The Influence of Causal Beliefs and Symptom Presentation on Mental Health Help-Seeking Preferences in Muslim Americans

by

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Abstract

Despite facing elevated psychological distress, Muslim Americans represent an underserved population in mental health research and practice. While stigma and acculturation have been widely studied as barriers to help-seeking, less attention has been paid to the role of causal beliefs regarding mental illness etiology and symptom presentation in shaping treatment preferences. The present study addressed this gap by examining how mental illness etiological beliefs (Islamic/spiritual, biological, and environmental), perceived symptom severity, and treatment recommendations (Islamic and formal) were related among culturally diverse Muslim Americans (N = 236). Participants read clinical vignettes that varied by diagnostic category (depression, OCD, schizophrenia) and by content (religious vs non-religious) and rated perceived severity, causal beliefs, and treatment recommendations for each vignette to examine whether these beliefs and preferences varied accordingly. Results showed that Islamic beliefs were positively associated with Islamic treatment endorsement and negatively associated with formal treatment endorsement, while biological and environmental beliefs were positively associated with formal treatment endorsement. Perceived symptom severity was consistently associated with biological beliefs and formal treatment endorsement but was not related to Islamic beliefs. Causal beliefs and treatment endorsement also differed significantly by diagnostic category. Religious symptom content significantly increased Islamic treatment endorsement and decreased formal treatment endorsement. The findings demonstrated that Muslim Americans' treatment preferences are shaped by both underlying causal beliefs and contextual features of symptom

presentation. Implications for culturally responsive assessment and clinical training are discussed.

Chapter 1

Introduction

The Muslim population in the United States continues to grow and is currently estimated at approximately 3.45 million individuals (Pew Research Center, 2017). Despite this, Muslim Americans remain an underserved population in both mental health research and practice (Awaad et al., 2023). Moreover, existing literature suggests that Muslim Americans may be at an elevated mental health risk compared to other groups. A recent study revealed that Muslims are nearly twice as likely to report suicidal ideation compared to other faith groups within the sample (Awaad et al., 2021).

Stressors for Muslim Americans

Increased distress in this population may be related to the unique stressors Muslims face in the context of living in America. Additionally, many of the stressors experienced by Muslim Americans also overlap with those faced by racial groups such as Middle Eastern/ North African (MENA) individuals and South Asians due to the conflation of religious and ethnic identities in the US. For example, individuals from the MENA region are presumed to be Muslim, and Muslims are racialized as coming from the MENA region (Awad et al., 2019). As a result, Muslim and MENA populations experience similar struggles due to being socially perceived as a homogenous group. These stressors include increased discrimination, islamophobia, and subsequent racial profiling in the post 9/11 context (Amri & Bemak, 2012; Wrobel, 2023).

Indeed, a study examining Muslim college students found that discriminatory experiences were associated with higher levels of depression and anxiety symptoms (Tineo et al., 2021).

Almost 60% of Muslims in the US are foreign born, and immigration status comes with its own struggles (Pew Research Center, 2017). According to Amri and Bemak (2012), Muslim American immigrants face unique psychosocial issues that heighten their risk of psychological distress such as the process of acculturation, as well as balancing between clashing ethnic and American identities, language barriers, family role disruption (e.g., parentification of children) and social isolation due to loss of support networks. Such stress, deemed acculturative stress, is viewed as a product of perceived conflict between norms of the host culture and culture of origin. Even when attempting to acculturate into American society, Muslims reported increased perceived discrimination when integrated into societies, placing Muslim Americans in a double bind between acculturative stress and discrimination (Lajevardi et al., 2020). While many Muslims reported an openness to acculturation, it is possible that integration increases the likelihood of exposure to stressors such as discrimination (Amer & Hovey, 2007). Immigrants may also encounter practical stressors beyond acculturation-related difficulties, such as securing housing and employment opportunities (Wrobel, 2023). Moreover, immigrants may have been exposed to premigration traumatic stressors that exacerbate post-migration stressors (Amri & Bemak, 2012).

Underutilization of Services

Despite this elevated risk of psychological distress, Muslims living in the West are less likely to endorse the use of professional mental health services, instead preferring more informal sources such as friends and family, or religious coping (Sabado et al., 2023; Zia et al., 2022).

Indeed, professional services were one of the least supported/utilized sources of support by Muslim Americans (Sabado et al., 2023). Amri and Bemak (2012) speculated that such attitudes may reflect broader cultural mistrust towards such institutions, a pattern similar to other minority groups in the West. This was replicated in recent qualitative research as well (Qadeer et al., 2025). Muslims have expressed fears that mental health professionals may be biased or stereotype them based on their religious identity (Bagasra, 2023), as well as concerns that providers may discourage their religious beliefs or recommend interventions perceived as antithetical to Islamic values (Verwey, 2024).

Consistent with these concerns, perceived islamophobia was indirectly associated with negative attitudes about formal mental health services (McLaughlin et al., 2022). In this manner, Islamophobia represents a "dual risk" to Muslim Americans, both elevating distress and deterring this population from seeking formal services (McLaughlin et al., 2022, p. 579). Beyond these experiences, there are several factors that inform the help-seeking decisions of Muslim Americans.

Determinants of Help-seeking Behavior

There is a plethora of research exploring the processes that shape help-seeking behavior in health contexts. Such theories include the Theory of Planned Behavior (TPB) which has been widely adapted to health behaviors (Ajzen, 1991). This theory proposes that one's intentions to perform a behavior are informed by attitudes towards the behavior, subjective norms, and perceived behavioral control. Attitudes inform behavior as much as they influence an individual's intentions towards that behavior (Ajzen, 1991). Thus, within the context of mental

health, attitudes towards formal help were an important predictor for formal mental health service utilization (Aloud & Rathur, 2009).

While general frameworks like TPB are useful, culturally specific models have been developed to better understand help-seeking among Muslims, given the role of culture in shaping attitudes toward mental illness and mental health treatment (Browning et al., 2026). For example, Aloud and Rathur (2009) developed a culturally specific help-seeking pathway model for Arab Muslims (HSPAM) in the West. This framework emphasizes the role of Islamic and Arab cultural identity on attitudes towards formal mental health services. According to this model, there are three stages that an individual experiencing psychological distress passes through: problem recognition, deciding to seek help, and service selection (Aloud & Rathur, 2009).

In the first stage (problem recognition), individuals' cultural and religious beliefs, pre-existing knowledge of mental illness, and culturally shaped understandings of health and illness influence whether symptoms are recognized as problematic. Even after identifying a problem, one may remain hesitant in the second stage (decision to seek help) due to factors such as stigma, family and communal ties, and negative attitudes towards formal services. In the final stage (service selection), choice of care is likely to be impacted by a preference for informal resources, acculturation, awareness of available formal resources, and systemic barriers such as institutional or economic constraints (Aloud & Rathur, 2009).

Within this model, it is proposed attitudes towards seeking formal services specifically are shaped by four primary factors: cultural and traditional beliefs, knowledge of formal services, one's perception of societal stigma, and one's use of informal resources (Aloud & Rathur, 2009). These determinants were also identified in a more recent systematic review of the literature

(Tanhan & Young, 2022). Consistent with TPB theory as described above, these determinants shape attitudes toward formal mental health treatment, which may subsequently influence intentions to seek care, and mental health service utilization.

Acculturation and Stigma

Existing literature has explored the outlined factors and supported this theoretical framework (Ali et al., 2022; Verwey, 2024), with an emphasis on stigma (Ali et al., 2022; McLaughlin et al., 2022; Zia & Mackenzie, 2024) and acculturation (Bairami et al., 2021; Mudryk & Johnson, 2023; Sadek & Awad, 2025). Much of the literature has focused on stigma as a central barrier to help-seeking, with Muslim Americans reporting fears of being perceived as crazy, social judgment, and reputational damage (Qadeer et al., 2025).

Acculturation has also been examined as a determinant of help-seeking, although with mixed findings. Some studies suggested that individuals who had acculturated more to American values were more likely to seek professional help compared to those who harbored Islamic values (Sabado et al., 2023). However, other research found no significant relationship between acculturation, enculturation, and attitudes and intentions towards psychological help-seeking (Zia & Mackenzie, 2024). One explanation for these inconsistencies is that acculturation may not directly predict help-seeking attitudes. Indeed, Ali et al. (2022) found that when familiarity with services was included in their model, acculturation was no longer significantly associated with rejection attitudes towards formal services. So, acculturation may only influence treatment preferences to the extent that it increases familiarity and knowledge of available professional mental health services. Thus, Ali et al. (2022) argued that acculturation may be too

broad of a construct, and other underlying factors may better account for differences in help-seeking attitudes.

Research has largely focused on the role of stigma and factors like acculturation, while the influence of mental illness beliefs remains a less studied portion of the HSPAM model. In existing studies, cultural beliefs significantly accounted for variance in rejection attitudes beyond stigma (Ali et al., 2022). Similarly, research examining religiosity in addition to acculturation found that acculturation did not significantly mediate these relationships. Instead, high endorsement of biomedical beliefs was the mediator (Mudryk & Johnson, 2023). Similarly, Tanhan and Young (2022) suggested that cultural beliefs about mental illness may contribute to perceived stigma, highlighting the importance of cultural conceptualization of mental health. Rather than stigma and acculturation, research indicates that beliefs about mental health and services may better explain help-seeking behavior in Muslim Americans. While research has increasingly begun to examine beliefs about mental illness, it is relatively nascent.

Mental Illness Beliefs

Mental illness beliefs refer to the attributions individuals make about the causes of mental illness as well as treatment (Ali et al., 2022). Culture informs the explanatory models and beliefs one may have about mental illness causes or treatments (Ahuvia et al., 2024). Moreover, a plethora of research on mental illness beliefs in general populations has deemed them an influence towards constructs such as help-seeking (Ahuvia et al., 2024). In Aloud and Rathur's (2009) model, mental illness beliefs were situated within the problem recognition stage and said to inform attitudes towards seeking formal services. According to Alhomaizi et al. (2018), mental illness beliefs were described as a cross-cutting factor that influences help-seeking at the

individual, interpersonal, community, and larger environmental level. This suggests that mental illness beliefs are an important aspect of decision-making for Muslim Americans. Muslim Americans harbor various beliefs regarding the etiology of mental illnesses. Broadly, etiological beliefs held by Muslim Americans fall under the following categories: Religio-cultural and biopsychosocial beliefs.

Religio-Cultural Etiological Beliefs

Firstly, Muslim Americans have often endorsed religious explanations for mental health symptoms, perceiving mental illness as a test of patience from God or ordained by God's will (Alhomaizi et al., 2018; Aloud & Rathur, 2009). In a similar vein, symptomology may be attributed to a lack of faith or insufficient engagement in religious activities such as prayer, resulting in mental illness being viewed as a form of punishment (Alqasir & Ohtsuka, 2024). Even individuals who engage in prayer may be viewed as "not trying hard enough" (Alhomaizi et al., 2018, p. 35). Indeed, fatalist perspectives are typical in Muslims, who view much of the world as pertaining to God's will in the realm of health, and this influences their help-seeking decisions (Nageeb et al., 2018). Fatalistic conceptualizations have also been linked to beliefs surrounding mental illness specifically (Bagasra & Mackinem, 2014).

Bagasra and Mackinem (2014) differentiated these Islamic conceptions from supernatural or spiritual explanations of mental illness. Supernatural etiological beliefs include attributing psychological distress to black magic, possessions by spirits (jinn), or the Evil Eye, which is held in these cultures to mean harm brought forth by envy (Alhomaizi et al., 2018; Alqasir & Ohtsuka, 2024; Bagasra, 2023). Within Islamic teachings, jinn are spiritual beings, and Muslim Americans have reported that the belief in jinn possession as a cause of mental illness is common

within their communities (Alhomaizi et al., 2018). Participants reported that jinn possession may explain symptoms such as disorganized thinking and behavior, increased aggression, and self-injurious behaviors (Alqasir & Ohtsuka, 2024). Evil eye was described as a potential explanation of mental illness and reflected a belief that psychological distress can arise due to exhibited success that may provoke envy from others (Alhomaizi et al., 2018). While apparent in this population, supernatural explanations were less endorsed compared to fatalistic perspectives of mental illness (Bagasra & Mackinem, 2014).

Religious teachings have been found to influence the shaping of explanatory beliefs. In a qualitative study, nearly all participants identified the Quran and Islamic teachings (hadith) as sources of information for mental health (Verwey, 2024). Similarly, participants in another study reported endorsing supernatural and fatalistic causes due to their inclusions in the Quran (Alqasir & Ohtsuka, 2024). Moreover, these beliefs were further circulated within the community setting through Islamic lectures, discussions, and online platforms (Verwey, 2024).

Biopsychosocial Beliefs

Muslim Americans also endorsed mental illness etiological beliefs beyond Islamic and supernatural explanations. Muslims have also reported biomedical beliefs, viewing mental illness as comparable to other physical illnesses and attributing it to factors such as chemical imbalances or genetic aspects (Bagasra & Mackinem, 2014). These beliefs align with the use of "idioms of distress" in culturally diverse groups, such as MENA populations, that are often expressed through physical ailments. In MENA cultures, there is less distinction between psychological and physical expressions of distress (Elshamy et al., 2023). Contrary to what may be expected, religiosity predicted both traditional beliefs about mental health etiology and biomedical beliefs

in Muslims living in the West (Mudryk & Johnson, 2023). Indeed, a study conducted by Bairami et al. (2021) found that a high proportion of Muslims endorsed both biological and environmental etiological beliefs.

According to Bagasra (2023), situational factors —such as traumatic experiences, family stressors, substance use, or divorce — were the most mentioned cause for psychological problems in addition to spiritual causes. Environmental factors such as exposure to toxins, chemicals, prenatal disturbances, and food additives were also viewed as causes of mental illness (Bagasra & Mackinem, 2014). Thus, Muslims appear to hold both cultural and biopsychosocial beliefs about mental illness etiology (Alhomaizi et al., 2018).

A Multi-Dimensional Approach

Moreover, the literature suggests that Muslim Americans' beliefs about mental illness are multidimensional rather than monolithic. For instance, exploratory findings indicated that even when biological or environmental causes were recognized, they were often interpreted as divine in nature and done through God's will (Bagasra, 2023). This illustrates that Muslim Americans hold multifaceted views, and the context may influence which explanations are emphasized (Qadeer et al., 2025). Similarly, participants in another study believed that these beliefs were not mutually exclusive; supernatural causal beliefs did not conflict with accepting biopsychosocial mental health models (Verwey, 2024). Instead, some simultaneously endorsed both biomedical and supernatural explanations (Bairami et al., 2021).

Therefore, it is important to examine the personal beliefs of Muslim clients to better understand how variations in these beliefs may shape their therapeutic preferences and impact service selection (Bagasra, 2023). For instance, Mudryk and Johnson (2023) found that among

individuals with higher religiosity, biomedical causal beliefs were significantly associated with more positive attitudes towards mental health services, while traditional beliefs negatively predicted such attitudes. Exploration of beliefs in Muslims may prove useful in understanding, supporting, and influencing treatment choices.

Treatment preferences

Causal beliefs have been found to influence stigma and mental health treatment preferences. Different causal explanations (biological vs. social) shape attitudes towards treatment seeking in general populations (Ahuvia et al., 2024; Nolan & O'Connor, 2019). Exploratory research has found similar relationships in Muslim populations as well. Within the literature, treatment preferences were discussed in terms of informal and formal sources of support. Muslims showed a preference for more informal methods compared to professional mental health services, although contextual factors may cause this to vary (Sabado et al., 2023).

Preference for Informal Sources

According to Sabado et al. (2023), the highest-ranked sources of support among Muslim Americans included family, self-care, religious practices (e.g., prayer), or not seeking support at all. Consistently, MENA Muslim Americans tend to first reach out to family members when experiencing mental health concerns, viewing these issues as family matters rather than individual problems (Mechammil et al., 2019). This likely reflects their collectivist cultural background. Following family support, personal religious services are commonly sought out. Activities such as praying for an individual, making *Du'a* (supplication), or engaging in *Ruqia* (recitation of the Quran or invoking the name of God) were endorsed as potential responses to mental illness (Alqasir & Ohtsuka, 2024; Bagasra, 2023; Mechammil et al., 2019). Therefore,

initial problem management is done through family and religious activities (Verwey, 2024). Similarly, research on general populations found informal help-seeking to be more common than formal help-seeking (Brown et al., 2014).

However, existing research regarding Muslims' endorsement of religious leaders (e.g., Sheikhs or Imams) as help-seeking resources has yielded mixed findings. On one hand, earlier literature suggested Imams were a preferred source of help seeking, with many endorsing their aid for psychological difficulties (Abu-Ras et al., 2008). Similarly, Verwey (2024) found that some participants viewed them as helpful in addressing personal concerns. Religious scholars may be viewed as more trustful, and individuals may feel more comfortable sharing their struggles with the added benefit of receiving spiritual guidance (Qadeer et al., 2025).

On the other hand, there was some hesitancy seeking help from Imams. Some individuals expressed concerns about Imam's lack of mental health knowledge and did not view them as a fitting source of support for psychological issues. Additionally, some believed that spirituality and therapy should not be combined, and they viewed therapy and religious guidance as distinct domains with separate solutions (McLaughlin et al., 2022). Similarly, Zia et al. (2022) reported lower endorsement of Imams than expected. They hypothesized that this may be related to beliefs about mental illness as a form of divine punishment, which could lead to fears of being judged as sinful. However, this relationship was not directly examined within the study. Other studies implied similar findings. When mental health concerns were attributed to supernatural factors, participants preferred spiritually based healing methods and perceived formal methods as unfit for the problem (Verwey, 2024). However, when viewed as moralistic failures and faith weakness, they were reluctant to seek out religious help (Verwey, 2024). Thus, causal beliefs may influence what forms of help are deemed necessary.

In addition, within close-knit Muslim communities, seeking support from religious leaders may raise concerns about privacy (McLaughlin et al., 2022; Verwey, 2024). Consistent with such concerns, public methods such as friends and the community (e.g. Mosque) were the least rated likely sources of support (Sabado et al., 2023). Within collectivist communities, these findings suggest that more private forms of support (e.g., family or personal religious practices) are prioritized before engaging with the broader community. However, it was concluded that more research is needed to examine the role of potential attributions (McLaughlin et al., 2022).

Attitudes towards Formal Services

Formal services, such as therapists, appear near the bottom ranking of preferred initial sources of support (Sabado et al., 2023). However, in a qualitative study, Verwey (2024) reported that nearly all participants endorsed formal services, and a majority expressed a willingness to seek counseling themselves. This suggests that while not rejected, formal services are not viewed as the primary solution for mental health concerns.

It has been speculated that an overreliance on traditional sources, such as Imams, may negatively influence Muslims' perception of more formal mental health services (Aloud & Rathur, 2009; Tanhan & Young, 2022). However, other findings indicated more positive attitudes toward professional care. For instance, participants in Qadeer et al.'s (2025) study viewed pursuing mental health professionals as consistent with Islamic teachings. They emphasized such care is not only permissible but obligated as one should not address non-spiritual problems through spiritual means (Qadeer et al., 2025). This further supports that the *type* of causal belief one endorses influences their help-seeking choices. Indeed, greater

endorsements of biomedical explanatory beliefs have been associated with positive attitudes towards formal services (Mudryk & Johnson, 2023).

Beyond general attitudes, specific preferences for formal services also vary. Therapeutic preferences were shaped by sociocultural norms and experiences. McLaughlin et al. (2022) found that individuals who reported experiences of Islamophobia were more likely to prefer therapists who shared their religious background. Moreover, many participants expressed a preference for therapists of the same gender (McLaughlin et al., 2022). In terms of treatment modalities, individual therapy was preferred over family or group-based approaches. Attitudes towards medication were inconsistent. While some Muslims endorsed medication as part of treatment (McLaughlin et al., 2022), others feared the use of medication (Verwey, 2024). Rather than a complete rejection of pharmacological treatment, this is likely due to concerns regarding overreliance or over-medication in the mental health field and reflect a preference for it to be used in conjunction with other forms of care (Bagasra, 2011).

Preferences for service delivery settings also varied. Mosques and private clinics were more preferred as a setting for formal services by older individuals and those born outside of the US (McLaughlin et al., 2022). Individuals with lower help-seeking attitudes preferred group therapy, in mosque settings, with Imam collaboration, from Muslim therapists (McLaughlin et al., 2022). Participants who exhibited positive help-seeking attitudes were more likely to endorse private offices (McLaughlin et al., 2022). It is likely that mosque-based services may be more accessible and culturally familiar for older adults and immigrants, who face additional barriers. Across studies, the importance of culturally competent care, including preferences for therapists who understand Muslim beliefs, cultural context, community factors, and related challenges was emphasized (Qadeer et al., 2025; Verwey, 2024). Some expressed concerns about fears of

contact outside of treatment with a Muslim therapist due to the interconnectedness of Muslim communities (Verwey, 2024). More research would be needed to examine what influenced their help-seeking and preferred methods of support.

Hierarchy of Care

Research has demonstrated that help-seeking behavior is not so clear cut as binary preferences towards formal or informal services. Help-seeking patterns may not be fixed but instead follow either integrated or hierarchical patterns. For instance, some individuals endorsed a parallel model of help seeking, in which psychological and religious interventions are sought out simultaneously (Qadeer et al., 2025). One participant described this as seeking professional help while also receiving adjunct treatment from the Imam about religious methods related to the same concern (Qadeer et al., 2025). In contrast, other Muslims supported a hierarchical process of care, in which informal or religious methods are pursued before formal psychological services (Qadeer et al., 2025). Therefore, Muslims may initially manage symptoms through informal methods and only resort to formal services when proven to be insufficient (Verwey, 2024). However, others endorsed the opposite stepwise approach, believing that clinical concerns should be addressed before religious ones (Qadeer et al., 2025); for example, Quranic healing *(Ruqia)* should be pursued only when psychotherapy is unsuccessful (Alqasir & Ohtsuka, 2024). One aspect that appeared to shape these pathways is the nature of the psychological symptoms themselves.

The Role of Symptom Presentation

Although research in this area is scant, exploratory findings suggested that symptom presentation may influence the endorsement of particular causal beliefs and treatments sought

out subsequently (Qadeer et al., 2025). While Muslim Americans may hold multiple causal beliefs, certain factors likely influence which beliefs are more strongly endorsed, leading to varied help-seeking pathways (Alhomaizi et al., 2018). Bagasra and Mackinem (2014) speculated that beliefs about mental illness are likely to shift based on the nature of the symptoms and the context in which they occur.

Perceived Severity

Firstly, the endorsement of causal beliefs may be influenced by the visibility and perceived severity of a disorder, which in turn influence the types of treatment that are endorsed (Alqasir & Ohtsuka, 2024; Badran et al., 2025; Mechammil et al., 2019). Milder symptoms, such as depression or general stress, were attributed to supernatural causes and addressed through religious practices (e.g. reading the Quran) first and formal services only when the former did not suffice (Alqasir & Ohtsuka, 2024; Badran et al., 2025). In contrast, severe symptoms, such as suicidal thoughts or hallucinations, were framed as health-related concerns and formal mental health services such as psychotherapy were endorsed as the preference in Muslim Americans (Alqasir & Ohtsuka, 2024; Badran et al., 2025; Qadeer et al., 2025). Furthermore, a worsening of symptom severity led individuals to believe that seeking physician aid in conjunction with religious practices was necessary (Badran et al., 2025) and promoted greater utilization of all forms of support (Qadeer et al., 2025). This was referred to in another study as “hierarchy of perceived severity” (Qadeer et al., 2025, p. 4). However, these findings were all derived from qualitative studies, and further research is needed.

Symptom Type

Symptom type is another factor that may influence causal beliefs and treatment preferences, although it has been scarcely examined with Muslim populations. Within the broader literature, different mental health conditions were associated with distinct causal attributions. Many articles compared depression and schizophrenia (Angermeyer & Matschinger, 2003; Jacobi et al., 2022). For instance, individuals attributed schizophrenia to biological causes and major depressive disorder to psychosocial factors (Angermeyer & Matschinger, 2003). Similarly, a scoping review of existing studies examining causal mental illness beliefs found that there were some differences in the factor structures of perceived causes for different disorders across studies (Ahuvia et al., 2024). Preferences for treatment also differed by disorder type in general populations; informal services such as consulting a confidant were preferred for depression and psychiatric help was ranked first for schizophrenia (Angermeyer et al., 1999). However, no studies have been conducted directly comparing beliefs across diagnostics groups within the same study. Moreover, they noted that the types of causal beliefs may also differ based on population, so further examination is required in Muslim populations. Previous research with this population has recommended that future research examine potential differences in causal attributions and treatment recommendations across the diagnostic categories (Bagasra, 2011; Mudryk & Johnson, 2023). While symptoms like hallucinations are typically seen as more severe and require formal services (Alqasir & Ohtsuka, 2024; Qadeer et al., 2025), a participant in one study described hallucinations as spiritual and demonic and thus requiring spiritual methods (Mechammil et al., 2019). This may suggest that additional contextual factors, such as symptom content (hallucination perceived as demonic) may influence treatment preferences.

Symptom Content

Although research in this area is scant, the content of symptoms may also contribute to how mental illness is interpreted and, thus, how one responds to it. Symptom content may vary cross-culturally, as hallucination content can be shaped by religio-cultural meaning systems individuals hold, making symptoms "pathoplastic" (Larøi et al., 2014). For example, participants from a Muslim-majority population reported more religiously themed hallucinations than UK patients (Kent & Wahass, 1996). Similarly, individuals from Middle Eastern Islamic cultures are more likely to present with OCD symptoms centered on religious ritual, such as prayer-related obsession and ritual purity (Williams et al., 2017). In the case of schizophrenia, research has examined religious vs non-religious contextual sources of hallucinations (e.g. God vs the president) and delusions (Mohr et al., 2010; Phalen et al., 2019). Those with religious based delusions perceived greater conflict between their religious beliefs and psychiatric treatment compared to those with non-religious delusions, possibly resulting in reduced treatment engagement (Mohr et al., 2010). Given this, it may suggest that Muslim individuals experiencing symptoms that are religiously flavored may be less likely to engage in formal treatments. Prior work has also highlighted the need for research that includes symptom content involving negative religious content, such as hearing demons or the Devil, to examine how interpretations and help-seeking preferences may differ for such experiences (Phalen et al., 2019).

Similarly, OCD symptom subtypes (contamination, religiosity, asymmetry etc.) have been compared in the research, although this has been largely limited to public stigma (Ponzini et al., 2024). Results revealed that individuals interpret OCD symptom presentations differently and hold varying beliefs about causal factors depending on their content, although the comparison between religious and nonreligious content has yet to be explored (Chaves et al., 2024). Less is known about whether these differential perceptions also translate into variations in treatment

preferences. Therefore, more research examining the influence of religious content of symptoms on endorsed treatments and causal beliefs is crucial. Moreover, this has not been examined within specific cultural or religious populations who may interpret content differently (Mechammil et al., 2019). Overall, existing findings are largely qualitative, and there is a lack of research examining how symptom presentation (content, type, and severity) influence the causal beliefs and help-seeking pathways of Muslim Americans.

Chapter 2

Present Study

The literature denoted a relationship between beliefs and attitudes towards mental health services in Muslim Americans (Mudryk & Johnson, 2023). Moreover, emerging exploratory research suggested that perceived severity may play a role in this as well (Qadeer et al., 2025). The potential role of severity of the symptoms is relatively nascent, and further research is needed to examine the influence of contextual factors such as the severity, type, and content of the symptoms on Muslim Americans' causal beliefs and help-seeking preferences. So, it was recommended that future research utilize vignettes describing specific disorders to examine if causal attributions and treatment recommendations differ across the diagnostic categories (Bagasra, 2011; Mudryk & Johnson, 2023). While prior research has investigated the influence of symptom content (religious vs nonreligious) on stigma reactions, this has not been examined in the context of causal beliefs (Phalen et al., 2019). Therefore, the following study will examine Muslim Americans' endorsement of varying mental illness etiological beliefs for differing clinical vignettes and the subsequent treatments they would recommend. This will be conducted on Culturally and Linguistically Diverse (CLD) Muslims specifically, as research denoted potential cross-cultural differences in mental health attribution and therapeutic preferences between Anglo/Caucasian participants and other ethnocultural groups (Bairami et al., 2021; Sadek & Hashem, 2024). Thus, the following hypotheses were developed.

Hypotheses

H1: Beliefs will be associated with help-seeking preferences

(a) Spiritual beliefs regarding mental illness etiology will be correlated with positive attitudes towards Islamic treatments and less positive attitudes towards formal treatments.

(b) Biological and environmental beliefs regarding mental illness etiology will be more correlated with positive attitudes towards formal mental health services.

H2: Perceived symptom severity will be significantly associated with endorsed causal beliefs.

(a) Lower perceived symptom severity will be associated with stronger endorsement of Islamic causal explanations.

(b) Higher symptom severity will be associated with biological and environmental causal explanations.

H3: Perceived symptom severity will be significantly associated with endorsed treatment preferences.

(a) Lower perceived symptom severity will be associated with stronger endorsement of Islamic treatments.

(b) Higher symptom severity will be associated with formal treatments.

H4: Causal beliefs endorsed will differ based on vignette content

(a) Islamic belief endorsement will be higher for religious content vignettes than non-religious content.

(b) Biological and environmental beliefs endorsement will be higher for non-religious vignettes than religious content.

H5: Treatment endorsement will differ by symptom content.

(a) Islamic treatment endorsement will be higher for religious than non-religious content.

(b) Formal treatment endorsement will be higher for non-religious than religious content.

H6: Causal beliefs endorsed will differ based on mental illness category

H7: Treatment preferences endorsed will differ based on mental illness category

Chapter 3

Methods

Participants

Participants for this study were recruited through Prolific. To be eligible, individuals were initially required to (1) identify as a practicing Muslim, (2) be between 18 and 60 years of age, (3) be of MENA descent and (4) reside in the United States. Due to low response rates, eligibility was expanded to include all culturally and linguistically diverse Muslims residing in the US (e.g., MENA, South Asian, African). Of those who attempted the study, 236 individuals met the inclusion criteria. 124 participants were female (52.5%), 109 were male (46.2%), 1 was non-binary (0.4%), 1 preferred not to say (0.4%), and 1 (0.4%) left the item blank. Participants ranged in age from 18-60 years, with the majority falling within the 18-34 age range (70%). 127 (53.8%) of participants were born in the US and 108 (45.8%) elsewhere. The ethnic composition of the sample was predominantly of MENA descent (N=172, 72.9%). The remaining quarter of participants identified as South Asian (N=33, 14%), West/East African (N=21, 8.9%), or other/unspecified cultural groups (N=10, 4.2%). Finally, the sample reported relatively high levels of religiosity (M=2.66, SD = .36) on a three-point scale, indicating a high average agreement with items representing religious beliefs and practices.

Regarding mental health background, 133 participants (56.4%) reported a history of utilizing mental health services or treatments, while 102 (43.2%) did not. Regarding familiarity with mental illness, 40 (16.9%) reported being extremely familiar with mental illness, 96

(40.7%) reported being very familiar, 60 (25.4%) reported being somewhat familiar, 28 (11.9%) reported being slightly familiar, and 9 (3.8%) reported being not familiar at all. Similarly, when asked about mental health services, 36 (15.3%) reported being extremely familiar, 87 (36.9%) reported being very familiar, 65 (27.5%) reported being somewhat familiar, 36 (15.3%) reported being slightly familiar, and 11 (4.7%) reported being not familiar at all.

In terms of highest level of education obtained, 4 participants reported less than a high school education (1.7%), 34 reported a high school diploma or GED (14.4%), 34 reported some college but no degree (14.4%), 17 reported an associate's or technical degree (7.2%), 93 reported a bachelor's degree (39.4%), and 54 reported a graduate or professional degree (22.9%).

Materials and Measures

Demographic Questionnaire

Demographic variables such as age, gender, birth country (immigration status), level of education attained, history of service use, and familiarity and knowledge about mental illness and formal services were collected in a demographic questionnaire.

Religiosity

As part of the demographic questionnaire, religiosity was measured using the revised Age Universal Intrinsic-Extrinsic (I-E) Scale adapted from the Allport and Ross (1967) I-E Religious Orientation Scale, as modified by Amer and Hovey (2007). This measure is comprised of two subscales assessing intrinsic and extrinsic religious orientation. Amer and Hovey (2007) revised the original scale for use with Muslim participants by changing “church” to “church/mosque” and reducing the response format from a 5-point to 3-point Likert scale. This revised version demonstrated strong internal consistency (Cronbach’s alpha= .88). Similar to Amer and Hovey

(2007), the study utilized the 9-item intrinsic religiosity subscale which has been found to be more robust compared to the extrinsic scale.

Clinical Vignettes

Six clinical vignettes were developed for the present study. Each vignette provided a brief description of psychological symptoms a Muslim American was experiencing. The vignettes varied by mental illness category and symptom content, with two vignettes created for each diagnostic category. The three categories depicted symptoms characteristic of depression, obsessive-compulsive disorder (OCD), and schizophrenia. The selection of depression and schizophrenia was informed by prior research which has compared their different levels of perceived severity (Alqasir & Ohtsuka, 2024; Qadeer et al., 2025). Moreover, OCD was included given that one form of symptom presentation involves religious content (e.g. scrupulosity), allowing for comparison of symptom content within the same diagnostic category. The vignettes were presented in a 3 x 2 mixed factorial design. Diagnostic category (depression, OCD, schizophrenia) was manipulated within participants, such that all participants were exposed to a vignette from each category. Symptom content (religious, non-religious) was manipulated between participants who were randomly assigned to receive either all religiously or non-religiously framed vignettes.

Perceived Severity

Perceived severity of the mental illness category depicted in each vignette was measured using a single-item continuous rating scale. After reading each vignette, participants were asked to rate how severe they find the symptoms on a scale ranging from 0 to 100, with higher scores indicating greater perception of severity.

Mental Illness Etiological Beliefs

After reading each vignette, participants answered questions assessing their beliefs about the possible causes of the patient's symptoms. Items were adapted from the Conceptions of Mental Health Survey by Bagasra and Mackinem (2014) and modified for the present study. The scale consists of three subscales: biological, environmental, and Islamic/spiritual causes. Three items from the environmental subscale that were not relevant to the presented vignettes, specifically those related to alcohol consumption, drug use, and traumatic events, were removed. The remaining 13 items were rated on a 4-point Likert scale with response options ranging from "Very Unlikely" to "Very Likely".

Treatment Evaluation

A treatment evaluation questionnaire developed by the author was presented to the participants following each vignette to assess the participants' endorsement of various intervention options. Participants were asked to rate how likely they would recommend each treatment for the individual described in each vignette on a 100-point continuous rating scale, with greater scores indicating a higher endorsement. The questionnaire consisted of 8 items encompassing two domains: Islamic treatments (e.g., religious practices) and formal treatments (e.g. psychologist).

Procedure

Prior to data collection, the study proposal received approval from the Institutional Review Board at University of Michigan-Dearborn (HUM00289614). Participants were recruited through Prolific online, and data collection took place over seven weeks. Upon accessing the study, they were presented with an informed consent form that briefly explained the purpose of

the study and requested their consent to participate. Those who consented proceeded to the first portion of the study and completed the demographic questionnaire. Participants were then randomly assigned to one of two symptom content conditions (religious vs non-religious). All participants were exposed to three vignettes, one representing each mental illness category (depression, OCD, schizophrenia). Following each vignette, participants completed measures assessing causal beliefs and treatment evaluation related to the vignette. Once these were completed for each vignette, participants filled out a measure of religiosity. Religiosity was assessed at the end of the study to minimize the potential influence on their participants' responses to the vignettes. Upon completion, participants were compensated $3 for their time, which was provided by Experience+ Student Independent Research Grant.

Data were analyzed using SPSS. Bivariate correlations were run for the relevant variables for hypotheses 1, 2, and 3. Specifically, correlations between perceived symptom severity, causal beliefs (Islamic, biological, environmental), and treatment preferences (formal and Islamic) were examined across the three mental illness categories. Separate mixed ANOVAs were conducted for each dependent variable (causal beliefs and treatment recommendations) to examine whether participants differed in their responses as a functioning of symptom content (religious vs non-religious), diagnostic category (depression, OCD, schizophrenia), and their interaction.

Chapter 4

Results

The collected data were downloaded from Qualtrics and analyzed in IBM SPSS Statistics. Of the 261 submissions recorded on Prolific, 10 were excluded for not meeting inclusion criteria, two were duplicate entries, and 10 were flagged as potential bot activity, resulting in 239 suitable data sets. Upon further review, an additional three entries were removed due to excessive missing data. Of the remaining 236 participants, seven participants were missing 1-2 responses, which were prorated using the mean of their available responses for that measure. Cases in which more than 50% of scale items were missing were excluded from analyses involving that measure.

Descriptive Statistics

Basic demographic descriptive and frequency statistics are presented in Table 1. Scale descriptive statistics across vignettes and totaled averages are displayed in Table 2. Across the sample overall, environmental beliefs (M=2.865, SD= .034) were most strongly endorsed, followed by biological (M=2.627, SD=.040) and Islamic beliefs (M=2.059, SD=.042). With respect to treatment recommendations, it appears that formal services received higher endorsements (M=68.173, SD= 1.45), on average, compared to Islamic treatments (M=61.132, SD=1.808). However, ratings varied across diagnostic categories and symptom content conditions, which will be discussed in detail later below.

Scale Analysis

Reliability analyses were conducted on the modified and developed scales. Reliability was assessed across all subscales and averaged across the three vignettes (depression, OCD, schizophrenia). The Conceptions of Mental Illness scale was comprised of three subscales: Biological Beliefs, Environmental Beliefs, and Islamic Beliefs. Scale items were modified from the original measure to align with the vignette-based format of the current study. Initial analyses indicated that the Environmental Beliefs subscale did not demonstrate adequate internal consistency, and removal of the item "due to a lack of willpower or control" would improve this. Following its removal, the internal consistency of the Environmental Beliefs subscale improved to an acceptable level (α = .69).

All final subscales demonstrated adequate to strong internal reliability. The Biological Beliefs subscale (α = .61) and Environmental Beliefs subscale (α = .69) yielded lower alpha values, which was expected given that each subscale consisted of only three items. The Islamic Beliefs subscale demonstrated good reliability (α = .81). Additionally, the Treatment Evaluation measure, which was developed for the purpose of the current study, demonstrated strong internal consistencies for both the formal (α =.86) and informal treatment subscales (α = .86). An exploratory factor analysis (EFA) was conducted on the eight treatment evaluation items using principal axis factoring with varimax (orthogonal) rotation. It revealed two factors with eigenvalues greater than 1.0, supporting a two-factor structure consistent with two distinct subscales. Together, these factors accounted for 70.46% of the total variance (Factor 1=36.52%, Factor 2=33.94%). Factor loadings are provided below in Table 6. All averaged reliability analyses are provided below in Table 2.

Correlations

Bivariate correlations were run for the variables relevant to hypotheses 1, 2, and 3. Correlations between perceived symptom severity, causal beliefs (Islamic, biological, environmental), and treatment recommendations (formal and Islamic) were examined across the three mental illness categories. Pearson Correlation Coefficients are provided in Tables 4-6. There were several significant associations, as described below.

H1: Beliefs will be associated with help-seeking preferences

Hypothesis 1a. Islamic beliefs will be correlated with positive attitudes towards Islamic treatments and less positive attitudes towards formal treatments.

Across all three diagnostic category vignettes, Islamic causal attributions were significantly and positively associated with endorsement of Islamic treatments (depression r =0.63, p<.001; OCD r=.57, p <.001; schizophrenia r=.65, p<.001). This indicated that individuals who endorsed Islamic beliefs were more likely to support Islamic treatments across the three disorders presented.

There was also a significant negative correlation between Islamic beliefs and formal treatment recommendations for the depression (r= -.18, p = .006) and schizophrenia vignettes (r= -.27, p< .001), suggesting that those who rated Islamic causal attributions as less likely were more likely to endorse formal treatments. However, there was no significant correlation between Islamic beliefs and formal treatments for the OCD vignette treatments (r=-.045, p=.493).

Hypothesis 1 b. Biological and environmental beliefs will be more correlated with positive endorsements for formal mental health services.

Biological beliefs were positively associated with formal treatment endorsement across all three vignettes, including depression (r= .58, p< .001), OCD (r= .56, p<.001), and

schizophrenia (r=.58, p<.001). Similarly, environmental beliefs were also positively correlated with formal treatment preferences across depression (r=.28, p<.001), OCD (r= .36, p<.001), and schizophrenia (r= .25, p<.001). This suggests that individuals who endorsed biological and environmental causal beliefs were more likely to support formal mental health treatments across categories.

H2: Perceived symptom severity will be significantly associated with endorsed causal beliefs.

H2a: Lower perceived symptom severity will be associated with stronger endorsement of Islamic causal explanations.

Contrary to what was expected, Islamic causal explanations were not significantly associated with perceived symptom severity across depression (r=.085, p=.194), OCD (r= .084, p= .199), and schizophrenia (r= -.023, p= .723) vignettes. This suggests that there was no relationship between one's endorsement of Islamic beliefs and perceived symptom severity. Thus, this hypothesis was not supported.

H2b: Higher symptom severity will be associated with biological and environmental causal explanations.

Biological beliefs were significantly and positively associated with perceived symptom severity across all three vignettes, including depression (r = .22, p < .001), OCD (r = .34, p < .001), and schizophrenia (r = .26, p < .001). This suggests that those who rated symptoms as more severe were more likely to endorse biological beliefs for those symptoms as well. In contrast, the relationship between severity and environmental beliefs varied across the within-group vignettes. While a significant association was found for OCD (r = .15, p = .021), no significant associations were observed for depression (r = .077, p = .242) or schizophrenia (r =

.014, p = .835). Moreover, this association for environmental beliefs in the OCD vignette was smaller than that for biological beliefs. These findings partially support hypothesis 2b, suggesting that higher perceived symptom severity was consistently associated with biological causal beliefs across conditions, while the relationship with environmental beliefs was inconsistent.

H3: Perceived symptom severity will be significantly associated with endorsed treatment preferences.

H3a: Lower perceived symptom severity will be associated with stronger endorsement of Islamic treatments.

Findings were inconsistent across vignettes. For depression, there was a weak positive correlation between symptom severity and endorsement of Islamic treatments (r=.16, p=.015). In contrast with hypothesis 3a, this suggests that those who perceived symptoms as more severe were more likely to endorse Islamic treatments. However, no significant relationship was found between severity and Islamic treatment preferences for the OCD (r= .13, p= .057) and schizophrenia (r= -.031, p= .637) vignettes. Overall, these results do not provide support for H3a.

H3b: Higher symptom severity will be associated with formal treatments.

Hypothesis 3b was supported across all three vignettes. Perceived symptom severity was significantly and positively correlated with formal treatment endorsement for depression (r = .377, p < .001), OCD (r = .510, p < .001), and schizophrenia (r = .427, p < .001). These results suggest that greater perceived symptom severity was associated with higher endorsements of formal mental health treatment.

Taken together, these findings suggest that for depression vignettes, individuals who endorsed higher symptom severity were more likely to endorse both Islamic and Formal treatments, though the correlation with Islamic treatments was smaller compared to formal treatments. For OCD and schizophrenia, however, perceived symptom severity was only significantly associated with formal treatment endorsement.

Mixed ANOVA

A mixed factorial ANOVA was conducted with symptom content (religious vs non-religious) as the between-subjects factor and diagnostic category (depression, OCD, schizophrenia) as the within-subjects factor. The following dependent variables were examined separately: Islamic beliefs, environmental beliefs, biological beliefs, formal treatments, and Islamic treatments. Multivariate effects were interpreted using Wilk's Lambda, and significant within-subjects effects were examined with post-hoc pairwise comparisons using Bonferroni correction. Results for each dependent variable are reported below and in Table 7.

Causal Beliefs

Islamic Beliefs

Contrary to what was expected, there was not a significant main effect found between religious content and non-religious content for endorsement of Islamic beliefs (F (1,233) = 1.077, p=.301). Therefore, endorsement of Islamic beliefs did not significantly differ between content conditions, and Hypothesis 4a was not supported.

However, there was a significant main effect of mental illness category on endorsement of Islamic beliefs (F (2,466) =56.037, p<.001, η_p^2=.194). This was a large effect size. Post-hoc pairwise comparisons between mental illness categories with a Bonferroni adjustment were

conducted and revealed significant differences between OCD and depression ($p< .001$) and between OCD and schizophrenia ($p<.001$). There were no significant differences between depression and schizophrenia ($p=.568$). Examining the means suggested that Islamic beliefs were less endorsed for the OCD vignette ($M=1.87$, $SD= 0.63$) compared to the depression ($M=2.13$, $SD= 0.69$) and schizophrenia vignettes ($M=2.17$, $SD= 0.76$). Thus, Islamic causal beliefs endorsed differed based on mental illness category, partially supporting Hypothesis 6.

There was also a significant interaction effect between categories and conditions for Islamic beliefs (F (2,466) =4.193, $p=.016$, $\eta_p^2=.018$). This was a small-sized effect. Post-hoc simple effects tests were conducted and independent samples t-tests within each diagnostic category were examined to explore this effect. However, no significant differences emerged between diagnostic categories within either content condition or for any individual diagnostic category.

Biological Beliefs

There was also no significant main effect found between religious content and non-religious content for the endorsement of biological beliefs (F (1,233) =3.071, $p= .081$). Therefore, hypothesis 4b was unsupported.

Similar to Islamic beliefs, there was a main effect of mental illness category on endorsement of biological beliefs (F (2,466) = 21.605, $p< .001$, $\eta_p^2= .085$). This was a medium sized effect. Examining post-hoc pairwise comparisons indicated there was a significant difference between schizophrenia compared to depression ($p<.001$) and OCD ($p<.001$) vignettes. Indeed, descriptive means revealed that biological beliefs were more endorsed for schizophrenia

(*M*=2.79, *SD*= .71) vignettes compared to depression (*M*=2.55, *SD*=.70) and OCD (*M*=2.544, *SD*=.76). Thus, hypothesis 6 is partially supported.

Environmental Beliefs

For environmental beliefs, the results indicated no significant main effect of religious content condition (F (1,232) = 3.809, p =.052, η_p^2= .016) Therefore, hypothesis 4 was not supported by these results.

There was a significant main effect of mental illness category (F (2,464) = 42.143, p< .001, η_p^2= .154) suggesting a difference in endorsement of environmental beliefs across diagnostic groups. This was a large effect. Post-hoc pairwise comparisons with a Bonferroni adjustment correction revealed that there were significant differences between depression and OCD (p<.001) and schizophrenia (p<.001). Similarly, there was a significant difference between environmental beliefs endorsed between OCD and schizophrenia (p=.003). Based on descriptive statistics, depression had the highest environmental beliefs endorsed (*M*=3.09, *SD*=.61), followed by schizophrenia (*M*=2.83, *SD*=.67), and OCD (*M*=2.69, *SD*=.71).

There was a significant interaction effect between diagnostic categories and symptom content for environmental beliefs (F (2, 464) = 5.531, p= .004). This was a small-sized effect (η_p^2= .023). Independent samples t-test comparing religious and non-religious content within each diagnostic category revealed no significant difference for depression (t (233) =-1.324, p=.187) and schizophrenia (t (233) = -.086, p=.932). In contrast, OCD showed a significant difference between content conditions, with non-religious condition participants rating environmental beliefs as more likely (*M*=2.83, *SD*=.671) compared with religious conditions

(*M*=2.546, *SD*=.716), *t* (233) =-3152, *p*<.001. This appears to be what is driving the interaction effect.

Endorsement of Treatments

A Mixed ANOVA analysis was also used to determine the effect of content condition and mental illness category on the endorsement of Islamic and formal treatments respectively.

Islamic Treatments

There was a significant main effect of symptom content on endorsements for Islamic treatments (*F* (1,231) = 5.083, *p*=.025, η_p^2=.022). This was a small-sized effect. Those in the religious content condition rated Islamic treatments higher (*M*=65.21, *SD*=2.57) compared to those in the non-religious content condition (*M*= 57.06, *SD*=2.54). Thus, hypothesis 5a was supported.

The Mixed ANOVA indicated a significant main effect of the diagnostic category on endorsements of Islamic treatments (*F* (2, 462) = 24.394, *p*<.001). This was a medium sized effect (η_p^2=.096). There were significant differences in the endorsement of Islamic Treatments between OCD and depression (*p*<.001) and between OCD and schizophrenia (*p*<.001). Examining means revealed that Islamic treatments were rated significantly lower for OCD (*M*=56.51, *SD*= 29.16) than for depression (*M*=63.50, *SD*= 29.06) and schizophrenia (*M*= 63.24, *SD*= 30.58). Therefore, hypothesis 7 was supported by these findings.

Additionally, there was an interaction effect between content condition and diagnostic category on participants' endorsement of Islamic treatments (*F* (2, 462) = 4.619, *p* =.01). This was a small-sized effect (η_p^2= .020). Independent samples t-tests comparing religious and non-religious content within each diagnostic category revealed no significant differences for

depression (t (234) =1.534, p=.126) or OCD (t (232) =1.726, p=.086). However, schizophrenia showed a significant difference (t (233) =3.058, p=.002) between content condition, with Islamic treatment rated considerably higher under the religious condition (M=69.086, SD=29.50) than the non-religious condition (M=57.11, SD=30.49).

Formal Treatments

Symptom content had a significant main effect on participants' endorsement of formal treatments as well (F (1,232) = 19.50, p<.001, η_p^2=.078). This was a medium-sized effect. In line with hypothesis H5b, those in the non-religious condition endorsed formal treatments significantly more (M= 74.58, SD=2.03) compared to those in the religious condition (M=61.77, SD=2.07).

There was also significant main effect of category on formal treatments (F (2,464) =28.082, p<.001, η_p^2=.108). This was a medium-sized effect. Post-hoc pairwise comparisons with a Bonferroni indicated a significant difference between endorsements for schizophrenia compared to depression (p<.001) and OCD (p<.001). There was no significant difference between depression and OCD (p=1.00). Based on means, schizophrenia vignettes (M= 74.60, SD= 23.71) yielded the highest endorsements of formal treatments compared to depression (M=64.95, SD=27.45) and OCD vignettes (M=65.30, SD=27.93). Therefore, hypothesis 7 was supported.

Ancillary Analyses

A mixed factorial ANOVA was also conducted to examine whether there were significant differences in perceived severity of symptoms between content conditions and across diagnostic categories. There was no main effect of symptom content on perceived severity (F (1,232) =

.763, p= .383). However, there was a main effect of diagnostic category (F (2,464) = 73.18, p< .001), and this was large-sized (η_p^2= .24). Post-hoc pairwise comparisons revealed there were significant differences in perceived severity between schizophrenia compared to depression (p <.001) and OCD (p<.001). However, OCD and depression were not significantly different in their perceived severity (p = .23). Descriptive means suggested schizophrenia was perceived as significantly more severe (M=85.25, SD= 17.27) compared to depression (M=71.11, SD=21.04) and OCD (M=69.24, SD=21.54), whose symptoms were rated as less severe.

A mixed ANOVA was also conducted for the removed item from environmental beliefs examining "lack of willpower". There was a significant main effect of mental illness category (F (2,466) = 7.37, p<.001, η_p^2= .031). Post-hoc pairwise comparisons with a Bonferroni correction indicated that there were significant differences between depression and schizophrenia (p<.001) and OCD (p=.033). Mean ratings suggested that schizophrenia (M=2.20, SD=1.03) and OCD (M=2.28, SD=.998) were seen as less likely to be due to lack of willpower or control compared to depression (M=2.46, SD= 1.04).

There was also a significant interaction effect (F (2,466) = 4.481, p=.012, η_p^2= .019). This was a small sized effect. To further analyze this, pairwise comparisons were examined separately within each content condition. Within the religious content condition, depression (M=2.526, SD=1.03) was rated significantly higher than both OCD (M=2.155, SD=1.0, p=.003) and schizophrenia (M=2.103, SD=1.0, p<.001). Within the non-religious content condition, ratings for lack of willpower did not significantly differ across diagnostic categories (F (2,236) = .721, p= .487). These results suggest that in religious framed symptoms, depression was attributed more to a lack of willpower relative to OCD and schizophrenia, but not for non-religiously framed symptom vignettes.

Chapter 5

Discussion

Muslim Americans represent a growing yet underserved population in mental health research and practice, experiencing elevated risk of psychological distress due to discrimination, Islamophobia, acculturative conflict, and premigration trauma (Aloud & Rathur, 2009; Awaad et al., 2023). Despite this, Muslims living in the West are less likely to endorse professional mental health services (Sabado et al., 2023; Zia et al., 2022). Understanding the factors that influence Muslim Americans' help-seeking behaviors is, therefore, crucial to developing culturally responsive interventions and improving mental health service utilization within this community.

While stigma and acculturation have been well-researched, less is known about the role of causal beliefs in shaping treatment preferences, which have also been identified as an important determinant of treatment-seeking behavior (Aloud and Rathur, 2009). Muslim Americans endorsed multiple, multi-dimensional explanations regarding mental illness etiology (Bagasra, 2023), and prior research identified a relationship between biological beliefs and attitudes towards mental health services in Muslim Americans (Mudryk & Johnson, 2023). General causal beliefs and attitudes towards both Islamic and Western mental health treatments have also been examined among Muslim Americans (Alqasir & Ohtsuka, 2024; Bagasra, 2011; Sabado et al., 2023; Verwey, 2024).

However, existing literature remains predominantly exploratory (Bagasra & Mackinem, 2014), qualitative (Alqasir & Ohtsuka, 2024; Qadeer et al., 2025), or geographically restricted

(Aloud & Rathur, 2009). While Qadeer et al. (2025) qualitatively examined treatment recommendations using clinical vignettes, participants reviewed a general range of symptoms rather than vignettes varying by diagnostic category, limiting conclusions about how symptom type and content specifically shape causal attributions and treatment preferences. No research to date quantitatively has examined how contextual factors such as the type and content of symptom presentation may shift Muslim Americans' causal beliefs and treatment recommendations. Therefore, the present study addressed these gaps by examining Muslim American participants' causal beliefs regarding mental illness etiology and treatment recommendations across clinical vignettes which varied by diagnostic category and symptom content. Findings are presented and discussed below.

Beliefs and Help-seeking Preferences

The present findings revealed a significant relationship between Islamic beliefs and endorsement of Islamic treatments across all three vignettes (depression, OCD, schizophrenia). Therefore, Hypothesis 1a was supported. There was also a significant negative relationship between Islamic beliefs and formal treatment endorsements for depression and schizophrenia; however, this did not reach significance for OCD, though the direction of the association remained negative. These findings suggest that participants who endorsed Islamic beliefs were more likely to endorse Islamic treatments and less likely to support formal treatments. Consistent with Hypothesis 1b, biological and environmental causal beliefs regarding mental illness etiology were positively associated with formal treatments endorsements, indicating that participants who attributed mental illness to biological or environmental factors were more likely to also recommend formal mental health services.

These findings are consistent with existing research demonstrating that causal beliefs are an important determinant of treatment preferences. In general populations, different causal explanations (biological vs. social) shape attitudes towards treatment seeking (Ahuvia et al., 2024; Nolan & O'Connor, 2019), and among Muslim Americans specifically, biological causal beliefs have similarly been linked to more favorable attitudes toward formal mental health services (Mudryk & Johnson, 2023). The present study builds on this by replicating these results and demonstrating that Islamic beliefs are similarly associated with Islamic treatment endorsement. This aligns with previous qualitative work that demonstrated participants preferred spiritually based healing and viewed formal methods as unfit for mental health concerns attributed to supernatural factors (Verwey, 2024) but considered formal services more appropriate for problems perceived as non-spiritual (Qadeer et al., 2025).

Perceived Symptom Severity

Ancillary analyses revealed significant differences in perceived symptom severity across the three diagnostic vignettes. Schizophrenia was rated as significantly more severe than both depression and OCD, which were perceived as similarly severe to one another. This finding is noteworthy when interpreting the subsequent results, as perceived severity may influence participants' causal attributions and treatment recommendations across diagnostic categories. This difference is consistent with existing literature, which has similarly positioned schizophrenia-related symptoms, such as hallucinations, as more severe relative to depression (Alqasir & Ohtsuka, 2024; Badran et al., 2025; Qadeer et al., 2025). Indeed, in previous research, schizophrenia was more consistently recognized as a mental illness compared to depression, which may reflect differences in perceptions of symptom severity or visibility (Nordt et al., 2006). Moreover, perceptions of depression and schizophrenia are commonly compared in the

mental health literature (Angermeyer & Matschinger, 2003; Nordt et al., 2006). In contrast, perceptions of OCD have received less comparison with other diagnostic groups in the literature.

Symptom Severity and Causal Beliefs

Prior qualitative research demonstrated variations in causal belief endorsement based on perceived symptom severity, with milder symptoms attributed to supernatural or religious causes and more severe symptoms framed as health-related concerns warranting formal intervention (Alqasir & Ohtsuka, 2024; Qadeer et al., 2025). Thus, it was hypothesized that perceived symptom severity would be negatively associated with Islamic causal beliefs (Hypothesis 2a) and positively associated with biological and environmental beliefs (Hypothesis 2b). The first part of the hypothesis was not supported; across all three vignette conditions, Islamic causal explanations were not significantly associated with perceived symptom severity. Therefore, it does not appear that level of symptom severity influences one's endorsement of Islamic beliefs.

However, consistent with prior research that indicated severe symptoms were conceptualized as health-related concerns, biological causal beliefs were positively associated with perceived symptom severity across all three conditions (Alqasir & Ohtsuka, 2024; Badran et al., 2025; Qadeer et al., 2025). Therefore, participants who perceived a condition as more severe were more likely to endorse biological explanations regarding etiology. Environmental beliefs, however, revealed inconsistent findings. Positive associations between environmental beliefs and perceived symptom severity emerged only within the OCD vignette, and this effect was relatively small. This may be attributable to OCD's symptom content specifically rather than severity. The absence of this relationship in the depression and schizophrenia conditions, despite similar or greater perceived severity, supports this interpretation.

Symptom Severity and Treatment Recommendations

Hypothesis 3a predicted that perceived symptom severity would be negatively associated with Islamic treatment endorsement. This hypothesis was not supported, and findings were mixed across diagnostic categories. Contrary to expectations, Islamic treatment endorsement was positively associated with perceived symptom severity for depression, and a similar, non-significant positive association emerged for OCD. This suggests that the diagnostic category may play a role in shaping Islamic treatment beyond severity. In contrast, higher perceived symptom severity was consistently associated with greater endorsement of formal treatments across all three conditions. This replicated prior qualitative research findings in which Muslim Americans favored formal mental health services when symptoms were perceived as more serious or debilitating (Alqasir & Ohtsuka, 2024; Badran et al., 2025; Qadeer et al., 2025). Thus, Hypothesis 3b was supported.

Overall, findings across beliefs and treatment recommendations suggest that perceived symptom severity was not consistently associated with Islamic causal beliefs or Islamic treatment endorsement but was consistently associated with biological causal beliefs and formal treatment endorsement across all three diagnostic categories. This suggests that as Muslim Americans perceive symptoms as more severe, they are more likely to adopt biological explanatory explanations and recommend formal mental health services. This is consistent with Qadeer et al.'s (2025) concept of a hierarchy of perceived severity, whereby participants recognized a need for clinical mental health intervention for more severe presentations of mental distress than milder ones.

Symptom Type

Given the inconsistent correlations across symptom types, it is important to examine how causal beliefs and treatment recommendations differ by diagnostic category to identify where these effects emerge. In general populations, perceptions of different mental illness categories have been explored, specifically between depression and schizophrenia (Angermeyer & Matschinger, 2003)**.** Hypothesis 6 speculated that causal beliefs endorsements would vary between the three diagnostic category vignettes: depression, OCD, and schizophrenia. Consistent with this, the diagnostic category significantly influenced endorsement of all three causal belief types. Biological beliefs were most strongly endorsed for schizophrenia, aligning with existing literature's conclusion that psychotic symptoms such as hallucinations were perceived as biomedical concerns (Alqasir & Ohtsuka, 2024; Badran et al., 2025; Qadeer et al., 2025). Environmental beliefs varied significantly between all three groups; it was most endorsed for depression, followed by schizophrenia and then OCD. Participants endorsed Islamic beliefs at similarly high levels for depression and schizophrenia vignettes, but significantly lower levels for OCD vignettes. This may be because OCD-characteristic symptoms (e.g., intrusive thoughts, compulsions) are less likely to be perceived as spiritually caused than the mood or psychotic symptoms present in depression or schizophrenia. Alternatively, it may reflect lower general familiarity with OCD relative to depression and schizophrenia. Indeed, past research demonstrated that the general public more readily recognizes schizophrenia and depressive disorder as mental illnesses (Link et al., 1999). Moreover, a lack of familiarity with OCD is more likely in ethnic minority groups (Stewart et al., 2018).

Treatment recommendations also significantly shifted based on the diagnostic category. Islamic treatment endorsement significantly differed across diagnostic categories. OCD vignettes elicited significantly lower endorsements for Islamic treatments than both the

depression and schizophrenia vignettes. In contrast, schizophrenia vignettes elicited significantly higher formal treatment endorsement compared to both depression and OCD, which did not differ from one another. Thus Hypothesis 7 was supported. The pattern of differences in formal treatment endorsement matched the ancillary analyses, which indicated schizophrenia was perceived as more severe than OCD and depression. Therefore, the increased formal endorsement for schizophrenia relative to the other two vignettes likely reflects its perception as more severe, and thus, requiring formal treatment (Qadeer et al., 2025).

Symptom Content

Hypothesis 4 speculated that causal beliefs would differ significantly as a function of symptom content. This hypothesis was not supported. There was no significant main effect of symptom content on Islamic, biological, or environmental causal beliefs. This suggests that whether symptoms were framed in a religious or non-religious context did not shift Muslim American participants' etiological attributions.

In contrast, symptom content significantly influenced treatment recommendations. Participants who received religiously framed symptom vignettes endorsed Islamic treatments significantly more, and formal treatments significantly less compared with those in the non-religious content condition. This supports Hypothesis 5, which predicted a significant difference in the endorsement of various treatments based on religious framing of symptoms. This suggests that the manner in which symptoms manifest and whether they are perceived to affect religious or non-religious domains of life may influence what forms of help are deemed necessary. Indeed, participants in previous research endorsed that one should not address non-spiritual problems through spiritual means (Qadeer et al., 2025). This result also corroborated prior work that

speculated individuals experiencing religiously themed delusions would have reduced treatment engagement due to perceived greater conflict with psychiatric treatment than those experiencing non-religious delusions (Mohr et al., 2010). Results indicated that participants viewed religiously framed symptoms as more appropriately addressed within a religious context, despite the underlying symptoms being identical (e.g. auditory hallucination) and differing only in symptom content (e.g. Devil or FBI agent). This supports that symptom presentation may shape perceptions of appropriate care. Previous research has also demonstrated differences in perception based on symptom content. For instance, religious obsessive-compulsive content was less likely to be identified as a mental health problem by participants compared with doubt or checking-based OCD content (Chaves et al., 2024).

Implications

There are several implications of this study for both research and clinical practice. More broadly, this study addressed a significant gap in the literature by examining an understudied population and replicating and extending existing qualitative findings. First, these findings supported a multidimensional model of belief, in which individuals may hold biological, environmental, and religious explanations for symptoms (Bagasra & Mackinem, 2014). Therefore, it is important to explore clients' specific explanatory models rather than assume based on religious or cultural identity alone. Second, whereas prior research suggested Muslim Americans generally prefer informal services (Sabado et al., 2023), the present study found relationships between causal beliefs regarding mental illness etiology and the types of treatments they endorsed, which aligns with previous qualitative findings (Badran et al., 2025; Mudryk & Johnson, 2023). Third, this research extended beyond examining the relationship between general beliefs and attitudes towards mental illness and formal services (Mudryk & Johnson,

2023) by exposing participants to specific, clinically relevant symptoms presented in vignettes. Indeed, participants' ratings of causal beliefs and treatment recommendations differed depending on the symptom presentation that varied by diagnostic category and symptom content (religious vs non-religious). Thus, beliefs and treatment preferences may be shifted based on contextual factors. Moreover, by examining specific vignettes rather than general attitudes, this likely holds greater clinical relevance than broad attitudinal measures because it more closely resembles how beliefs operate in response to real presenting concerns. Fourth, severe symptom presentations may be more likely to reach formal services, whereas mild-to-moderate presentations, such as depression and OCD, may be less likely to do so, suggesting that individuals with these latter disorders may be at greater risk of not receiving formal care.

Fifth, causal beliefs and treatment endorsement displayed a parallel pattern in the diagnostic category main effect. Both Islamic causal beliefs and treatments were similarly endorsed for depression and schizophrenia but significantly lower for OCD. A similar trend was present in biological causal beliefs and formal treatment endorsement: both were rated significantly higher within the schizophrenia vignettes compared to the depression and OCD ones. This parallel pattern in beliefs and treatments suggests clients who attribute a disorder to religious or spiritual causes may be more inclined to seek out Islamic treatments, while clients who attribute a disorder to biological causes may be more receptive to formal interventions. This pattern was not present for religious content as the religious framing of symptoms had no effect on endorsements of beliefs regarding mental illness etiology.

However, the finding that treatment endorsement differed based on religious symptom content is both novel and especially relevant for this population. Participants who viewed vignettes depicting religiously themed symptom content (e.g., hallucinations involving religious

themes) endorsed Islamic treatments more strongly and formal treatments less strongly than participants who viewed vignettes depicting non-religiously themed symptom content (e.g., hallucinations involving a secular figure). This is a vital finding because symptoms can manifest differently cross-culturally. For example, hallucination content is "pathoplastic", meaning religio-cultural meaning systems can shape its form (Larøi et al., 2014). Indeed, Saudi Arabian patients, a Muslim- majority population, reported more religiously themed hallucinations than UK patients, who reported hallucinations that narrated their ongoing behavior (Kent & Wahass, 1996). Similarly, OCD presentation in Middle Eastern Islamic cultures was more likely to center on religious ritual, such as prayer-related obsession and ritual purity (Williams et al., 2017).

This difference in treatment endorsement appeared despite religious framing having no effect on causal beliefs, suggesting that other factors were influencing participants' willingness to engage in formal treatment when symptoms were religiously framed. For instance, it may also reflect concerns about being misunderstood or stigmatized by non-Muslim practitioners. Muslims have reported fearing that mental health professionals may hold biased views or apply stereotypes based on their religious identity (Bagasra, 2023), as well as concerns that providers may discourage their religious beliefs or recommend interventions perceived as antithetical to Islamic values (Verwey, 2024). So, when symptoms are religiously themed, these concerns may be especially salient and prompt a preference for Islamic treatment. Interestingly, the presentations this population is more likely to experience (religious content) are also the presentations less likely to prompt formal help-seeking. This may contribute to underutilization of services within this population, especially if fear of stigma or misunderstanding discourages engagement with formal care when symptoms carry religious meaning. Practitioners must therefore understand how such factors may shape perceived treatment appropriateness and

perceived causal attribution within this population, as well as how symptoms may manifest differently.

Strengths, Limitations, and Future Directions

The present study had several notable strengths. First, this study quantitatively examined the relationship between causal beliefs and treatment preferences among Muslim Americans, addressing a gap in the predominantly qualitative existing literature. Second, the use of clinical vignettes within an experimental design permitted direct comparisons and allowed for causal inferences across the effect of diagnostic categories and symptom content on causal beliefs and treatment endorsement. Responding to specific vignettes also captured more information beyond what general attitude measures alone can reveal (Ali et al., 2022; Mudryk & Johnson, 2023). Third, randomizing the order of vignettes and items within each vignette controlled for potential fatigue and order effects. Fourth, examining both Islamic and formal treatments allowed participants to rate each treatment type independently, providing a broader picture of treatment preference than prior work examining formal services alone. Finally, this study addressed a gap in the literature by examining an understudied and underserved population and offered novel insight into the religio-cultural factors shaping perceptions of mental illness causes and treatments among Muslim Americans.

Despite these novel insights, several limitations should be considered when interpreting findings. First, participants were recruited through Prolific, a convenience online sampling platform whose users tend to demonstrate greater technological proficiency than the general population. The study was also restricted to English speakers, which likely excluded more recent immigrants and less acculturated individuals who may hold stronger religio-cultural etiological beliefs. Second, sample demographics limit generalizability. Most participants (70%) were under

the age of 35, from a MENA background (72.9%), well-educated (62.3% held a bachelor's degree or higher), and highly familiar with mental health services. Moreover, half of the sample reported prior mental health service uses, suggesting greater openness to treatment than may be typical of the broader population. In addition, participants reported high levels of religiosity, which may limit generalizability to less religious or secular Muslim individuals. However, because religiosity was central to the constructs under investigation, some degree of religiosity in the sample was expected. Moreover, this sample was drawn from culturally diverse Muslims Americans; as such, these findings may not generalize to Muslim populations outside this specific cultural and geographic context. Future research should examine potential differences in causal beliefs and treatment preferences cross-culturally, given that prior research has identified differences across MENA, South Asians and Caucasian Muslims (Bairami et al., 2021; Sadek & Hashem, 2024).

In addition, there were some methodological limitations. Although item order was randomized, the absence of attention checks made it difficult to ensure that participants attended to each item carefully and responded with effort. Due to the correlational nature of some analyses, causal conclusions cannot be derived about the relationship between variables, such as beliefs, severity, and treatment preferences. Moreover, the scales used for biological and environmental beliefs consisted of 3 items each, which limits the robustness of the scales used. Future research would benefit from developing and piloting more robust, multi-item scales to reliably capture these constructs.

An additional limitation concerns the interpretation of treatment endorsement itself. Participants were asked whether a given vignette character should seek different types of treatment, rather than whether they themselves would seek treatment under similar

circumstances. While this approach reduces social desirability and personal bias, it also limits the extent to which these findings can be generalized to individuals' actual help-seeking behavior. Additionally, the study did not assess whether participants could identify or label the disorder depicted in each vignette. Given the inconsistent findings observed for OCD relative to depression and schizophrenia, which may reflect lower general familiarity with OCD's symptom presentation, this is a notable limitation. Future research should ask participants to label the disorder depicted in each vignette to assess this population's general familiarity with disorders, given the role of problem recognition in the help-seeking model (Aloud & Rathur, 2009) and prior research linking greater recognition of mental illness with increased professional help-seeking preference (Picco et al., 2018).

Other questions fell outside of the scope of this study and warrant further investigation. This study was not designed to assess specific pathways to care that individuals might pursue when multiple treatments are endorsed. Past qualitative research has shown that Muslims' help-seeking may follow parallel or hierarchical seeking of care, rather than a simple preference for one treatment type over another (Qadeer et al., 2025). For example, they may initially pursue Islamic treatments before seeking out formal services when it proves insufficient. While the present findings show that participants endorsed both Islamic and formal treatments, this design cannot determine which pathway individuals would prioritize to pursue first. Future research could ask participants to rank treatment options or specify the order in which they would pursue different forms of care. Although causal beliefs and treatment preferences were associated, the causal beliefs endorsed did not shift across conditions in the same way that treatment recommendations did. This suggests that while causal beliefs play a role, other factors, such as concerns about having one’s beliefs pathologized (Bagasra, 2023), may also shape treatment

recommendations. Future research should utilize clinical vignettes to examine such factors as well.

Conclusion

Causal beliefs and symptom presentation are important facets to treatment-seeking behavior. This study replicated prior qualitative research with quantitative evidence that causal beliefs were meaningfully associated with treatment endorsement: Islamic beliefs were associated with greater endorsement of Islamic treatments, while biological and environmental beliefs were associated with greater endorsement of formal treatments. This study also represents the first experimental manipulation of religious symptom content and diagnostic category within a Muslim American population using clinical vignettes. Beliefs differed by diagnostic category: biological beliefs were rated higher for schizophrenia than depression and OCD, environmental beliefs were rated highest for depression, and Islamic beliefs were endorsed similarly for depression and schizophrenia, but significantly lower for OCD. Treatment recommendation ratings also differed significantly based on whether symptom content was religiously or non-religiously framed.

These findings were relevant to clinical practice. They point to the need for cultural competency training that equips practitioners to assess clients' explanatory models and recognize religious and spiritual aspects of a client's presentation without over-attributing symptoms to culture or religion alone (Qadeer et al., 2025). Given that Muslim Americans remain an underserved population in mental health research and practice, these findings addressed a meaningful gap in understanding the factors that shape treatment-seeking behavior in this community. Findings should nonetheless be interpreted with several limitations in consideration,

including a convenience sample recruited online and restricted to English-speaking, comparatively young, well-educated, and predominantly MENA participants with a history of service use. Future research should examine specific pathways individuals pursue when multiple treatment types are endorsed and assess participants' ability to recognize or label presenting symptoms directly.

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Tables

Table 1. Descriptive and Frequency Statistics

Demographic Variables	N	%
Gender		
Female	124	52.5
Male	109	46.2
Non-binary	1	0.4
Prefer not to say	1	0.4
Age		
18-24	77	32.6
25-34	96	40.7
35-44	37	15.7
45-54	23	9.7
55-64	3	1.3
Ethnicity		
Middle Eastern/North African (MENA)	172	72.9
South Asian	33	14
West/East African	21	8.9
Other/Unspecified	10	4.2
Education		
Less than high school	4	1.7
Highschool diploma or GED	34	14.4
Some college, but no degree	34	14.4

Associates or technical degree	17	7.2
Bachelor's Degree	93	39.4
Graduate or professional degree	54	22.9
Born in US		
Yes	127	53.8
No	108	45.8
Familiarity with Mental Illness		
Not familiar at all	9	3.8
Slightly familiar	28	11.9
Somewhat familiar	60	25.4
Very familiar	96	40.7
Extremely familiar	40	16.9
Familiarity with Mental Health Services		
Not familiar at all	11	4.7
Slightly familiar	36	15.3
Somewhat familiar	65	27.5
Very familiar	87	36.9
Extremely familiar	36	15.3
Personal History of Treatment Use		
Yes	133	56.4
No	102	43.2

Table 2. Descriptive Statistics and Reliability Analysis of Measures Used

	Mean (SD)				Cronbach's α
	Depression	OCD	Schizophrenia	Total	
Islamic Beliefs	2.13 (.045)	1.87 (.041)	2.17 (.049)	2.06 (.042)	.69
Biological Beliefs	2.55 (.045)	2.54 (.049)	2.79 (.046)	2.63 (.040)	.61
Environmental Beliefs	3.09 (.040)	2.68 (.045)	2.83 (.044)	2.87 (.034)	.81
Islamic Treatment	63.52 (1.90)	56.55 (1.90)	63.31 (1.97)	61.13(1.81)	.86
Formal Treatment	64.82 (1.73)	65.19 (1.78)	74.51 (1.52)	68.17 (1.45)	.88

Table 3. Bivariate Correlations: Depression Vignette

Variables	1	2	3	4	5	6
Perceived Severity	-	-	-			
Environmental Beliefs	.077	-	-			
Biological Beliefs	.219***	.323***	-	-		
Islamic Beliefs	.085	.157*	.022	-		
Formal Treatment	.377***	.283***	.578***	-.179**	-	
Islamic Treatment	.158*	.065	-.016	.628***	-.196**	-

Table 4. Bivariate Correlations: OCD Vignette

Variables	1	2	3	4	5	6
Perceived Severity	-					
Environmental Beliefs	.151*	-				
Biological Beliefs	.341***	.358***	-			
Islamic Beliefs	.084	.208**	.140*	-		
Formal Treatment	.510***	.358***	.563***	-.045	-	
Islamic Treatment	.125	.066	-.013	.572***	-.104	-

Table 5. Bivariate Correlations: Schizophrenia vignette

Variables	1	2	3	4	5	6
Perceived Severity	-					
Environmental Beliefs	.014	-				
Biological Beliefs	.258***	.261***	-			
Islamic Beliefs	-.023	.007	-.070	-		
Formal Treatment	.427***	.246***	.582***	-.265***	-	
Islamic Treatment	-.031	.113	-.080	.654***	-.194**	-

* indicates $p < .05$ ** indicates $p < .01$ *** indicates $p < .001$

Table 6. Factor Analysis

Treatment Items	Factor Loadings	
	1	2
Factor 1: Formal Treatments		
1. The person should see a psychologist	**.896**	-.147
2. The person should see a psychiatrist	**.884**	-.139
3. The person should consult a family doctor	**.783**	.055
4. The person should take medication for their difficulties	**.839**	.034
Factor 2: Informal Treatments		
5. The person should consult an imam or sheikh	-.136	**.781**
6. 6 The person should be engaging in Ruqya (Quran recitation)	-.051	**.838**
7. The person should increase religious practices (e.g. praying, dua, dhikr)	.003	**.824**
8. The person should take part in an Islamic-based therapy	.021	**.824**

Note: factor loadings above .40 are in bold. Rotated Component Matrix.

Table 7. Mixed ANOVA with all the Dependent Variables

	Source	*Df*	*F*	η_p^2	*p*
Islamic Beliefs	(A) Category	2,466	56.037	.194	**<.001*** **
	(B) Content	1,233	1.077	.005	.301
	A x B (Interaction)	2,466	4.193	.018	**.016***
Biological Beliefs	(A) Category	2,466	21.605	.085	**< .001*** **
	(B) Content	1,233	3.071	.013	.081
	A x B (Interaction)	2,466	.173	.001	.842
Environmental Beliefs	(A) Category	2,464	42.143	.154	**<.001*** **
	(B) Content	1,232	3.809	.016	.052
	A x B (Interaction)	2,464	5.531	.023	**.004****
Formal Treatments	(A) Category	2,464	28.082	.108	**<.001*** **
	(B) Content	1,232	19.50	.078	**<.001*** **
	A x B (Interaction)	2,464	1.346	.006	.247
Islamic Treatments	(A) Category	2,462	24.394	.096	**<.001*** **
	(B) Content	1,231	5.083	.022	**.025***
	A x B (Interaction)	2,462	4.619	.020	**.01***

Islamic Beliefs

Table 8. Mixed ANOVA for Islamic Beliefs

Source	*Df*	*F*	η_p^2	*p*
(A) Category	2,466	56.037	.194	**<.001*** **
(B) Content	1,233	1.077	.005	.301
A x B (Interaction)	2,466	4.193	.018	**.016***

Table 9. Descriptive Statistics of Categories for Islamic Beliefs Variable

Categories	Mean	Std. Deviation
Depression	2.132	.69
OCD	1.874	.63
Schizophrenia	2.171	.76

Table 10. Post Hoc Pairwise Comparisons (Bonferroni) for Islamic Beliefs by Diagnostic Category

Comparison	Mean Difference	Std. Error	Sig.	95% CI
Depression vs OCD	**.259***	**.030**	**<.001**	(.187, .331)
Depression vs Schizophrenia	-.039	.029	.568	(-.110, .032)
OCD vs Schizophrenia	**-.297***	**.032**	**<.001**	(-.375, -2.19)

Table 11. Results of t-tests for Islamic Beliefs Scores by Diagnostic Category and Symptom Content

	Content Condition						
	Religious		Non-Religious				
	Mean	(SD)	Mean	(SD)	t	df	Sig.
Depression	2.17	.703	2.0952	.68772	.819	233	.413
OCD	1.8764	.59755	1.8711	.65865	.064	233	.949
Schizophrenia	2.2615	.77186	2.0807	.74265	1.830	233	.068

Table 12. Post Hoc Pairwise Comparisons for Islamic Beliefs by Diagnostic Category, Separated by Symptom Content

Content Condition	Category I	Category J	Mean Diff. (I-J)	SE	*p*
Religious	Depression	OCD	**.293***	**.044**	**<.001**
	Depression	Schizophrenia	-.092	.042	.094
	OCD	Schizophrenia	**-.385***	**.051**	**<.001**
Non-Religious	Depression	OCD	**.224***	**.040**	**<.001**
	Depression	Schizophrenia	.015	.041	1.0
	OCD	Schizophrenia	**-.210***	**.040**	**<.001**

Biological Beliefs

Table 13. Mixed ANOVA for Biological Beliefs

Source	*Df*	*F*	η_p^2	*p*
(A) Category	2,466	21.605	.085	**< .001*** **
(B) Content	1,233	3.071	.013	.081
A x B (Interaction)	2,466	.173	.001	.842

Table 14. Descriptive Statistics of Categories for Biological Beliefs Variable

Measure: Biological Beliefs

Categories	Mean	Std. Deviation
Depression	2.550	.70
OCD	2.544	.76
Schizophrenia	2.901	.71

Table 15. Post Hoc Pairwise Comparisons (Bonferroni) for Biological Beliefs by Diagnostic Category

Comparison	Mean Differences	Std. Error	Sig.	95% CI
Depression vs OCD	.006	.045	1.00	-.103,.115
Depression vs Schizophrenia	**-2.40***	**.043**	**<.001**	-.343,-.136
OCD vs Schizophrenia	**-.246***	**.040**	**<.001**	-.342,-.150

Environmental Beliefs

Table 16. Mixed ANOVA for Environmental Beliefs

Source	*Df*	*F*	η_p^2	*p*
(A) Category	2,464	42.143	.154	**<.001*** **
(B) Content	1,232	3.809	.016	.052
A x B (Interaction)	2,464	5.531	.023	**.004** **

Table 17. Descriptive Statistics of Categories for Environmental Beliefs Variable

Categories	Mean	Std. Deviation
Depression	3.088	.605
OCD	2.687	.708
Schizophrenia	2.826	.668

Table 18. Post Hoc Pairwise Comparisons (Bonferroni) for Environmental Beliefs by Diagnostic Category

Comparison	Mean Difference	Std. Error	Sig.	95% CI
Depression vs OCD	**.404***	**.046**	**<.001**	(.293,.515)
Depression vs Schizophrenia	**.261***	**.045**	**<.001**	(.153,.369)
OCD vs Schizophrenia	**-.143***	**.043**	**.003**	(-.247,-.039)

Table 19. t-tests for EB Scores by Diagnostic Category and Symptom Content

	Content Condition						
	Religious		Non-Religious				
	Mean	(SD)	Mean	(SD)	t	df	Sig.
Depression	3.0348	.62964	3.1389	.57587	-1.324	233	.187
OCD	**2.5460**	**.71613**	**2.8306**	**.67085**	**-3.152**	**234**	**.002***
Schizophrenia	2.8203	.64025	2.8278	.69543	-.086	233	.932

Formal Treatments

Table 20. Mixed ANOVA for Formal Treatments

Source	*Df*	*F*	η_p^2	*p*
(A) Category	2,464	28.082	.108	**<.001*** **
(B) Content	1,232	19.50	.078	**<.001*** **
A x B (Interaction)	2,464	1.346	.006	.247

Table 21. Descriptive Statistics of Categories for Formal Treatments Variable

Categories	Mean	Std. Deviation
Depression	64.947	27.447
OCD	65.302	27.932
Schizophrenia	74.60	23.713

Table 22. Post Hoc Pairwise Comparisons for Formal Treatments by Diagnostic Category

Comparison	Mean Difference	Std. Error	Sig.	CI
Depression vs OCD	-.378	1.511	1.0	(-4.023,3.266)
Depression vs Schizophrenia	**-9.694***	**1.591**	**<.001**	(-13.53,-5.858)
OCD vs Schizophrenia	**-9.316***	**1.276**	**<.001**	(-12.392, -6.240)

Table 23. Pairwise Comparison of Means for Formal Treatment by Symptom Content

			95% Confidence Interval			
Condition	Mean	Std. Error	Lower Bound	Upper Bound	Mean Diff.	p
Religious Content	61.771	2.068	57.696	65.845	**-12.806***	**<.001**
Non-Religious Content	74.576	2.033	70.571	78.582		

Islamic Treatments

Table 24. Mixed ANOVA for Islamic Treatments

Source	*Df*	*F*	η_p^2	*p*
(A) Category	2,462	24.394	.096	**<.001*** **
(B) Content	1,231	5.083	.022	**.025***
A x B (Interaction)	2,462	4.619	.020	**.01***

Table 25. Descriptive Statistics of Categories for Islamic Treatment Variable

Categories	Mean	Std. Deviation
Depression	63.497	29.062
OCD	56.506	29.156
Schizophrenia	63.236	30.582

Table 26. Post Hoc Pairwise Comparisons (Bonferroni) for Islamic Treatments by Diagnostic Category

Comparison	Mean Difference	Std. Error	Sig.	CI
Depression vs OCD	**6.986***	**1.055**	**<.001**	(4.908,9.065)
Depression vs Schizophrenia	.220	1.172	.851	(-2.088,2.528)
OCD vs Schizophrenia	**-6.766***	**1.181**	**<.001**	(-9.093,-4.440)

Table 27. Results of t-tests for Islamic Treatment Scores by Diagnostic Category and Symptom Content

	Content Condition						
	Religious		Non-Religious				
	Mean	(SD)	Mean	(SD)	t	df	Sig.
Depression	66.1379	29.2707	60.3542	28.6381	1.534	234	.126
OCD	59.8138	30.1444	53.2766	27.7918	1.726	232	.086
Schizophrenia	**69.0862**	**29.5006**	**57.1134**	**30.4934**	**3.058**	**233**	**.002***

Table 28. Pairwise Comparison of Means for Islamic Treatment by Symptom Content

			95% Confidence Interval			
Condition	Mean	Std. Error	Lower Bound	Upper Bound	Mean Diff.	Sig
Religious Content	65.207	2.573	60.138	70.277	8.151	**.025***
Non-Religious Content	57.056	2.540	52.052	62.061		

Appendix A. Demographics Questionnaire

1) Do you identify as Muslim?
   a) Yes
   b) No

2) Are you of Middle Eastern or North African Origin?
   a) Algeria
   b) Bahrain
   c) Egypt
   d) Iraq
   e) Iran
   f) Jordan
   g) Kuwait
   h) Lebanon
   i) Lebanon
   j) Libya
   k) Morocco
   l) Oman
   m) Palestine
   n) Qatar
   o) Saudi Arabia
   p) Syria
   q) Tunisia
   r) UAE
   s) Yemen
   t) I am not of MENA background (Please specify)
   u) Other MENA country (Please specify)

3) How old are you?
   a) Under 18
   b) 18-24 years old
   c) 25-34 years old
   d) 35-44 years old
   e) 45-54 years old
   f) 55-64 years old
   g) 65+ years old

4) What is your gender identity?
   a) Male
   b) Female
   c) Non-binary
   d) Prefer not to say

5) Were you born in the US?
   a) Yes
   b) No (Specify where you were born)

6) What is the highest level of education you obtained?
   a) Some high school or less
   b) High school diploma or GED
   c) Some college, but no degree
   d) Bachelor's degree
   e) Graduate or professional degree (MA, MS, MBA, PhD, JD, MD, DDS, etc.)
   f) Prefer not to say

7) How familiar are you with mental illness and the types of symptoms?
   a) Not familiar at all
   b) Slightly familiar
   c) Very familiar
   d) Extremely familiar

8) How familiar are you with mental health and psychological services?
   a) Not familiar at all
   b) Slightly familiar
   c) Very familiar
   d) Extremely familiar

9) Have you ever used a mental health service (e.g., psychologist, counselor, psychiatrist, social worker) for a mental health concern?
   a) Yes
   b) No

Appendix B. Clinical Vignettes

Clinical Vignette 1A: Depression with Religious Content

Amir is a 19-year-old man. For the last few months, he has been feeling sad, empty and tired most days. He has not had the energy to pray and has lost interest in religious activities that once felt meaningful. He has been going to the mosque less often. This struggle has made him feel worthless and very guilty. He believes he is not worthy of God and feels ashamed that he is not praying. As a result, Amir has withdrawn himself from others and has troubles managing his day-to-day tasks.

Clinical Vignette 1B: Depression without Religious Content

Amir is a 19-year-old man. For the last few months, he has been feeling sad, empty and tired most days. He has not had the energy to do his tasks or activities that once felt meaningful. He has been going out less often. He feels worthless and very guilty. He believes he is not a good person and feels ashamed that he is not getting things done. As a result, Amir has withdrawn himself from others and has trouble managing his day-to-day tasks.

Clinical Vignette 2A: OCD with Religious Content (Scrupulosity)

Adam is a 24-year-old man. He constantly worries that his wudu was not done correctly and that his prayers do not count. These thoughts are unwanted and make him very anxious. To feel better, he redoes his wudu many times and repeats his prayers whenever he feels unsure, sometimes for hours. As a result, these routines take up a large part of his day and make it so that he's unable to get other things done.

Clinical Vignette 2B: OCD without Religious Content

Adam is a 24-year-old man. He constantly worries that his tasks were not done correctly and that he forgot something important. These thoughts are unwanted and make him very anxious. To feel better, he checks things over and over again and repeats checks whenever he feels unsure, sometimes for hours. As a result, these routines take up a large part of his day and make it so that he's unable to get other things done.

Clinical Vignette 3A: Schizophrenia with Religious Content

Ibrahim is a 26-year-old man. For the past few months, he believes that the Shaytan (devil) is inserting thoughts into his mind and trying to control his actions. He reports that he sometimes hears the Shaytan (devil) whispering into his ear, even when alone. He spends a lot of time focused on these thoughts and voices. As a result, Ibrahim has started to mistrust people, avoids leaving

the house, and has been taking off a lot of days from work because he feels unsafe leaving his home.

Clinical Vignette 3B: Schizophrenia without Religious Content

Ibrahim is a 26-year-old man. For the past few months, he believes that the government is inserting thoughts into his mind and trying to control his actions. He reports that he sometimes hears an FBI agent whispering into his ear, even when alone. He spends a lot of time focused on these thoughts and voices. As a result, Ibrahim has started to mistrust people, avoids leaving the house, and has been taking off a lot of days from work because he feels unsafe leaving his home.

Appendix C. Post-Vignette Questionnaire

1) How severe do you find this person's condition to be? Slide the scale from 0 (not severe at all) to 100 (extremely severe)?

How likely do you think each of the following is a cause of this person's condition

2) due to a disease
   a) Very unlikely
   b) Unlikely
   c) Likely
   d) Very likely
3) Due to being inherited
   a) Very unlikely
   b) Unlikely
   c) Likely
   d) Very likely
4) due to committing sinful (haram) actions
   a) Very unlikely
   b) Unlikely
   c) Likely
   d) Very likely
5) due to stressful circumstances
   a) Very unlikely
   b) Unlikely
   c) Likely
   d) Very likely
6) due to a lack of willpower or control
   a) Very unlikely
   b) Unlikely
   c) Likely
   d) Very likely
7) due to being possessed by jinn
   a) Very unlikely
   b) Unlikely
   c) Likely
   d) Very likely

8) due to the evil eye (al-ayn or Nazar)
    a) Very unlikely
    b) Unlikely
    c) Likely
    d) Very likely
9) due to chemical imbalances in the brain
    a) Very unlikely
    b) Unlikely
    c) Likely
    d) Very likely
10) Due to being a test from God
    a) Very unlikely
    b) Unlikely
    c) Likely
    d) Very likely
11) due to family problems
    a) Very unlikely
    b) Unlikely
    c) Likely
    d) Very likely
12) Due to a bad living environment
    a) Very unlikely
    b) Unlikely
    c) Likely
    d) Very likely
13) due to black magic
    a) Very unlikely
    b) Unlikely
    c) Likely
    d) Very likely
14) due to the will of Allah (swt).
    a) Very unlikely
    b) Unlikely
    c) Likely
    d) Very likely

Please rate from 0-100 how likely it is that you would recommend the following treatments for the person's condition.

1. See a psychologist
2. See a psychiatrist

3. Consult a family doctor
4. Take medication for their difficulties
5. Consult an imam or sheikh
6. Engaging in Ruqya (Quran recitation)
7. Increase religious practices (e.g. praying, dua, dhikr)
8. Take part in an Islamic-based therapy

Appendix D. Religiosity Questionnaire

1) I enjoy reading about my religion.
   a) Disagree
   b) Neither agree nor disagree
   c) Agree
2) It is important to me to spend time in private thought and prayer.
   a) Disagree
   b) Neither agree nor disagree
   c) Agree
3) I would prefer to go to a mosque/masjid.
   a) Disagree
   b) Neither agree nor disagree
   c) Agree
4) I have often had a strong sense of God's presence.
   a) Disagree
   b) Neither agree nor disagree
   c) Agree
5) I try to live all my life according to my religious beliefs.
   a) Disagree
   b) Neither agree nor disagree
   c) Agree
6) My religion is important because it answers many questions about the meaning of life.
   a) Disagree
   b) Neither agree nor disagree
   c) Agree
7) I would rather join a Qur'an study group than a mosque social group.
   a) Disagree
   b) Neither agree nor disagree
   c) Agree
8) My whole approach to life is based on my religion.
   a) Disagree
   b) Neither agree nor disagree
   c) Agree
9) Prayers I say when I'm alone are as important to me as those I say in the mosque/masjid
   a) Disagree

b) Neither agree nor disagree
c) Agree