

Beliefs About the Causes of Psychosis Among Persons With Psychosis and Mental Health Professionals: A Scoping Review

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Objective: The beliefs that people with psychosis hold about causes of their illness (causal beliefs) can affect their choice to adhere to treatment and engage in mental health services. However, less is known about causal beliefs of mental health professionals (MHPs) and their impact on treatment adherence and service engagement. This review explored literature focusing on MHPs' causal beliefs and mapped the degree of concordance between their causal beliefs and those of people with psychosis.

Methods: A systematic literature search of PubMed, Embase, Scopus, PsycINFO, and Applied Social Sciences Index Abstracts and a gray-literature search of PsyArXiv and MedNar yielded 11,821 eligible references. The first author reviewed all titles and abstracts, and the coauthors reviewed 10% (N=1,200).

Results: Forty-two articles were included. Most articles indicated that MHPs tend to endorse biogenetic beliefs (9

of 15 articles assessing MHPs' beliefs, 60%), whereas people with psychosis tend to endorse psychosocial beliefs (16 of 31 articles, 52%) and other nonbiogenetic beliefs (in 8 of 31 articles, 26%). Most studies did not compare causal beliefs of people with psychosis and their treating MHP. Studies varied in design, setting, and measures.

Conclusions: MHPs and people with psychosis often hold complex views composed of different types of causal beliefs. However, a gap in causal beliefs between these groups appears to exist, which may affect the therapeutic relationship and pose barriers to treatment adherence. Future studies should address this gap by developing interventions that facilitate open communication about causal beliefs to promote treatment alliance and shared decision making.

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“Causal beliefs” refer to beliefs regarding the causes of a condition; among persons who have the condition in question, such beliefs are often understood as part of active attempts to understand and cope with health threats. Causal beliefs influence emotional responses, coping strategies, and treatment choices (1). Among individuals with psychosis, a growing body of literature highlights the potential impact of causal beliefs on adherence behavior and service engagement (2, 3). Nonadherence to antipsychotic medication and disengagement from psychiatric services are highly prevalent, and although nonadherence and disengagement can be a manifestation of personal choice (4, 5), they are also associated with higher rates of relapse and readmission among persons with psychosis (6–8), making targeting causal beliefs in this population especially important.

At least six types of causal beliefs about psychosis can be identified in the literature: biogenetic, psychosocial, spiritual-religious, related to substance abuse (3, 9), related

to personal characteristics (e.g., lack of willpower) (10), and as a part of the human experience (11–13). Biogenetic beliefs

HIGHLIGHTS

- To understand whether people with psychosis and mental health professionals differ in their beliefs about the causes of psychosis, a scoping review was conducted to identify and compare common causal beliefs of these groups.
- Of 42 studies reviewed, most indicated that MHPs were more likely to endorse biogenetic causal beliefs, rather than psychosocial beliefs, whereas patients were more likely to endorse psychosocial causal beliefs, rather than biogenetic beliefs.
- Research that focuses on gaps in causal beliefs between MHPs and people with psychosis and its effect on the treatment alliance and treatment adherence is needed.

about psychosis highlight genetics or heritability and emphasize pharmacological treatment to target presumed biological abnormalities (14). Psychosocial beliefs stress the role of psychological, social, and environmental influences (e.g., socialization, trauma, and upbringing) in the development of psychosis and emphasize psychosocial interventions, such as psychotherapy and recovery-oriented interventions, to target cognitions, emotions, and behavior (15). Spiritual-religious beliefs focus on spiritual explanations of the occurrence of psychosis, such as God's will, witchcraft, or evil spirits (16). Substance abuse-related beliefs focus on drugs or alcohol as the reason for the occurrence of psychosis (17). Beliefs related to personal characteristics emphasize personality and other individual characteristics that contribute to the development of psychosis (10). Finally, beliefs that the psychotic experience is part of human experience emphasize psychosis as a part of reality, such as believing that one has special powers or that voices are real (11, 12, 18).

A recent systematic review that focused on the relationship between causal beliefs among people with psychosis and their outcomes found that people with psychosis mostly endorsed psychosocial beliefs and that their health outcomes were related to the type of causal beliefs they held (3). For example, biogenetic beliefs were associated with higher rates of medication adherence, whereas psychosocial beliefs were associated with greater psychotherapy engagement. Spiritual beliefs were associated with longer duration of untreated psychosis. Another significant finding was that causal beliefs were related to stigma: people with psychosis who endorsed a biogenetic causal belief were more likely to experience stigma and to exhibit stigmatizing attitudes toward others with psychosis. This relationship between biogenetic causal beliefs and stigma was also previously found among mental health professionals (MHPs) (19, 20) and the general public (21). Causal beliefs related to personal characteristics have also been found to be associated with stigma and negative attitudes toward mental illness among people with psychosis (22–24) and the general public (10).

However, less attention has focused on causal beliefs about psychosis held by MHPs, and little is known about possible disagreements between MHPs and people with psychosis regarding causal beliefs. Research indicates that MHPs may hold different types of causal beliefs, compared with people with psychosis (e.g., 25–27). However, understanding whether causal beliefs are a point of disagreement between MHPs and people with psychosis requires evaluating the existing evidence and mapping the types of causal beliefs that MHPs tend to hold. Therefore, the purpose of this review was to explore the scope and breadth of the literature focusing on MHPs' causal beliefs and to map causal beliefs among MHPs and people with psychosis and the degree of concordance between them. Specifically, we focused on the following exploratory questions: What are common causal beliefs about psychosis among MHPs? How different are they from those of people with psychosis?

What is the impact of MHPs' profession on their causal beliefs? What is the impact of culture and psychiatric setting?

METHODS

To identify studies for consideration or inclusion in this scoping review, we worked with a medical librarian to develop detailed search strategies for each database. (Details about the search strategy are provided in an online supplement to this article.) The search was developed for PubMed and was translated to Embase, Scopus, PsycINFO, and Applied Social Sciences Index Abstracts. A gray-literature search included PsyArXiv and MedNar. The search included no restrictions on publication date. The final database search was completed on March 26, 2019, and the gray-literature search was completed on March 27, 2019. We supplemented the results of the systematic search with relevant articles not identified with use of the search criteria but which we considered important for review purposes.

Studies included were those published in English that employed at least one measure specifically assessing causal beliefs about psychosis and that reported the content and endorsement levels of causal beliefs in the results. Furthermore, we included only studies that directly assessed people with psychosis (adults at least 18 years old who reported experiencing psychotic symptoms [e.g., hearing voices] or who had a diagnosis of schizophrenia spectrum disorder [schizophrenia, schizoaffective disorder, schizophreniform disorder, brief psychotic disorder, or psychotic disorder not otherwise specified]) or MHPs (psychiatrists, psychiatric nurses, psychologists, social workers, case managers, occupational therapists, and support workers). Studies excluded were review articles; studies with providers who were peer support workers, primary care physicians, or medical students; studies not reporting the content and levels of endorsement of causal beliefs; and studies that explored endorsement of only one type of causal belief (e.g., only biogenetic), because such studies did not allow for comparison of the endorsed types of causal beliefs.

The systematic search yielded 17,029 studies, with 42 from gray-literature sources (see PRISMA flow diagram [28] illustrating study selection process in the online supplement). After the removal of duplicates, 11,821 references were eligible for screening. Screening was performed with Covidence (covidence.org), the recommended standard platform for Cochrane reviews. The first author reviewed all titles and abstracts ($N=11,821$), and all other coauthors reviewed the first 10% of the titles and abstracts ($N=1,200$) for reliability. This process yielded high agreement rates, ranging from 96.3% to 99.3%. We discussed disagreements until agreement was reached. Screening titles and abstracts resulted in the exclusion of 11,681 records that failed to meet the inclusion criteria. The full text of the remaining 140 articles was screened by the first author with consultation, as needed, with the second and last author, which led

to the exclusion of 101 articles that failed to meet the inclusion criteria. An additional three full-text articles (25, 29, 30) were excluded because they described the same sample and results of the same study (31–33). Six additional articles were added after review of Carter et al.'s (3) references list and prior knowledge of the authors, and the final sample included 42 articles.

Data were charted by using a predesigned form. We charted the following descriptive data: sample characteristics (people with psychosis, MHPs, and recruitment setting), study characteristics (study design, sample size, country, and assessment schedule), measurement of causal belief, and study results (types and level of causal beliefs endorsed) (see table in online supplement).

The coding of causal beliefs into categories was conducted iteratively by four authors (R.R.O., D.R., I.H.-O., Y.Z.-I.) by using an a priori categorization system that was adjusted and developed throughout the process. The first author (R.R.O.) coded the results of each of the included articles; the coding was then reviewed by the second (D.R.), third (I.H.-O.), and last (Y.Z.-I.) authors. This step included categorization based on an a priori three-category system: biogenetic, psychosocial, and spiritual-religious. The second step included adjustment of the category definitions on the basis of existing literature to include causal beliefs that did not fall into the above three categories. This step resulted in the addition of three categories (beliefs related to substance abuse, related to personal characteristics, and as a part of the human experience), yielding a total of six categories (3, 17, 18, 34, 35).

We used the Critical Appraisal Skills Program (CASP) (36) to assess the methodological quality of the qualitative studies. The tool contains 10 questions and assesses quality in three domains: validity, presentation, and impact of study results. We used the Joanna Briggs Institute (JBI) Critical Appraisal Checklist for Analytical Cross Sectional Studies (37), the appraisal tool most preferred for such studies (38). The tool contains eight questions assessing sample and setting and measurements of exposure and outcome and addressing confounders and analysis. We also used the JBI Critical Appraisal Checklist for Studies Reporting Prevalence Data (39). The tool contains nine questions assessing sample and setting, validity, analysis, and response rates. The risk of bias was evaluated by the first author, who consulted with the second and last authors in cases of uncertainty. Disagreements were discussed among these three authors until agreement was reached.

RESULTS

Methodological Quality of the Included Articles

Quality appraisal of the articles that employed qualitative methods indicated that two articles met all 10 criteria suggested by the CASP (13, 35), one article met nine of the criteria (18), four met eight (34, 40–42), and the remaining met seven (43, 44), six (45), and five (46). The quality appraisal

of the articles that included quantitative research methods indicated that only two articles (30, 47) met all the criteria suggested by the JBI Critical Appraisal Checklist for Analytical Cross Sectional Studies. The identification and management of confounding factors received the highest percentage of high-risk ratings in analytical cross-sectional studies. The validation of measurements of causal beliefs received the highest percentage of high risk of bias in descriptive cross-sectional studies. (The quality appraisal tables are available in the online supplement.)

Some of the included articles did not present precise endorsement rates of causal beliefs: seven articles (25, 48–53) presented percentages without Ns, 10 articles presented means (27, 29, 43, 54–60), and seven of the qualitative articles (13, 18, 26, 34, 35, 45, 46) and four of the quantitative articles (2, 22, 61, 62) did not present percentages or means. Therefore, we calculated approximate Ns based on percentages and total Ns where possible and present existing data in other cases.

Causal Beliefs of MHPs

Common types of causal beliefs about psychosis. Of the 42 studies included, 15 (36%) explored causal beliefs of MHPs from a range of professions: psychiatrists (23, 26, 57, 59, 62); psychiatric nurses (25, 60, 63); and psychologists, social workers, occupational therapists, care coordinators, and mental health support workers (24, 27, 45, 52, 53, 55, 58, 61) (Table 1). Three of the studies are from the 1970s, which limited the comparability of results from different studies (58, 61, 62). Nine studies found a clear preference for biogenetic beliefs about psychosis among MHPs (24–27, 53, 57, 59, 60, 63); six studies reported the endorsement of psychosocial beliefs alongside biogenetic beliefs (25, 52, 55, 59, 62, 63), suggesting that although MHPs are more inclined toward biogenetic beliefs about psychosis, they often hold complex causal models that include several beliefs simultaneously.

Impact of clinical profession on type of causal beliefs. Endorsement of causal beliefs was related to profession. One study compared causal beliefs of MHPs from different professions (55). All 12 psychologists who participated in the study endorsed psychosocial beliefs about psychosis (childhood trauma, adulthood trauma, and recent stress), whereas only three (25%) endorsed beliefs about the role of genetics, and two (17%) endorsed beliefs about chemical imbalance. Other nonmedical MHPs in this study (N=186) endorsed biogenetic beliefs (genetics, 48%, N=~90; and chemical imbalance, 45%, N=~84) and psychosocial beliefs (childhood trauma, 60%, N=~111; and adulthood trauma, 50%, N=~94) to a similar extent (55). Conversely, psychiatrists (N=21) were the only group with a higher endorsement of biogenetic beliefs (genetics, 100%, N=21; chemical imbalance, 91%, N=~19) compared with psychosocial beliefs (childhood trauma, 81%, N=~17; and adulthood trauma, 81%, N=~17). Eight articles focused on psychiatrists and

TABLE 1. Studies of causal beliefs about psychosis among mental health professionals (MHPs)

Study	Country	Participants	N	Setting	Outcomes ^a
Carter et al., 2017 (55)	United Kingdom	Community psychiatric nurses, social workers, psychiatrists, staff nurses, care coordinators, psychologists, team managers, occupational therapists, support workers, and others	219	Mental health centers	The study used 5-point scales, with higher scores indicating greater endorsement. MHPs' scores were higher on the psychosocial scale (PS), compared with the biogenetic scale (BG) ($M=4.11\pm1.63$ vs. $M=3.75\pm1.64$). Psychologists' PS scores were considerably higher than their BG scores ($M=4.72\pm1.19$ vs. $M=2.29\pm1.88$). Other professionals' PS scores were similar to their BG scores. Psychiatrists were the only group to have higher BG scores, compared with their PS scores ($M=4.38\pm.94$ vs. 4.07 ± 1.70).
Fitzgibbons and Shearn, 1972 (61)	United States	Psychiatrists, psychologists, and psychiatric social workers	183	Multiple settings	Psychiatrists endorsed the disease concept of schizophrenia and rejected interpersonal etiology. Psychologists and social workers endorsed interpersonal etiology while rejecting the disease concept of schizophrenia and did not differ significantly from each other with respect to these 2 factors. Endorsement rates were not reported.
Gallagher, 1977 (62)	United States	Psychiatrists	109	Members of the American Psychiatric Association	No clear preference was found for either biogenetic or psychosociogenetic views. Endorsement rates were not reported.
Grausgruber et al., 2007 (52)	Austria	Nonmedical mental health professionals, including psychiatric nurses, social workers, psychologists, physiotherapists, and occupational therapists	1,479	Mental health care institutions (mailed survey)	MHPs endorsed a multicausal model of schizophrenia, including unhappy family situation (31%, $N\sim454$), genes (26%, $N\sim390$), and nervous strain (26%, $N\sim389$).
Harland et al., 2009 (57)	United Kingdom	Trainee psychiatrists	72	Multiple settings	The biological model was most frequently endorsed for schizophrenia. Two of the 3 statements most agreed with were related to schizophrenia: "The disorder results from brain dysfunction" (86% endorsed); "The appropriate study of the disorder involves discovery of biological markers and the effects of biological interventions" (80%). Schizophrenia was the least likely disorder to be attributed to other etiological models (i.e., nonbiological).
Kukulu and Ergün, 2007 (63)	Turkey	Psychiatric nurses	693	Psychiatric wards	Approximately half (51%, $N=279$) of the nurses agreed that social problems caused schizophrenia, and most (93%, $N=506$) agreed that it is an illness present from birth.

continued

TABLE 1, continued

Study	Country	Participants	N	Setting	Outcomes ^a
Magliano et al., 2004 (25)	Italy	Nurses and psychiatrists	300 ^b	Mental health services	Factors most frequently endorsed were heredity (psychiatrists, 75%, N=~82; nurses, 74%, N=~141), stress (psychiatrists, 66%, N=~7; nurses, 53%, N=~101), and family conflicts (psychiatrists, 46%, N=~51; nurses, 48%, N=~91).
Newmark et al., 1977 (58)	United States	Psychologists and psychiatrists	381 ^c	Multiple settings	Compared with psychologists, psychiatrists rated both the psychodynamic perspective ($p \leq .001$) and the biochemical-neurological perspective ($p \leq .001$) as significantly more important.
Soskis, 1972 (59)	United States	Psychiatrists	132	Multiple settings	On a scale of 1–3, psychiatrists' highest endorsement was for the genetic perspective ($M=2.2$), closely followed by psychodynamic ($M=2.1$) and family-learning ($M=2.1$) perspectives.
Ting, 1997 (60)	Taiwan	Psychiatric nurses	525	Hospitals	Genetic predisposition was ranked as the most important factor in the etiology of schizophrenia ($M=1.83$, rank order 1), followed by constitutional/biochemical imbalance ($M=1.08$, rank order 2).
Wahass and Kent, 1997 (53)	United Kingdom and Saudi Arabia	Psychologists and psychiatrists	295 ^d	Mailed questionnaires sent to professionals in mental health sectors	Beliefs about etiology were related to culture, rather than to profession. For example, United Kingdom (UK) staff were more likely than staff in Saudi Arabia (SA) to endorse brain damage (UK psychologists, 57%, N=~40; UK psychiatrists, 62%, N=~53; SA psychologists, 36%, N=~25; SA psychiatrists, 40%, N=~28), negative childhood experiences (UK psychologists, 36%, N=~25; UK psychiatrists, 22%, N=~19; SA psychologists, 8%, N=~6; SA psychiatrists, 6%, N=~4).

^a When Ns were not reported, estimated Ns (e.g., N=~454) were calculated on the basis of the total N presented in the article and the reported percentage.

^b 190 nurses, 110 psychiatrists.

^c 219 psychologists, 162 psychiatrists.

^d 140 psychologists, 155 psychiatrists.

nurses (25–27, 57, 59–61, 63) and reported that they were more likely to endorse biogenetic beliefs compared with psychosocial beliefs. In four of these studies, endorsement of biogenetic beliefs ranged between 75% and 100%, and endorsement of psychosocial beliefs ranged between 48% and 81% (25, 26, 57, 63). The other four studies reported similar results without presenting percentages and Ns, indicating that psychiatrists and nurses saw psychosis more as a biological disorder than as a condition that is caused by psychosocial factors (27, 59–61).

One study showed that this biological view was more salient for psychosis than for other mental conditions (57). In this study psychiatrists endorsed biogenetic beliefs about psychosis with great conviction, whereas for other conditions, such as major depressive disorder, generalized anxiety

disorder, and antisocial personality disorder, psychiatrists exhibited other sets of beliefs, not necessarily biogenetic. Specifically, two of the three statements receiving the most agreement in the study were related to psychosis: “The disorder results from brain dysfunction” (86%, N=62); “The appropriate study of the disorder involves discovery of biological markers and the effects of biological interventions” (80%, N=57).

Of note, Newmark et al. (58) found opposite results for the impact of clinical profession on endorsement of causal beliefs. The lack of reported data prevents reporting the specific percentages and Ns; however, the authors reported that psychologists consensually endorsed biogenetic beliefs, whereas psychiatrists did not show a clear preference for a specific causal belief. However, the results of Newmark et al.

(58) should be interpreted with caution, because the study included a variety of work settings: psychiatrists and psychologists working in private practice emphasized a psychosocial perspective, whereas psychiatrists and psychologists working in state or university hospitals emphasized the biogenetic perspective.

Cultural differences among MHPs. Only one study compared causal beliefs of MHPs from different cultures. Wahass and Kent (53) explored attitudes of psychologists and psychiatrists toward auditory hallucinations, comparing MHPs from the United Kingdom (UK) and Saudi Arabia (SA). The results showed that causal beliefs about psychosis varied by MHP nationality. UK staff were more likely than SA staff to endorse psychosocial beliefs: 36% of UK psychologists ($N \sim 16$) and 22% of UK psychiatrists ($N \sim 10$) endorsed negative childhood experiences as a cause, compared with 8% ($N \sim 4$) of SA psychologists and 6% ($N \sim 3$) of SA psychiatrists. Almost half (40%, $N \sim 18$) of the UK psychologists and more than a quarter (28%, $N \sim 13$) of the UK psychiatrists endorsed environmental factors, compared with 10% ($N \sim 5$) of the SA psychologists and 8% ($N \sim 4$) of the SA psychiatrists. Most of the UK psychologists (64%, $N \sim 29$) and a third (34%, $N \sim 16$) of the UK psychiatrists endorsed stressful life events, compared with 40% ($N \sim 20$) of the SA psychologists and 10% ($N \sim 5$) of the SA psychiatrists. UK psychologists were more likely to endorse a genetic component (38%, $N \sim 17$), compared with SA psychologists (14%, $N \sim 6$). Therefore, UK MHPs presented a wider range of possible causal beliefs, compared with SA MHPs. Of interest, psychologists and psychiatrists within the same culture tended to agree with each other about etiology.

Causal Beliefs of People With Psychosis

Common types of causal beliefs about psychosis. Of the included articles, 35 focused on people with psychosis and indicated that their most endorsed causal beliefs were psychosocial (13, 22, 23, 26, 27, 29, 43, 45, 48, 50, 51, 54, 56, 64–66) and other nonbiogenetic beliefs (30, 34, 35, 40–42, 46, 49, 67) (Table 2). For example, Magliano et al. (50) found that most of the individuals with psychosis who reported on their causal beliefs (76%, $N=150$ of 198) mentioned at least one social cause and that more than half (58%, $N=114$ of 198) reported exclusively social causes. Family conflicts (41%, $N \sim 81$) were the most commonly reported social cause, followed by trauma (39%, $N \sim 77$), work and school difficulties (34%, $N \sim 67$), and psychological issues (33%, $N \sim 65$). Similarly, Carter et al. (54) found that people with psychosis endorsed psychosocial beliefs (childhood trauma, 54%, $N \sim 167$; adulthood trauma, 60%, $N \sim 187$; recent stress, 57%, $N \sim 177$; and personal sensitivity, 64%, $N \sim 197$) more often than they did biogenetic beliefs (hereditary factors, 45%, $N \sim 140$; and chemical imbalance, 46%, $N \sim 144$). Conversely, Van Dorn et al. (24) found a dominance of biogenetic causal beliefs over psychosocial

beliefs among people with psychosis. The most frequently endorsed cause was chemical imbalance (89%, $N \sim 93$). These different findings might be attributable to their asking participants about a hypothetical person with psychosis, rather than asking them about their own experiences.

The studies found a preference for psychosocial beliefs among people with psychosis, however, like MHPs, they often held complex causal models composed of different types of causal beliefs (e.g., 27, 46, 49, 56, 64).

Spiritual-religious causal beliefs. Seven studies reported that people with psychosis who came from cultures that value spirituality were more likely to endorse spiritual-religious causal beliefs about psychosis, compared with other types of beliefs (30, 40, 41, 44–46, 49). For example, a qualitative study conducted in Malawi by Chilale et al. (46) found that participants attributed mental illness to sociocultural factors; witchcraft, spirit possession, and curses were the main determinants endorsed. Similarly, Jones et al. (40), who conducted their study in the UK but recruited participants from various settings, including two spiritualist churches and one evangelical Christian church, found that a factor that emerged in their factor analysis was “the positive spiritual perspective” ($N=7$ of 20 participants)—namely, the perception of voices as positive experiences derived from spiritual forces.

In line with these findings, differences in causal beliefs were found among people with psychosis of different nationalities. People from Western societies were found to endorse biogenetic and psychosocial causal beliefs more often than did people from non-Western countries, who were more likely to endorse spiritual-religious beliefs, compared with other types of beliefs. Six studies compared causal beliefs of people of different nationalities or different cultural backgrounds and reported on these differences (17, 29, 43, 47, 65, 67). For example, Conrad et al. (43) compared causal beliefs of people from Jordan and Germany and found that whereas both groups endorsed predominantly psychosocial beliefs—and specifically the belief in psychosocial stress as a cause (83% of Jordanians [$N \sim 20$] and 61% of Germans [$N \sim 14$])—Germans mentioned biogenetic beliefs more often (26% of the Germans [$N \sim 6$] and none of the Jordanians), and Jordanians mentioned spiritual-religious beliefs more often (29% of the Jordanians [$N \sim 7$] and none of the Germans).

Similar findings were reported from a study conducted in Canada (17). Black participants cited biogenetic beliefs (heredity, 37%, $N=15$) and beliefs related to substance abuse (32%, $N=13$) less often than did White participants (heredity, 57%, $N=51$; and substance abuse, 52%, $N=47$). Finally, a study conducted in the UK among four ethnic groups (47) found that causal beliefs differed significantly by ethnicity. Whites cited biological causes (35%, $N=10$) more frequently, compared with African Caribbeans (7%, $N=2$), Bangladeshis ($N=0$), and West Africans (11%, $N=3$); and these three groups cited supernatural causes

TABLE 2. Studies of causal beliefs about psychosis among people with psychosis

Study	Country	N ^a	Setting	Outcomes ^b
Angermeyer and Klusmann, 1988 (48)	Germany	198	Psychiatric hospitals	Most patients chose a combination of two or more categories: 64% (N=~126) endorsed "family" as a cause, 71% (N=~140) endorsed "personality," 88% (N=~174) endorsed "recent psychosocial factors," and 32% (N=~62) endorsed "biology."
Caqueo-Urizar et al., 2015 (29)	Chile, Peru, and Bolivia	253	Public clinics	Participants rated causal factors on a 3-point scale, with higher scores indicating a stronger endorsement of the item as a cause of psychosis. Scores were higher for psychosocial factors (M=2.69±2.83) than for biological (M=1.67±1.73) and magical-religious (M=1.16±1.92) factors.
Carter et al., 2018 (13)	United Kingdom	15	Community mental health (CMH) teams, early intervention teams (EITs)	The category of belief most frequently endorsed was psychosocial. Other categories (biological, drug use, and unusual beliefs) were also frequently mentioned. In this qualitative study, endorsement rates were not reported.
Carter et al., 2018 (54)	England	311	CMH teams, EITs, and inpatient units	Participants rated causal factors on a 5-point scale, with higher scores indicating a stronger endorsement of the item as a cause of psychosis. Scores were higher on the psychosocial scale (M=3.37±1.06), compared with the biogenetic scale (M=3.13±1.15). Scores were lowest on the spiritual scale (M=2.30±1.34).
Charles et al., 2007 (49)	India	100	Hospital	Most held complex models of illness: 60% (N=~60) held at least one nonbiomedical causal belief, and 32% (N=~32) endorsed disease as a cause. Spiritual beliefs were widely held. Patients' endorsement of a disease model and a belief in karma and evil spirits as causes of illness were associated with higher stigma scores.
Chilale et al., 2017 (46)	Malawi	24	Different sources in the community, including traditional healers (participants in an earlier study were approached).	Among causal beliefs, sociocultural factors, such as witchcraft, spirit possession, and curses, were dominant. In this qualitative study, endorsement rates were not reported.
Conrad et al., 2007 (43)	Jordan and Germany	47 ^c	Psychiatric hospitals (1 Jordanian, 2 German)	Participants rated causal beliefs on a 5-point scale, with higher scores indicating a stronger endorsement of the item as a cause of psychosis. For both groups, the most endorsed belief was psychosocial stress (Germans, M=25.8±4.9; Jordanians, M=25.5±6.5). Jordanians endorsed supernatural factors more strongly, compared with Germans (M=10.1±5.1 vs. M=7.7±4.3).
Dudley et al., 2009 (42)	United Kingdom	21	EITs	The most endorsed cause was drug use (N=6, 29% of the variance). None of the factors reflected a "medical model" of psychosis.
Freeman et al., 2013 (66)	United Kingdom	92	Mental health services, both inpatient and outpatient	The most endorsed causes were psychosocial: stress (72%, N=65 of 90), state of mind (68%, N=61 of 89), other people (64%, N=58 of 90), and personality (60%, N=54 of 90).
Gómez-de-Regil, 2014 (56)	Mexico	62	Hospital	Participants rated causal factors on a 4-point scale, with higher scores indicating a stronger endorsement of the item as a cause of psychosis. Participants rated society factors highest (M=12.7±4.1), followed by personality (M=11.9±3.7), family (M=11.1±4.5), biology (M=10.4±3.5), and esoteric (M=8.8±3.1).
Holzinger et al., 2003 (23)	Germany	100	Outpatient clinics, CMH services, and office-based psychiatrists	Participants cited psychosocial causes about twice as often as biogenetic causes. The main psychosocial cause cited was psychosocial stress (66%, N=66).
Hussain et al., 2017 (22)	Pakistan	100	Hospital	The most frequently endorsed beliefs were psychosocial. Beliefs least likely to be endorsed were related to alcohol and drugs. Endorsement rates were not reported.

continued

TABLE 2, continued

Study	Country	N ^a	Setting	Outcomes ^b
Johnson et al., 2012 (30)	India	131	Hospitals	Endorsed causes were spiritual (black magic, 73%, N=96; evil spirits, 18%, N=23; and punishment by God, 11%, N=14), hereditary factors (<1%, N=1), disease (14%, N=17), and psychosocial factors (11%, N=14). About a fifth of participants (22%) endorsed models with multiple causal factors. The proportion endorsing disease models steadily increased over time. The number endorsing nonmedical models was high at recruitment, fell over the first year of treatment, and then rose dramatically.
Jones et al., 2003 (40)	United Kingdom	20	Different sources in the community	"Positive spiritual perspective" was the most endorsed factor (N=7). Those whose responses loaded onto this factor perceived voices as positive experiences, derived from spiritual sources. They condemned a biomedical view of hearing voices. The second most-endorsed factor was the personal relevance perspective (N=4), in which hearing voices was related to personal life events within a psychological framework.
Kinderman et al., 2006 (35)	United Kingdom	20 ^d	7 psychiatrists referred inpatients and outpatients	Participants held multiple beliefs simultaneously. The most common account implied an interaction between personal characteristics and psychosocial stresses. In this qualitative study, endorsement rates were not reported.
Lund and Swartz, 1998 (41)	South Africa	10	Community psychiatry clinic	Most respondents (N=7) understood their condition in terms of a "spiritual" or "mystical" explanation.
Magliano et al., 2009 (50)	Italy	241	Mental health clinics	At least one social cause was cited by 76% (N=150 of 198), and 58% (N=114 of 198) cited exclusively social causes. The most frequently cited social cause was family conflicts (41%, N=~81), followed by traumas (39%, N=~77). Biological causes were cited by 10% (N=~20). In regard to stigma, those who attributed their mental disorder to social causes scored lower on recognizability, compared with those who made other attributions (lower scores indicated that they were less likely to feel they would be recognized as a person with mental illness).
Makanjuola et al., 2016 (44)	Nigeria, Ghana, and Kenya	85	Clinics of complementary and alternative practitioners	Endorsements were equal for spiritual (49%, N=64) and biopsychosocial (51%, N=66) causes. In regard to stigma, most who scored high in stigma tended to hold supernatural causal beliefs.
Maraj et al., 2017 (17)	Canada	171 ^e	EITs	Black Africans were less likely than White Europeans to attribute psychosis to hereditary factors (37%, N=15 vs. 57%, N=51) or to substance abuse (32%, N=13, vs. 52%, N=47). No differences in explanatory models were noted between the Black Caribbean and White European groups.
McCabe and Priebe, 2004 (47)	United Kingdom	119	Mental health clinics	Whites cited biological causes (35%, N=10) more frequently, compared with African Caribbeans (7% N=2), Bangladeshis (N=0), and West Africans (11%, N=3). Supernatural causes were cited by African Caribbeans (10%, N=3), Bangladeshis (27%, N=7), and West Africans (29%, N=8) and were not cited at all by Whites. Social causes were cited more frequently by African Caribbeans (60%, N=18) and Bangladeshis (42%, N=11), compared with Whites (31%, N=9).
Sanders et al., 2011 (67)	New Zealand	111	Mental health services	The three most frequently endorsed causes were drugs and alcohol (26%, N=14), family relationships and abuse (22%, N=12), and biological causes (20%, N=11). No significant differences in causal beliefs were detected between Māori and New Zealand Europeans.

continued

TABLE 2, continued

Study	Country	N ^a	Setting	Outcomes ^b
Sayre, 2000 (18)	United States	35	Hospital	Participants endorsed both psychosocial and biogenetic beliefs. In this qualitative study, endorsement rates were not reported.
Syrén and Hultsjö, 2014 (34)	Sweden	33	Outpatient units	Psychosocial and spiritual causes were the most frequently endorsed. In this qualitative study, endorsement rates were not reported. Some participants did not regard psychosis as a problem and believed that they had been exclusively selected for extraordinary missions.
Wall et al., 2017 (64)	United Kingdom	72 ^f	Hospital	Stress or worry was the most endorsed explanation among both forensic (65%, N=26) and general psychiatry (81%, N=32) inpatients. Forensic inpatients were more likely than general psychiatry inpatients to attribute psychosis to drug use (55%, N=22 vs. 38%, N=12).
Watson et al., 2006 (51)	United Kingdom	100	National Health Service (NHS) Trusts	Internal causal attributions were widely endorsed, with 68% (N=68) agreeing that "My state of mind played a major part in causing my current problems/illness." Attributing psychosis to one's state of mind was significantly related to higher levels of anxiety ($r_s=.27$, $p<.01$) and attributing psychosis to stress was related to higher levels of self-esteem ($r_s=.27$, $p<.01$).
Williams and Steer, 2011 (2)	United Kingdom	66	3 NHS mental health centers	The most frequently endorsed beliefs were that psychosis was caused by stress or worry, a trauma, chemical imbalance, thinking about things too much, mental attitude, or family problems. Only descriptive information was presented regarding causal beliefs, because the scale's items were not easily classified into meaningful dimensions, according to the authors.
Yalvaç et al., 2017 (65)	Turkey	148	Outpatient psychiatry units	"Internal problems" was the most endorsed cause by participants from Ankara (58%, N=57), followed by "family problems" (44%, N=44). Among those from Van province, the most endorsed cause was "no idea" (38%, N=18), followed by "family problems" (31%, N=15).

^a In all studies, all participants were people with psychosis (Johnson et al. [30] reported that participants had first-episode psychosis).

^b When Ns were not reported, estimated Ns (e.g., N=126) were calculated on the basis of the total N presented in the article and the reported percentage.

^c 24 Jordanians, 23 Germans.

^d 10 inpatients, 10 outpatients.

^e 90 White European, 41 Black African, 40 Black Caribbean.

^f 40 forensic, 32 general.

more frequently than did Whites, who did not endorse this type of belief (10%, N=3; 27%, N=7; and 29%, N=8, respectively). African Caribbeans (60%, N=18) and Bangladeshis (42%, N=11) cited social causes more frequently than did Whites (31%, N=9).

Beliefs related to personal characteristics. Eleven studies reported that people with psychosis often attributed their psychotic experiences to their personal characteristics (e.g., personal sensitivity or lack of willpower) (17, 18, 22–24, 51, 56, 64, 66). Of note is that attributing psychosis to personal characteristics was also evident in other studies reviewed here, but it was measured as part of psychosocial beliefs (together with social-environmental causal beliefs) and not treated as a separate category. Although it makes sense to view beliefs related to personal characteristics and to social causes as intertwined, it seems that the former may have unique consequences for the individual's self-esteem and

coping strategies. Three studies defined beliefs related to personal characteristics as a form of self-blame (22–24). Two studies reported on the negative impact of this belief. One found that endorsing this type of belief was associated with patients' perception that the psychotic experience had a negative influence on their emotional state ($p\leq 0.05$) and on life in general ($p\leq 0.001$) (56). Watson et al. (51) found a relationship between internal causal attribution (i.e., attributing psychosis to the self) and higher levels of anxiety ($p<0.01$), whereas attribution of psychosis to external factors, such as stress, was related to higher self-esteem ($p<0.01$).

On the other hand, two studies suggested that beliefs related to personal characteristics may lead to higher motivation for change and to better engagement in psychotherapy (18, 66). Freeman et al. (66) explored factors predicting engagement in cognitive-behavioral therapy for psychosis. They found that people who were more engaged in therapy attributed the cause of their problems to their personality

($p=0.015$) and state of mind ($p=0.003$) compared with those who were less engaged. Similarly, in a qualitative study, Sayre (18) found that people who attributed their difficulties to their personality and behavior appeared to feel some responsibility and were motivated to make behavioral changes in order to cope with their problems. People in this group found psychiatric treatment helpful and felt that it enabled them to gain some control over their symptoms.

Beliefs that the psychotic experience is part of the human experience. Several qualitative studies included in the review enabled a deeper understanding of causal beliefs that are often endorsed by people with psychosis (13, 18, 34, 35). These studies reported that some participants believed that their experiences were real and part of their general experience as human beings. These participants did not define the experiences as psychosis or as part of a mental illness. For example, Syrén and Hultsjö (34) analyzed data from two qualitative studies and reported that one of the four categories that emerged under “causes of illness” was “it is not a disease.” People who endorsed this belief thought that they had been selected for extraordinary missions and did not believe that their experience was a psychotic illness. In addition to the study by Syrén and Hultsjö (34), who studied outpatients, three additional studies examined patients in inpatient settings. Sayre (18) interviewed 35 inpatients diagnosed as having schizophrenia and defined one of the six causal belief categories in her study as “ordination”—the belief that one actually has special powers or duties and the perception that one’s hospitalization is a misunderstanding.

Kinderman et al. (35) interviewed both outpatients and inpatients and found that inpatients experiencing active psychosis did not identify their experience as an “illness” or as distinct from their usual experiences. Instead, they experienced it as an inseparable part of their identity. In contrast, the most common causal belief cited by outpatients, who were in a period of remission, implied an interaction between personal characteristics (cast in terms of vulnerability) and psychosocial stresses. Finally, Carter et al. (13) explored the development of causal beliefs among people with psychosis. Nine of the 15 participants in their study described the development of their causal beliefs as shifting from a belief that their experiences were real perceptions and thus they did not need causal beliefs to explain them, to a gradual search for reasons for their experiences, often after their first contact with mental health care.

Differences in Beliefs Between People With Psychosis and MHPs

Considerable gaps were found in four studies comparing the causal beliefs of people with psychosis and MHPs (24, 26, 27, 45) (Table 3). In one study, although specific Ns or percentages were not provided, the authors reported that biogenetic factors were considered by MHPs (i.e., pharmacists, psychologists, psychiatric nurses, and psychiatric social workers) to be the most predominant cause of psychosis,

whereas societal factors were the causes most frequently endorsed by people with psychosis, with some variations depending on the type of causal belief classification used in the analysis (27). This trend was found in two more studies (24, 26). Uniquely, in a qualitative study conducted in Mali, Napo et al. (45) found an influence of cultural context on causal beliefs of both MHPs and people with psychosis: psychosocial factors, such as breaking taboos and engaging in family conflicts, were seen by both groups as playing an important role in causing schizophrenia. Although the study did not specify the experts’ professions (except for one traditional healer mentioned), this finding suggests that gaps between people who experience psychosis and MHPs may be moderated by cultural background.

Causal Beliefs and Stigma

Only three studies explored the relationship between causal beliefs and stigma among people with psychosis. One study found higher endorsement rates of spiritual-religious causal beliefs (witchcraft and spiritual attack) among people with psychosis who had scores indicating high self-stigma (70%, $N=14$), compared with those who had scores indicating low self-stigma (33%, $N=4$) (44). Another study reported that people who considered their psychotic experiences as exclusively attributable to social causes acknowledged lower levels of recognizability (i.e., the feeling of being identifiable as mentally ill by other people) ($p<0.02$) (50). Finally, Charles et al. (49) found that higher stigma among people with psychosis was associated with biogenetic causal beliefs about psychosis ($p=0.09$), as well as with a belief in karma ($p=0.02$) and evil spirits ($p=0.08$).

Four studies explored causal beliefs and stigma among MHPs (24, 52, 53, 63), but three of them analyzed the two variables separately without attempting to study associations between them (24, 53, 63). Grausgruber et al. (52) did not find a significant relationship between causal beliefs and stigma in their sample of MHPs.

DISCUSSION

The purpose of this review was to describe the scope of literature and to map the existing evidence on causal beliefs about psychosis among MHPs and people with psychosis. Results suggest that both MHPs and people with psychosis often hold complex causal models composed of different types of causal beliefs and that a gap exists in the different sets of causal beliefs held by MHPs and by people with psychosis. A central finding was that MHPs endorsed biogenetic causal beliefs of psychosis more often than they did other types of beliefs (24–27, 53, 57, 59, 60, 63) and that profession type had an impact on the causal beliefs of MHPs. Those from medical professions were found to hold mostly biogenetic beliefs, whereas those from nonmedical professions, such as psychologists and social workers, were found to hold psychosocial beliefs more often than they held other types of causal beliefs. Unlike MHPs, people with psychosis

TABLE 3. Studies comparing causal beliefs about psychosis among people with psychosis and among mental health professionals (MHPs)

Study	Country	Participants	N	Setting	Outcomes
Napo et al., 2012 (45)	Mali	People with psychosis and medical practitioners, including a traditional healer	20 ^a	Hospital	Psychosocial factors, such as breaking of taboos and family conflicts, were seen by people with psychosis and by experts as playing an important role in causing schizophrenia. In this qualitative study, endorsement rates were not reported.
Luderer and Böcker, 1993 (26)	Germany	People with psychosis and psychiatrists	51 ^b	Psychiatric hospital	Psychiatrists saw psychoses as biological disorders (endorsement rates were not reported). Among people with psychosis, only 24% stressed the idea of an underlying biological disorder, 41% attributed schizophrenia to their living conditions, and 35% attributed it to their personal characteristics.
Tarakita et al., 2018 (27)	Japan	People with psychosis and MHPs (medical staff other than psychiatrists)	559 ^c	Hospitals and mental clinic	The authors created 4 subscales (psychosocial, biological, environmental, and cultural) based on 2 measures. Medical staff predominantly endorsed biological conceptions, and people with psychosis endorsed psychosocial beliefs. Only factor loading was reported for these subscales.
Van Dorn et al., 2005 (24)	United States	People with psychosis and MHPs, including psychiatrists, psychologists, clinical social workers and case managers	189 ^d	MHPs were from community mental health clinics and hospitals (mailed survey); for people with psychosis, the setting was not mentioned.	"Chemical imbalance" was the most frequently endorsed cause by both people with psychosis (89%, N=93) and MHPs (98%, N=82). People with psychosis were significantly less likely than MHPs to endorse a chemical imbalance as a cause. Psychosocial causes were more frequently endorsed by people with psychosis (85%, N=88,) than MHPs (67%, N=55), and biogenetic causes were more frequently endorsed by MHPs (96%, N=79) than by people with psychosis (74%, N=77).

^a 15 people with psychosis, 5 practitioners.^b People with psychosis, N of psychiatrists not specified.^c 212 people with psychosis, 347 MHPs.^d 104 people with psychosis, 85 MHPs.

were found to frequently endorse psychosocial beliefs about psychosis, a finding reported previously in other reviews (3, 68).

Although psychosocial causal beliefs often refer to social and psychological aspects as intertwined, the results of this review shed light on the inherent difference between them. Social-environmental causal beliefs may be associated with positive outcomes, such as higher self-esteem (51), whereas beliefs related to personal characteristics were found to be frequently associated with negative consequences, such as self-blame (22–24), poorer emotional state (56), and higher levels of anxiety (51). On the other hand, beliefs related to

personal characteristics appear to have a potential to facilitate positive change and engagement in therapy (18, 66).

The findings of qualitative studies in this review suggest that people who experience acute psychosis may be more likely to believe that the psychotic experience is part of the human experience, rather than regarding it as psychosis or as mental illness (13, 18, 35). Instead, these individuals experienced psychosis as inseparable from their identity (69, 70). For some, the process of separating one's "self" from the illness is an important part of the recovery process (70). This finding echoes the concept of "narrative insight," which refers to the different ways in which people make sense of

their psychotic experiences, which often does not accord with traditional psychiatric definitions (69, 71, 72).

Another factor found to influence causal beliefs is culture. Studies focusing on culture and type of causal beliefs reported that people with psychosis who come from Western societies were more inclined toward biogenetic and psychosocial causal beliefs, compared with those from non-Western cultures, who were more likely to endorse spiritual-religious beliefs. Only one study explored causal beliefs of MHPs from different cultures and reported that the strongest impact on causal beliefs was culture (53). Although not focused on culture per se, a recent related qualitative systematic review that focused on the role of spirituality in the formation of causal beliefs about mental illness found considerable gaps between the spiritual needs of people with mental illness and the services provided by psychiatric systems, which failed to address those needs (73).

Differences in causal beliefs between people with psychosis and MHPs may also negatively affect the therapeutic relationship, which is closely linked to treatment adherence and outcome (74, 75). Collaboration and agreement on the purpose and goals of treatment are core features of the therapeutic relationship (76, 77). Research has shown that disagreements on a wide range of issues are highly prevalent between MHPs and people with psychosis (78–81) and that such disagreements are associated with poorer outcomes (82) and less satisfaction with the therapeutic relationship (83). Therefore, on the basis of four studies that compared causal beliefs of MHPs and people with psychosis (24, 26, 27, 45), we assume that the gaps in causal beliefs between these groups can interfere with the therapeutic relationship, an issue that requires more research. Increasing MHPs' awareness of gaps in causal beliefs and fostering patient–MHP collaborative and open communication, such as Open Dialogue (84), shared decision making, and other engagement methods (85–88), about causal beliefs, can improve the therapeutic relationship.

Although results of the review indicate that MHPs are more likely to endorse biogenetic causes, compared with people with psychosis, who are more likely to endorse psychosocial causes, both groups often hold complex causal models that integrate different types of beliefs. Discussing causal beliefs as part of team meetings can enable MHPs to critically evaluate their own beliefs, raise awareness among others, and help lead to the endorsement of more complex causal models that hold multiple angles and perspectives. In turn, such models can help MHPs be more open-minded about the causal beliefs of the people they treat, which can strengthen the therapeutic alliance. When a person seeks to understand the reasons for his or her experience, whether the person defines it as psychosis or not, the MHP should encourage an open discussion about causal beliefs, exploring with the person as part of the therapeutic process different types of beliefs. Moreover, causal beliefs can serve as an important target for intervention (66, 89, 90) and help people with psychosis create links between their life history

and their current experiences, which can lead to the development of a more coherent sense of self (91, 92).

Only one study found that people with psychosis were more likely to endorse biogenetic causal beliefs over psychosocial beliefs (24), and this study used case vignettes. This finding may suggest that when asked about other people with psychosis and not about their own experiences, people with psychosis are more likely to hold biogenetic beliefs. A systematic review focusing on people with mental illness and MHPs found that biogenetic beliefs were related to higher levels of stigma among both groups (19). Another recent systematic review of stigma among MHPs highlighted the relationship between biogenetic beliefs and stigma; biogenetic causal beliefs led to more negative attitudes of MHPs toward people with schizophrenia (20). Moreover, biogenetic explanations rather than psychosocial explanations have been found to evoke significantly less empathy and more dehumanization among MHPs toward people with mental illness (93, 94). Because the results of the review presented here point to potential gaps between MHPs, who were found to be more likely to endorse biogenetic than other types of causal beliefs, and people with psychosis, who were found to be more likely to endorse psychosocial causal beliefs than they were other types of beliefs, it is likely that such discrepancies will be related to higher levels of stigma among MHPs, which may be deleterious to the therapeutic relationship and to patients' adherence. However, this assumption requires further research, because only one study explored the relationship between MHPs' causal beliefs and stigma (52), and only three reported on the relationship between causal beliefs and stigma among people with psychosis (44, 49, 50).

Although this review has provided valuable information about the causal beliefs of MHPs and people with psychosis and about existing gaps between these two groups, its results are subject to certain limitations. The studies included in the review used a wide range of methodologies and measures to assess causal beliefs and were conducted in different geographical areas during different periods, making it hard to compare the findings regarding causal beliefs of MHPs and people with psychosis. Future studies should attempt to assess causal beliefs by using existing standardized measurements, such as the Illness Perception Questionnaire for Schizophrenia (9) and Short Explanatory Model Interview (95). Second, in some of the included studies, specific endorsement rates were not reported. To reflect an accurate and extensive presentation of the state of arts and not to ignore studies that did not provide clear numbers, we provided estimated Ns in seven cases. These estimated Ns were calculated on the basis of the total N presented in the article and the reported percentage. In cases in which percentages were not reported, we present the existing data. Third, because of the iterative nature of the data-coding process of content that was conducted by four authors, we did not assess interrater reliability. However, disagreements were discussed throughout the process until agreement was reached.

CONCLUSIONS

The included studies were heterogeneous in their quality, breadth of reported data, year of publication, design, setting, and measures, which highlights a need for further research using validated measures of causal beliefs. Results provide evidence supporting differences in causal beliefs between MHPs and people with psychosis. MHPs were more likely to endorse biogenetic beliefs about psychosis over other types of beliefs; people with psychosis were more likely to endorse psychosocial beliefs and other nonbiogenetic beliefs about their experience, rather than biogenetic beliefs. These possible differences can harm the therapeutic alliance, which is closely linked to treatment adherence and outcomes. Overcoming gaps in causal beliefs requires that MHPs become aware of their own causal beliefs and of potential gaps so that they can discuss them openly and respectfully with people with psychosis. Such discussions may help people with psychosis integrate their current experiences with their life history, which can facilitate the process of constructing a personally meaningful narrative of self and illness, an important part of the recovery process (96). Given the scarce evidence regarding differences in causal beliefs between MHPs and people with psychosis and the relationship between causal beliefs and stigma, future research should focus on exploring these issues and their impact on the therapeutic alliance.

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