Loneliness and psychosis: an integrative review

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Purpose of review
This review synthesizes emerging research on loneliness in psychosis, integrating neurocognitive, social, developmental, and phenomenological perspectives. We highlight how loneliness operates as both a precipitant and consequence of psychosis symptoms, discuss its manifestations across the psychosis spectrum, and outline conceptual and clinical priorities for advancing person-centered research and clinical care.

Recent findings
Loneliness is highly prevalent in psychotic disorders and strongly associated with psychiatric symptom severity, instability of self-concept, and overall reduced wellbeing. Neurocognitive models demonstrate that chronic loneliness heightens social threat sensitivity and alters brain networks supporting social cognition and emotion regulation in individuals with psychosis. Longitudinal data show bidirectional relationships between loneliness and paranoia, psychotic-like experiences, and social-cognitive biases. Qualitative work emphasizes loneliness as a profound barrier to recovery across stages of illness. Understudied contributors, including attachment disruptions, social defeat, context, solitude, and disturbances in self and identity, shape subjective experiences of loneliness beyond objective isolation.

Summary
Loneliness in psychosis is multidimensional, driven by interacting cognitive, interpersonal, developmental, and contextual processes. Future research should refine definitional distinctions of loneliness in psychosis phenomenology, incorporate dynamic and mixed-methods paradigms, and examine individual-specific and interpersonal mechanisms. Clinically, evidence supports treatments that prioritize meaning making, improving existing relationships, and addressing social biases, integrating cognitive, meta-cognitive, and narrative approaches.

Keywords
loneliness, psychosis, social isolation, subjectivity

INTRODUCTION

Loneliness – a lack of desired social connection – has been characterized as a public health crisis, with global prevalence rates reaching 'epidemic' levels [1]. Loneliness is associated with elevated risk for cardiovascular disease, sleep challenges, mood difficulties, diminished quality of life, and premature mortality [2,3]. Among individuals with psychotic disorders, loneliness is more prevalent and severe than in the general population: people living with schizophrenia and related psychotic disorders are at least twice as likely to experience loneliness, with up to 80% of individuals reporting frequent or intense feelings of social disconnection [4]. Loneliness in this population is associated with greater severity of both positive and negative symptoms [4,5▪▪,6], increased substance use [7,8], elevated suicidality risk [9], higher stigma [10▪▪], poorer physical health [11], and lower quality of life [12]. Qualitative studies demonstrate that individuals with psychotic disorders describe loneliness as a profound barrier to recovery, with addressing loneliness an urgent treatment priority [13,14].

Unfortunately, research paradigms and clinical frameworks for understanding loneliness in psychosis remain limited, especially in establishing cognitive, interpersonal, and experiential drivers of loneliness. Loneliness is often conflated with social isolation (i.e. the state of being alone), despite not being strongly associated with the degree of social interaction. Elucidating pathways to loneliness may be uniquely critical in psychosis, where determinants likely cross structural, psychosocial, and other individual-level factors.

We review recent developments on loneliness in psychosis and provide suggestions for future

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Curr Opin Psychiatry 2026, 39:201–208

DOI:10.1097/YCO.0000000000001058

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KEY POINTS

- Loneliness is highly prevalent and clinically significant in psychosis, linked to more severe symptoms, poorer functioning, increased stigma, and reduced quality of life.
- Multiple mechanisms can contribute to loneliness in psychosis, including neurocognitive hypervigilance to social threat, social defeat and chronic exclusion, discrepancies between desired and actual social connection, disturbances in self-other experience, and cultural/contextual factors.
- Evidence suggests that loneliness may manifest differently across the psychosis spectrum, influencing presentation of psychotic-like experiences and clinical high-risk states, and demonstrating a reciprocal relationship with several dimensions of first-episode and multiepisode psychosis.
- Core developmental and relational processes (e.g. attachment, early adversity, solitude, meaning-making, and narrative identity) shape vulnerability to loneliness in psychosis, yet these areas remain insufficiently explored with a need for more nuanced models of social experience in psychosis.
- Clinical implications of research on loneliness in psychosis emphasize person-centered, relational, and context-sensitive interventions, including enhancing social quality, integrating metacognitive and narrative approaches, expanding group and family work, and attending to both individual traits and dynamic processes of loneliness in daily life.

directions for clinical research and care. First, we situate the experience of loneliness within broader models of social and interpersonal processes and then discuss pathways to loneliness in psychosis. Second, we present associations between loneliness and illness stages, from at-risk states to psychosis development and maintenance. Third, we review advancements in methodological and conceptual approaches and provide brief suggestions for future research. In our integration, we seek to advance a more precise and person-centered understanding of loneliness as a central feature of psychosis phenomenology and a critical target for intervention.

LONELINESS AND PSYCHOSIS

Emerging evidence suggests that loneliness may operate both as a precipitant and maintaining factor of positive and negative symptoms of psychosis [5▪▪,6,15▪]. Loneliness may emerge from interpersonal conflict or poor relationship quality [16,17,18▪] and be a consequence of prolonged social stress and adversity [19▪▪]. Given the complex, multidimensional manifestations of loneliness in psychosis, extant theories are useful for clarifying the mechanisms and impact of loneliness in this population.

Neuro-evolutionary models and paranoia

Evolutionary models conceptualize loneliness as a neurocognitive signal that motivates social reconnection. Building on the 'social brain' theory [20,21], contemporary neurocognitive frameworks propose that chronic loneliness recalibrates neural systems involved in social monitoring and threat detection, resulting in hypervigilance toward cues of rejection or hostility [2,22,23]. In the short-term, loneliness may serve an adaptive function that promotes social motivation, while in the long-term, it may lead to withdrawal and isolation.

Social-cognitive biases toward perceived social threat may also amplify suspiciousness and persecutory beliefs [24–26]. Recent longitudinal studies indicate that increases in loneliness predict subsequent elevations in paranoid ideation, even after accounting for baseline symptom severity [27▪▪]. Furthermore, suspicious appraisals of auditory verbal hallucinations contribute to poorer social functioning and increased negative affect, giving way to loneliness [28].

With respect to neural correlates of loneliness, a large epidemiological study demonstrated that loneliness in individuals with psychotic disorders was associated with decreased gray matter volume in regions associated with social cognition (e.g. prefrontal cortex and temporal regions), emotional regulation (e.g. insula and hippocampus), and reward processing (e.g. nucleus accumbens and thalamus) [29▪]. Additionally, a recent transcranial direct current stimulation (tDCS) study targeting amygdala-prefrontal circuits in individuals with psychotic disorders reported improved feelings of social connection in daily life, despite no change in the number of social contacts [30▪▪]. Taken together, evolutionary perspectives and recent neurocognitive literature highlight the role of social disconnection in clinical symptoms, particularly those related to paranoia and persecutory ideation, as well as social-cognitive processes contributing to loneliness.

Social defeat and psychosis

Complementary frameworks of loneliness specific to psychosis research have examined social disconnection as an etiological and maintaining factor. The social defeat hypothesis posits that repeated experiences of exclusion, rejection, or discrimination can induce chronic stress, contributing to increased risk for schizophrenia [19▪▪,31–33]. Social defeat processes are associated with reductions in anticipatory

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pleasure, social approach behavior, and goal-directed effort in psychosis [34▪▪]. Loneliness may further enforce withdrawal and defeatist cognitions, with longitudinal work supporting this reciprocal relationship between social defeat, loneliness, and negative symptoms [35].

Discrepancy model and social quality

The cognitive-discrepancy model conceptualizes loneliness as the gap between one's desired and achieved social connection, highlighting how preferences (e.g. amount of social interaction desired) and expectations (e.g. preference for intimate versus casual social content) shape loneliness [36]. In the context of psychosis, this preference gap may be widened by external factors such as stigma and impoverished social environments [37,38] and by internal factors such as impaired social motivation [39]. Empirical evidence supports that loneliness is more closely associated with the perceived quality of social interaction than with objective measures of aloneness in schizophrenia [40]. Qualitative work further emphasizes a dynamic relationship between desire for connection and meaningfulness of engagement, underscoring how preferences and social needs influence loneliness in psychosis [10▪▪,41].

Phenomenological perspectives, intersubjectivity, and culture

Phenomenological and contextual models locate social disconnection within broader disturbances of intersubjectivity and self-other boundary integrity. Recent empirical work indicates that following psychosis onset, self-disturbance (i.e. instability in self-concept or diminished agency) may also exacerbate loneliness by disrupting self-other connections; these disruptions may serve as unique intrapersonal vulnerabilities for social disconnection in psychosis [42▪]. In high-risk states, extended social deprivation may give rise to anomalous experiences consistent with the social-deafferentation hypothesis, in which reduced social input prompts compensatory neural generation of social percepts such as hallucinations or felt presences [43▪,44]. Loneliness may also represent a distorted embodied emotion in individuals with schizophrenia, attributed to cultural factors that can influence both appraisal of social connection and the lived experience of psychosis [10▪▪].

LONELINESS ACROSS THE PSYCHOSIS SPECTRUM

While models of loneliness can elucidate putative mechanisms underlying social disconnection in individuals with psychosis, the experience of loneliness may manifest differently across stages of the psychosis spectrum, from psychotic-like experiences (PLEs) to chronic presentations (see Fig. 1).

General population and psychotic like experiences

Social disconnection may be correlated with PLEs, such as attenuated hallucinations [45] and delusions [46], in the general population. Empirical studies indicate that loneliness and PLEs are bidirectionally linked [47,48▪] and that loneliness may predict the emergence and persistence of felt presence [49,50▪].

Clinical high risk

Within clinical high risk (CHR) populations, loneliness is a robust predictor of symptom progression and may predict transition to psychosis [4,12]. While literature on loneliness in CHR is sparse, prospective studies demonstrate that increases in loneliness and perceived social rejection precede exacerbations in suspiciousness and perceptual anomalies that may serve as important diatheses [51▪]. Given the high prevalence of loneliness in the developmental period prior to psychosis onset (adolescence and young adulthood), disruptions in social belonging during these windows may impede the development of social-cognitive capacities and potentially amplify attentional biases toward social threat and self-referential processes, contributing to psychosis emergence [51▪,52▪].

First-episode psychosis

Recent research emphasizes the relevance of loneliness in early psychosis, particularly in first-episode psychosis (FEP). FEP youth frequently report profound feelings of social disconnection, and qualitative studies demonstrate the challenges in rebuilding and maintaining social relationships during recovery from an initial psychotic episode [53▪,54▪,55]. Furthermore, the onset and treatment of psychosis can often coincide with the interruption of life milestones related to education, employment, and peer dynamics, compounding losses in social identity and belonging. FEP youth have described loneliness as stemming from experiences such as stigma, rejection, and social withdrawal, as well as identity-related processes, including reparations of self-concept during recovery [41,52▪,56].

Multiepisode psychotic disorder

In multiepisode psychotic disorder, cumulative effects of prolonged isolation, stigma, and social role loss may contribute to chronic loneliness [4,12].

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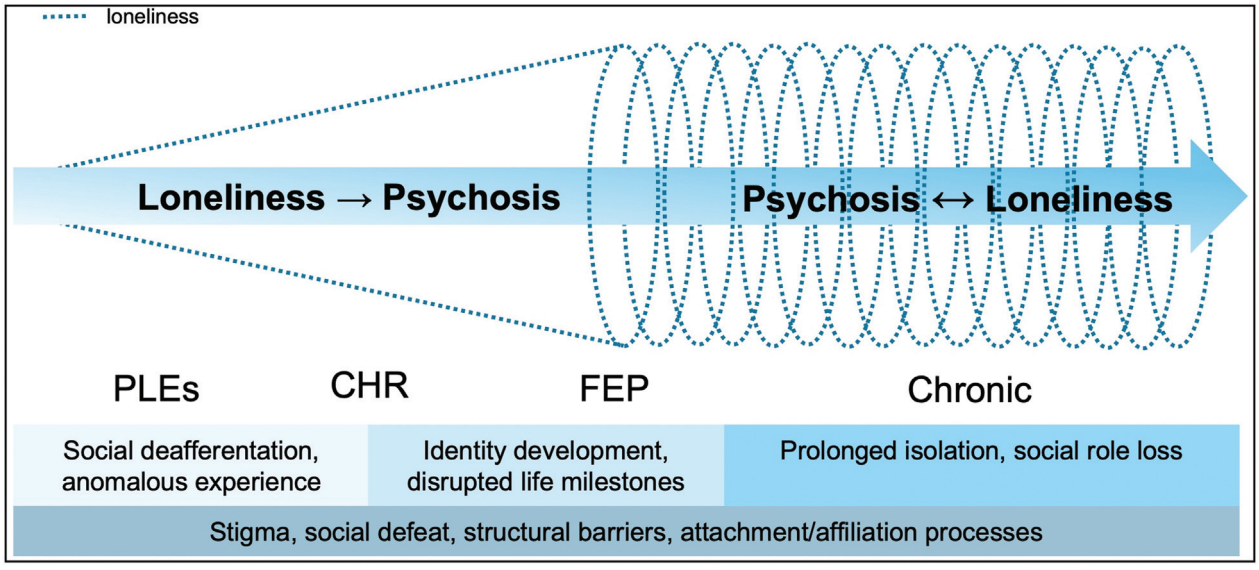

FIGURE 1. Loneliness and the psychosis spectrum. Evidence suggests that loneliness exacerbates emerging psychosis, from psychotic-like experiences (PLEs) to clinical high risk (CHR). Following psychosis onset (first-episode psychosis; FEP), loneliness and psychosis demonstrate a bi-directional (cyclical) relationship. This relationship is sustained throughout multiepisode/chronic experiences with psychosis.

Over time, recurrent episodes and functional decline may progressively erode social networks and reinforce internalized stigma and a sense of alienation from others [57]. For some individuals, loneliness may become relatively stable, characterized by diminished expectations of connection, reduced social motivation, and social role loss, interacting with and exacerbating negative symptoms [11].

CONCEPTUAL CONSIDERATIONS AND FUTURE DIRECTIONS

Beyond the models and processes discussed above, there are aspects of loneliness that remain underexplored and warrant further attention. Below, we discuss future considerations, including the importance of attachment and affiliation, solitude, narrative identity and meaning making, and categorical definitions of loneliness.

Attachment, affiliation, and early social disruptions

Loneliness is a fundamentally relational experience, emerging from perceived barriers to belonging and mutuality. In psychosis, insecure and disorganized attachment patterns are highly prevalent and associated with negative self-esteem, paranoia, social impairments, and delayed recovery [58,59▪▪]. Recent findings in adults with psychotic disorder show that avoidant attachment is linked to reduced prosocial engagement, whereas anxious attachment predicts heightened social withdrawal, even among unaffected siblings [60]. Furthermore, early caregiving instability and adverse childhood experiences may engender enduring internal models of others as unavailable or threatening, perpetuating patterns of hypervigilance, mistrust, and social disengagement [61▪▪,62]. Psychosis symptoms may directly contribute to challenges in the capacity to form and sustain reciprocal, secure bonds and relationship building [63,64]. Some argue that the role of disruptions in affiliation may impact overall functioning in a manner more severe than psychotic-illness related factors [65]. Early traumatic or socially isolating experiences may interact with genetic and other risk factors that subsequently contribute to social disconnection in psychosis [66].

Future work may seek to explore patterns of social attunement between/among social partners (i.e. relationship dynamics) to better understand attachment and affiliation as it relates to loneliness and social functioning. Dyadic and group-based paradigms may yield promising methods for examining how individuals with psychosis negotiate social closeness, threat, and self-other boundaries in real-time [67,68▪▪,69]. These approaches could further elucidate the impact of attachment processes on loneliness in psychosis.

Solitude and resilience

Distinguishing loneliness from solitude, or a general preference for and enjoyment of being alone, may be uniquely important in psychosis given patterns of

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social withdrawal, preferred time alone, and social exclusion are rarely disaggregated. Narrative research in psychosis suggests that voluntary solitude may serve as a self-regulatory function, helping manage overstimulation and consolidate self-experience [70▪]. Researchers examining self-directed time alone in psychosis have noted that solitude may become maladaptive when withdrawal is motivated by social exclusion or stigma rather than personal preference [71]. Despite growing theoretical interest in solitude as a normative and beneficial dimension of mental life in the general population, empirical research on solitude in psychosis is scarce. Solitude is often subsumed under the umbrella of social isolation or negative symptoms, overlooking the possibility that intentional solitude may buffer against loneliness as well as the individual level factors that may lead to resilience despite social disconnection. Indeed, models of social homeostasis suggest that the drive for social connection operates along a continuum of individual set points, with some individuals maintaining wellbeing through lower levels of engagement, reflecting resilience rather than deficit [72▪].

Future research should seek to understand individual level preferences and fluctuations in expressed social desire, using tools like experience sampling methods (ESMs) to capture dynamics of social preference, motivation, and loneliness versus solitude [73]. Such approaches may help clarify when time spent alone reflects adaptive self-regulation versus emerging distress or loss of motivation, offering a more nuanced understanding of social connection in psychosis.

Identity and meaning making

Loneliness may also be understood through the lens of disrupted narrative identity, the process by which individuals integrate experiences into a coherent sense of self over time [74]. In psychosis, disturbances in autobiographical memory, temporal continuity, and self-other differentiation may constrain meaning-making and consolidation of past experiences with present sense of self [52▪,75]. These constraints can contribute to feelings of isolation, limiting the ability to find personal meaning or connect one's experience with a broader life story. Additionally, internalized negative narratives about psychosis can further undermine meaning-making, reinforcing feelings of disconnection [41]. In early psychosis, narrative identity formation is a critical developmental task: the capacity to integrate emerging experiences of self and other during this lifespan stage can shape social wellbeing and recovery [76▪▪,77]. Consequently, loneliness may emerge both from social isolation during periods of psychosis onset (e.g. hospitalizations) as well as the subjective sense that one's experiences are 'incomprehensible,' stigmatized, or disconnected from one's own life narrative.

Incorporating narrative and mixed-method approaches would lead to identifying markers of resilience and guiding recovery-oriented interventions that foster coherence and continuity of self [78▪▪]. Although work has been conducted in nonclinical samples [79,80], the relationship between culture, identity, and loneliness should be explored in individuals across the psychosis spectrum.

Structures of loneliness in psychosis

Lastly, broad conceptual models of loneliness in the general population often distinguish between emotional, social, and existential dimensions, differentiating, for example, feelings of missing close attachment figures, broader social disconnectedness, or a perceived lack of meaning, purpose, and belonging. However, these definitional levels of loneliness have not yet been systematically examined or elaborated in psychosis, where loneliness may interact with other phenomena unique to psychosis-spectrum disorders such as challenges with self-world coherence. Future research should clarify how various loneliness dimensions may relate to psychosis onset, maintenance, and recovery processes.

CLINICAL APPLICATIONS

While researchers and clinicians have long recognized loneliness as a salient and distressing feature of psychosis [81▪▪], translation of this knowledge into contemporary clinical practice remains minimal. Effective interventions must address both the objective and subjective dimensions of social disconnection within and outside the therapeutic setting. Structurally, this includes increased opportunities for meaningful social contact through supported employment, education, community participation, and therapeutic alliance. Treatment might focus on enhancing the perceived quality, authenticity, and emotional significance of social relationships, and exploring factors that influence social expectancies (see Table 1 for an overview of clinical considerations).

Targeting social skills could reduce loneliness by providing a foundation to form and sustain relationships. However, evidence suggests that skills-based interventions have limited impact on reducing loneliness in the general population [82,83▪▪]. Social skills training for psychosis [84] could be refined to more directly address the quality and intimacy of relationships, in the context of individual preferences for connection. Such approaches might be most

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Table 1. Models of loneliness and considerations for psychosis care

Model	Core mechanism	Clinical applications
Social threat	Cyclical maintenance between loneliness and social-threat hypervigilance	Monitor and adapt social threat appraisals
		Prioritize therapeutic alliance and trust building
		Explore attachment disruptions and patterns
		Interrupt harmful social cognitions through metacognitive interventions
Social defeat	Chronic exclusion gives way to and reinforces amotivation and withdrawal	Promote social-motivational processes
		Support opportunities for social engagement
		Address stigma and rejection experiences
		Integrate trauma-focused approaches
Cognitive discrepancy	Loneliness emerges in the gap between desired and actual social connection	Attend to subjective quality of existing relationships
		Distinguish experiences of fulfilling solitude versus distressing alone-ness
Phenomenological/intersubjective	Disturbances of self-other boundaries and self-coherence contribute to subjective disconnection	Apply narrative and meaning-focused perspectives
		Process disruptions in self-experience and identity
		Consider multidimensional impact and role of loneliness (e.g. emotional, interpersonal, and existential)

effective when integrated with mentalization and metacognitive interventions that target beliefs about self and others [85]. Digital therapeutics may serve as one bridge toward personalized care, improving accessibility to treatment that can also be used to monitor and address personal (i.e. cognitive and behavioral) and contextual (i.e. social) factors contributing to loneliness [86].

Relational and interpersonal therapies have been shown to be effective for individuals with psychosis, specifically in processing the experience of psychosis, attachment patterns, internalized stigma, and for cultivating feelings of connectedness and trust [87,88▪▪,89▪▪,90]. Group, family, and couples therapy should be extended to individuals experiencing psychosis, with attention to both social communication in group dynamics and the strengthening of existing relationships within families and dyads [78▪▪,91▪▪]. Attending to the subjective experience of loneliness remains of paramount importance, with meaning making and narrative modalities serving as essential components of recovery-oriented care.

CONCLUSION

Our review underscores that loneliness is a multidimensional and deeply consequential in psychosis, shaped by the interplay of cognitive vulnerabilities, interpersonal contexts, developmental trajectory, and self-other experience. Interventions targeting loneliness should be person-centered, with the aim to attend to individual-level concerns including the interconnectedness of self, social context, and personal meaning. Integrating neurocognitive, psychosocial, and phenomenological perspectives may yield more nuanced and effective research and treatment models that account for the embodied and dynamic nature of social experience in psychosis.

Acknowledgements

None.

Financial support and sponsorship

None.

Conflicts of interest

D.F. serves as subject matter expert for Click Therapeutics and Boehringer-Ingelheim.

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