he felt about the attachment, which delayed his seeking help. Formulation focused on distinguishing mentorship-based admiration from romantic reciprocation, addressing the conditional assumption that a more experienced partner would resolve his own feelings of inadequacy, and gradually reducing contact-seeking behavior while building same-age peer relationships.

Cultural Considerations: Limerence in the Indian Context and Age-Disparate Attachments

Dedicated empirical research on limerence specifically within India is, at present, essentially absent from the published literature; the construct has not yet been the subject of a validated Indian measure, prevalence study, or clinical trial. This gap sits alongside a broader and older Indian research tradition on romantic love and mate choice, including work comparing love-based and family-arranged marriage formation, such as Bedi and Rogers' (2016) pilot study of love marriage in Punjab. That literature suggests that romantic attraction in India frequently unfolds under social constraints, family expectations, caste and community considerations, and limited pre-marital contact in some settings that may shape how limerence is triggered and expressed differently than in contexts with fewer structural barriers to courtship. Restricted contact with a romantic interest, for instance, could plausibly intensify the uncertainty that sustains limerence, since barriers to communication naturally produce the intermittent, ambiguous signal patterns described earlier in this review; this remains a hypothesis for future Indian research rather than an established finding.

Age-disparate limerent attachments where the limerent object is substantially older or younger than the person experiencing limerence appear to follow the same core mechanism described throughout this review (idealization sustained by uncertainty) but carry additional features worth noting for case conceptualization. When the LO is older, idealization often centers on perceived maturity, competence, or emotional security that the limerent person feels they lack, and the attachment can become entangled with unresolved caregiving or validation needs from earlier relationships. When the LO is younger, idealization more often centers on vitality, admiration, or a sense of being needed. In either direction, the power or

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status differential can amplify shame about the attachment, delay disclosure and help-seeking, and complicate the behavioral experiments used in treatment, since the realistic barriers to reciprocation (social disapproval, unequal life stage, or professional hierarchy) are genuine rather than purely cognitive distortions. Clinicians working with age-disparate limerence in the Indian context should be attentive to the additional weight that family and community judgment can carry in these cases, and should distinguish, as with any limerent presentation, between the fantasy-driven preoccupation and the person's realistic capacity for a healthy relationship with someone closer in age and circumstance.

Treatment Approaches

No treatment for limerence has been evaluated in a randomized controlled trial, and the published evidence base consists chiefly of single case studies and clinical extrapolation from OCD and anxiety treatment. Within that limitation, three approaches recur in the literature.

Exposure and Response Prevention (ERP)

Adapted directly from OCD treatment, ERP for limerence involves identifying the specific rituals that provide short-term relief (checking, reassurance-seeking, rehearsing conversations) and systematically delaying or preventing them while allowing the accompanying anxiety to rise and fall without acting on it. Wyant (2021) reported a meaningful reduction in ritual frequency and in LO-focused dysfunctional thoughts using this approach over a structured course of therapy.

Cognitive Restructuring

Standard CBT techniques identifying and testing the conditional assumptions described in the case-conceptualization section, examining evidence for and against the idealized view of the LO, and addressing the underlying core belief about self-worth form the second pillar of treatment. This work is often what allows the reduction in ritual behavior achieved through ERP to be sustained.

Broader Psychotherapeutic and Lifestyle Measures

Because limerence frequently emerges during periods of loneliness, life transition, or unmet attachment needs, treatment benefits from attention to the person's wider social and emotional life: rebuilding a support network, addressing untreated anxiety or low mood where present, and, where the limerent episode has a clear precipitating stressor, addressing that stressor directly. Given the current absence of validated instruments in most clinical settings, careful clinical interviewing mapping the presence and intensity of the core Tennov (1979) features (intrusive thinking, mood dependency, idealization, fear of rejection) remains the primary means of identifying limerence in practice, though the recent development of self-report measures for limerence (e.g., Marshall et al., 2025) may support more systematic assessment as this literature matures.

Directions for Future Research

Three gaps stand out. First, there is no Indian prevalence or descriptive data on limerence, despite plausible reasons to expect the phenomenon to present differently within Indian courtship and marriage norms. Second, no controlled treatment trial exists anywhere in the world; the evidence base rests on isolated case studies. Third, the relationship between limerence and recognized diagnostic categories (OCD, bipolar-spectrum disorders, attachment-related difficulties) has been explored only through symptom-level comparison

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rather than through studies that would establish shared or distinct etiology. Newly validated self-report instruments, such as the Limerence Questionnaire-11 (Marshall et al., 2025), offer a practical route toward addressing all three gaps, including within Indian clinical and college-student samples.

CONCLUSION

Limerence occupies an unusual position in psychology: a state that a large number of people recognize immediately from personal experience, yet one that has never been formally diagnosed, rarely appears in psychiatric training, and remains supported by a thin empirical literature relative to its apparent prevalence and clinical impact. The evidence reviewed here from Tennov's founding interviews, through neuroimaging and serotonergic research on romantic love and its overlap with addiction and OCD, to case-study evidence for CBT and ERP-based treatment converges on a coherent picture of limerence as an intensely reward-driven, uncertainty-sensitive cognitive-behavioral state rather than a mystical or purely romantic one. For India specifically, where courtship operates under a distinctive set of social constraints and where age-disparate attachments carry their own layer of social stigma, there is a clear opening for original empirical work that this review hopes to encourage.

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Conflict of Interest

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