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The Roles of Religion and Spirituality in Recovery from Mental Illness

By

Kazumi Uota

A dissertation submitted in partial satisfaction of the

requirements for the degree of

Doctor of Philosophy

in

Social Welfare

in the

Graduate Division

of the

University of California, Berkeley

Committee in charge:

Professor Steven P. Segal, Chair

Professor Eleanor Rosch

Professor Michael J. Austin

Spring 2012

The Roles of Religion and Spirituality in Recovery from Mental Illness

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Kazumi Uota

Abstract

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Recovery from mental illness is a deeply personal process unique to each individual, involving the strengthening of the person's sense of meaning and purpose, personal identity, and well-being. Many persons in recovery indicate that religion and spirituality are important resources for dealing with mental health difficulties. Yet religion and spirituality can also play negative roles in recovery by exacerbating self-blame, guilt, and a sense of abandonment, as well as promoting a view that mental illness signifies spiritual failure. While a number of quantitative studies have identified a positive link between religion/spirituality and mental health outcomes for people with serious mental illness, fewer of those studies have looked at recovery as process than outcome, and little is known about the relationship of religiousness and spirituality to self-stigma among mental health clients.

This research investigates the association of religiousness and spirituality to proxies (i.e., variables that are used to represent unobservable constructs of interest) of both psychosocial well-being and self-stigma among mental health clients through bivariate and multivariate analyses. In this study, recovery is understood as process; religiousness is defined as self-identification with an institutionalized religion; and spirituality is framed as perception of self as religious or spiritual without identifying with any special religion. This study is a secondary analysis of data collected by the Center for Self-Help Research in Berkeley, California, between 1996 and 2000, on a sample of 673 new users of self-help and community mental health agencies in the San Francisco Bay Area (Segal, Hardiman, & Hodges, 2002). Results show that both religiousness and spirituality were significantly associated with proxies of both psychosocial well-being and self-stigma, after accounting for clients' demographic, clinical, and agency characteristics. The unique contributions of this study are that it: (1) shows that both religiousness and spirituality are associated with proxies of self-stigma, i.e., increased social distance and prejudiced attitude toward psychiatric patients; (2) demonstrates that the relationship between religiousness and self-stigma among mental health clients is non-linear; (3) emphasizes the proper use of statistical methods including assumption checking and adjustment for multiple testing; and (4) introduces a visual recovery narrative (model) as an aid to understanding the concept of recovery. The implications of this study for social work practice, research, and education include: (1) the possibility that the currently accepted polarized view of negative religiousness versus positive spirituality may not hold; (2) the call for training and education of social workers in religion and spirituality; and (3) the need for long-term qualitative

and quantitative studies to investigate the process of recovery; and (4) the importance of incorporating assumption checking and adjustment for multiple testing into social work research.

To my sister Kumiko Miyazaki, who has shown me the true meaning of love

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Chapter One

Introduction

While I was working as a community mental health worker in New York City in the late 1980s, a mother of a grown-up son with schizophrenia confided to me that she thought it would have been better for her son to have cancer than mental illness. Her remark reflected the traditional, negative view of serious mental illnesses which predicted a progressively degenerative, downhill course for people with such diagnoses. This view, however, has been seriously challenged in the last three decades by the self-help and advocacy movement of mental health clients who identify themselves as consumers/survivors/ex-patients as well as by scientific evidence provided by long-term follow-up studies of serious mental illnesses (e.g., Harding, Brooks, Ashikaga, Strauss, & Breier, 1987). Today, the concept of recovery, which began with mental health clients, has come to occupy the central place in the mental health field. Anthony (1993), a well-known leader in psychiatric rehabilitation, summarizes mental health clients' perspectives on recovery as follows:

Recovery is described as a deeply personal, unique process of changing one's attitudes, values, feelings, goals, skills, and/or roles. It is a way of living a satisfying, hopeful, and contributing life even with limitations caused by illness. Recovery involves the development of new meaning and purpose in one's life as one grows beyond the catastrophic effects of mental illness. (p. 527)

As evident in the above definition, recovery seen from the perspective of mental health clients is not so much concerned with the outcome of mental health treatments such as symptom relief and restoration of premorbid state, as it is with the life journey of the person of whom mental illness is only one part. (This approach to recovery raises a methodological question: How can one investigate recovery without making it into an outcome or outcomes? The present study attempts to work around this problem by following Corrigan et al., 2005, who maintain that certain constructs [e.g., hope and empowerment] are essential elements or components of recovery as process, whereas other constructs [e.g., symptoms and disabilities] are the targets of recovery as outcome. This issue is further addressed in the Discussion, Chapter 5.)

Many first-person accounts of recovery describe this journey as a spiritual journey and document how religion and spirituality play a central role in their recovery (e.g., Lukoff, 2007). This observation is supported by empirical research as well. For example, Tepper, Rogers, Coleman, and Malony (2001), in a study of 406 individuals with persistent mental illness, discovered that more than 80 percent used religious coping, and that a majority of participants spent as much as half of their total coping time in religious practices. In addition, other authors (K. E. Bussema & Bussema, 2000; Fallot, 2007; Sullivan, 1993) have identified several specific ways in which religion and spirituality may function as resources for recovery by interviewing mental health clients: namely, religion and spirituality can enhance clients' self-esteem, offer unique coping strategies, provide significant sources of social support, and instill a sense of hope. Yet, religion and spirituality are not without faults. As much as they are helpful, they can be burdensome for some clients by causing excessive self-blame, guilt, and feelings of abandonment. In addition, clients report that members of some religious communities view their

disabilities as a sign of moral or spiritual weakness, thus intensifying their self-blame and sense of estrangement (Fallot, 2007).

The results of quantitative studies demonstrate a similar pattern, though many (not all) tend to focus on clinical outcomes rather than psychosocial constructs associated with the process of recovery. On the one hand, a number of studies report positive correlations between religiousness/spirituality and improved outcomes in mental health clients (e.g., Bosworth, Park, McQuoid, Hays, & Steffens, 2003; Jarbin & Knorr, 2004), but on the other hand, those studies that have examined the types of religious/spiritual coping (i.e., connection/estrangement from God; God as partner/judge; and reliance on God/self) indicate that negative religious/spiritual coping is linked to poorer mental health outcomes (Fallot & Heckman, 2005; Mohr, Brandt, Borrás, Gillieron, & Huguelet, 2006). Furthermore, only one quantitative study has identified religiousness (i.e., the Protestant ethic) as having an impact on the attitudes of mental health clients toward mental illness (Rüsch, Todd, Bodenhausen, & Corrigan, 2010).

These mixed results of research on religion and spirituality in mental health, a relative lack of quantitative research based on the perspective of recovery as process, and a paucity of research on the relationship between religiousness/spirituality and self-stigma among people with serious mental illness suggest a need for further research to determine whether religion and spirituality are indeed useful resources in recovery from serious mental illness. The present research attempts to fill some of the gaps in the literature by further investigating the relationship of religiousness and spirituality to psychosocial well-being and self-stigma for people with serious mental illness.

Specific objectives of this research are:

1. To examine the relationship of religiousness and spirituality to a wide array of psychosocial variables indicating clients' well-being, including hopefulness, self-esteem, self-efficacy, personal empowerment, organizationally mediated empowerment, extra-organizational empowerment, independent social integration, and social network size,
2. To examine the relationship of religiousness and spirituality to a set of psychosocial variables indicating clients' self-stigma of mental illness, including an absence of former psychiatric patients from social networks as well as social distance and a prejudiced attitude regarding such people in general.

The study's hypotheses include the following: (1) Religiousness and spirituality are *on the whole* expected to be positively associated with various proxies of psychosocial well-being. Although there is some evidence that negative religious/spiritual coping is associated with negative mental health outcomes, these authors indicate that their samples relied significantly more on positive than negative religious/spiritual coping styles (Fallot & Heckman, 2005; Mohr et al., 2006). Moreover, two large quantitative studies that have examined the relationship of religiousness and spirituality with health and well-being of mental health clients involved in self-help found overall positive associations among these variables (Bellamy et al., 2007; Corrigan, McCorkie, & Kidder, 2003); and (2) Religiousness is thought to be associated with an increased level of self-stigma indicated by an absence of other psychiatric patients in the client's social

network as well as higher social distance and attitude scores. However, the relationship between religiousness and stigma will not be linear, but curvilinear with highly religious individuals exhibiting less stigma than casually religious counterparts (Allport & Ross, 1967). Additionally, it is hypothesized that spirituality is not associated with self-stigma because, unlike religion, it is free from formal doctrines that may encourage perceptions of mental illness as moral failure or weakness.

Finally, to achieve the above stated objectives, the present research applies a series of bivariate and multivariate statistical analyses by taking into consideration the problem of multiple testing and using data collected by the Center for Self-Help Research in Berkeley, California, between 1996 and 2000, on a sample of 673 new users of community mental health centers and mental health self-help agencies in the San Francisco Bay Area (Segal et al., 2002). The following pages contain the detailed description of this research starting with the Background and Literature Review (Chapter 2) followed by Methods (Chapter 3), Results (Chapter 4), and Discussion (Chapter 5).

Chapter Two

Background and Literature Review

The key constructs of the present study, “recovery,” “religiousness,” and “spirituality,” are highly complex and diverse concepts that are very difficult to define in simple terms. For this reason, the first two sections of this chapter are devoted to addressing some of the definitional questions before turning to a discussion of existing research on religion and spirituality in mental health. Specifically, this chapter comprises the following five sections : (1) What is Recovery?; (2) Religiousness vs. Spirituality; (3) Qualitative Research on Religiousness/Spirituality and Recovery; (4) Quantitative Research on Religiousness/Spirituality and Recovery; and (5) Summary. The first section presents a brief historical background of the concept of recovery in mental health as well as various approaches to understanding this concept. The section’s focus is recovery as process and this perspective is explained in detail using a visual model. The second section examines various ways in which two concepts religiousness and spirituality are polarized in their meanings by contemporary theorists. The third section explores mental health clients’ perspectives on the mechanism of how religion and spirituality may facilitate or hamper their recovery by reviewing some qualitative studies. The fourth section examines the results of existing quantitative research indicating the prevalence of religious/spiritual coping among mental health clients, as well as positive and negative roles of religion and spirituality in recovery from serious mental illness. Finally, the last section summarizes the findings of this review and offers a rationale for pursuing the present study.

What is Recovery?

Historical Background

Until recently, serious mental illnesses such as schizophrenia were commonly regarded as having a progressively degenerative, downhill course (Harding, Strauss, & Zubin, 1992). This was largely due to the influence of Emil Kraepelin, a leading psychiatrist of the early 20th century, who judged schizophrenia to be an early onset form of dementia with a dismal prognosis. The pessimistic attitude of mental health professionals toward serious mental illness lasted for decades because of the continued dominance of Kraepelin’s original writings in medical textbooks (U.S. Department of Health and Human Services, 1999). However, a change in outlook occurred beginning in the 1960s as a result of the deinstitutionalization of state mental hospitals and the concurrent civil rights movement initiated by former mental hospital patients who identified themselves as consumers, survivors, and ex-patients. These people mobilized themselves to demand humane psychiatric treatment, offer mutual support, create alternative, peer-run mental health services, and later collaborate with mental health professionals and policymakers to improve the country’s mental health system (Lukoff, 2007; Toshi, Ralph, & Campbell, 2000; Zinman, 2010).

The concept of recovery began to appear in the first-person accounts of former mental hospital patients between the late 1970s and 1980s.¹ People who recovered from their mental

¹ This sentence refers to the emergence of the contemporary wave of writings by former mental patients. Personal accounts of mental patients are found to have existed for centuries (for example, see Geller & Harris, 1994). The defining characteristics of the contemporary writings include “their critical mass, organizational backing, and

illness were inspired to tell their stories to the public through their writings (Chamberlin, 1978; Deegan, 1988). These personal testimonials of recovery coincided with the appearance of a series of longitudinal research reporting much more favorable long-term outcomes for people with schizophrenia and other serious mental illnesses than had been previously predicted (e.g., Calabrese & Corrigan, 2005; DeSisto, Harding, McCormick, Ashikaga, & Brooks, 1995; Harding et al., 1987; Harrison et al., 2001).

Meanwhile, the concept of recovery spread from mental health clients to family advocacy groups and mental health professionals, in particular, those in the field of psychiatric rehabilitation (Anthony, 1993; Ragins, n.d.). In 1999, the U.S. Surgeon General, in a benchmark report on mental health, proposed the following action as a part of the vision for the future of the American mental health care:

All services for those with a mental disorder should be consumer oriented and focused on promoting recovery. That is, the goal of services must not be limited to symptom reduction but should strive for restoration of a meaningful and productive life.
(U.S. Department of Health and Human Services, 1999, Chapter 8, "Ensure the Supply," para 1)

Three Approaches to Recovery

Although recovery has now become a central concept in mental health, defining its meaning is not a straightforward task (Clay, 2005; Corrigan & Ralph, 2005). Corrigan and Ralph (2005), acknowledging the diverse perspectives on recovery from mental illness, warn their readers about the danger of producing a single definition and assuming it to describe the entirety of recovery. These authors argue that the term recovery actually encompasses three related constructs: (1) recovery as a natural phenomenon; (2) recovery as outcome; and (3) recovery as process. The following paragraph summarizes the description of these three constructs.

The first construct, *recovery as a natural phenomenon*, refers to the fact that some people diagnosed with a serious mental illness recover on their own over time. According to the findings of the aforementioned longitudinal studies of schizophrenia and other serious mental illnesses, approximately one-third of the patients seemed to fit under this category. The second construct, *recovery as outcome*, refers to a more familiar scenario in which people recover from a serious mental illness by participating in an array of mental health services, including psychopharmacological treatments and psychosocial interventions. A significant portion of the mental health community including clients has embraced this framework and perceives serious mental illness as a medical disorder and recovery as the outcome of effective treatment. Finally, the third construct, *recovery as process*, represents the perspective of many clients who view recovery not as an outcome, but as "a process, a way of life, an attitude, and a way of approaching the day's challenges" (Deegan, 1988, p. 15). This way of viewing recovery has reintroduced the idea of hope into the lives of people diagnosed with serious mental illness (Corrigan & Ralph, 2005).

freedom of expression from outside the confines of the institution" (U.S. Department of Health and Human Services, 1999, Chapter 2, Introduction and Definitions, para 3).

Recovery as Process

Of the above three constructs involving recovery, the third, namely recovery as process, has been chosen as the conceptual framework for the present dissertation because the study's sample primarily consists of users of self-help agencies who are likely to view recovery in this light. This perspective will be further examined in the following pages.

People in recovery often state that recovery is different for different people and it must be defined by each individual in his or her own terms (Clay, 2005). However, despite this claim, a number of studies (Davidson, Sells, Sangster, & O'Connell, 2005; Ralph, 2000; Ridgway, 2001) have attempted to identify some general aspects of the recovery process by studying published first-person accounts of mental health clients, as well as analyzing existing qualitative studies on recovery (e.g., narrative interviews and ethnography). A review of the above-cited three studies (Davidson et al., 2005; Ralph, 2000; Ridgway, 2001) resulted in the identification of a set of common themes involved in the process of recovery as follows:²

- Loss of self/illness identification
- Negative social factors surrounding mental illness
- Despair following psychiatric diagnoses*
- Being supported by others
- Renewing hope and commitment
- Accepting illness and redefining self
- Being involved in meaningful activities and expanded social roles
- Managing symptoms
- Resuming control and responsibility
- Overcoming stigma
- Exercising citizenship
- Recovery being a complex and nonlinear journey*

We will expand on these concepts using a tool called a visual model. Ruth Ralph (2005), a consumer researcher and former investigator of the COSP study,³ describes the role of visual models as follows:

² In general, the findings of the three studies were in agreement among themselves although different studies categorized recovery themes differently. I followed Davidson et al.'s design (with a minor modification) to generate the above list of common themes because of its orderliness and conciseness. The two items on the above list with an asterisk were added from Ridgway (2001)'s work. Davidson et al. analyzed both first-person accounts and existing qualitative research on recovery, while the other two studies examined only the former kind.

³ The Consumer-Operated Services Program (COSP) Multisite Research Initiative (1998–2004), known as the COSP study, was a federally funded, randomized controlled study to evaluate the effectiveness of adding peer-run services to traditional mental health services, as compared with providing traditional services alone. Consumers participated in every aspect of the study including research design. Ruth O. Ralph, Ph.D., was principal investigator at the Maine site (Clay, Schell, Corrigan, & Ralph, 2005).

Some people find that a picture or graphic helps them to better understand a concept. Visual definitions have also been developed as models of recovery. Visual models expand on the individual [verbal] definitions found in personal accounts. They bring together ideas and concepts from a number of sources. These visual models provide a theoretical base for the concept of recovery. (p. 131).

The visual models created by other authors employ conceptual maps and graphs to describe the process of recovery (Davidson et al., 2005; Prochaska, DiClemente, & Norcross, 1992; Ralph, 2005). Building on this idea, I have created a series of photographic images based on the common themes of recovery identified above. I then integrated these images with matching verbal definitions found in personal accounts of mental health clients.

A total of seven images are in the model. The actual visual model begins on page 10. Here, the captions and my brief descriptions of each image are provided as an introduction to the model. (To write the descriptions, the above three studies were consulted: Davidson et al., 2005; Ralph, 2000; Ridgway, 2001.) Note that the captions (italicized words) are not the same as the common themes identified in the previous page. Those themes were combined into more general, fewer themes suitable for pictorial representation. However, the original, individual themes are incorporated in the descriptions of the images and readily identifiable. Again, the process of recovery is a complex and nonlinear journey (Ridgway, 2001). The phases of recovery represented by pictures are neither mutually exclusive nor linearly related with each other. Instead, the person in recovery travels through different phases, shifting back and forth, moving from one phase to another, and sometimes experiencing several phases simultaneously.

Figure 1. *Glow of Life*. As we reviewed earlier, many clients do not regard recovery as simply an outcome of effective treatment or return to a premorbid state. Instead, they view it as a lifelong process unique to each individual. Many recovering people feel that the experience of mental illness and of its negative social consequences have forever changed who they are. Furthermore, some people do not wish to return to their previous selves because they have grown as people through this experience.

Figure 2. *Labeling*. People diagnosed with serious mental illness are often treated as though they personify their psychiatric labels and are no longer human beings with unique personalities, talents, and preferences. This gradually erodes their sense of self until they come to identify themselves as “mentally ill.”

Figure 3. *Harm*. For people with serious mental illness, harm comes in a myriad of forms, including psychiatric symptoms (e.g., delusions, hallucinations, & depression), resulting impairments (e.g., poor communication, socially inappropriate behaviors, & weakness), stigma (e.g., incurable, dangerous, incompetent, & character weakness), social consequences (e.g., poverty, alienation, chronic unemployment, & lack of decent housing), and psychiatric treatment itself (e.g., coercion, medication side effects, & power inequities within system).

Figure 4. *Despair*. People with serious mental illness have many reasons to despair. But, probably the most significant source of despair is hearing the expert’s pronouncement that the illness is incurable and will result in a lifelong disability. An initial response to

such a catastrophic circumstance is often denial, which for many people in time turns to despair. In despair, people cannot find any hope for the future and simply abandon efforts to improve their life circumstances.

Figure 5. *Caring*. Caring sets the process of recovery in motion. Having supportive others (e.g., family, friends, professionals, pets, & God) and a renewed commitment to recovery allow people with mental illness to touch the inner source of hope, strength, and healing. Instead of attempting to reach recovery in one giant leap, people learn to value the process and know that they are recovering when they take very small, tangible steps (e.g., talking with families and friends, exercising, eating healthy foods, resting well, joining self-help groups, taking medications, & participating in prayer/meditation).

Figure 6. *Awakening*. Recovery involves letting go of one's sense of powerlessness associated with the role and identity of "mental patient." It means redefining one's self as a person of whom mental illness is only one part, and who is capable of resuming control and responsibility over one's own life. This includes coming to terms with one's mental illness and learning to manage symptoms in some way—although accepting a particular framework of mental illness (e.g., medical model) is not required—as well as learning to withstand and fight against stigma.

Figure 7. *Engaging with Life*. One of the negative social consequences of serious mental illness is alienation and the person's withdrawal from life. Recovery entails breaking through this immobile state and beginning to participate in life once again. It means becoming involved in meaningful activities and expanded social roles (e.g., active parenthood, employment, education, self-help, & religion/spirituality), as well as exercising one's rights and responsibilities as a citizen and a community member (e.g., voting, advocacy, & volunteerism). In particular, a number of people in recovery find it very rewarding and meaningful to help and mentor newcomers to the recovery community, as well as advocating for positive changes in the mental health system. These new roles and activities offer greater meaning and purpose in the lives of people with mental illness.

Lastly, before turning to the visual recovery model, a few other things need to be clarified. As mentioned earlier, the definition of recovery varies with each person. In particular, people in recovery from mental illness have a different outlook from each other regarding the established mental health system and its services. Some people view them as very helpful and effective, others hold a more neutral view, and still others find them abusive. People also have different understandings of mental illness. Some people regard mental illness as a medical disorder, others view it as a reaction to life challenges, and still others experience it as a spiritual crisis. The perspectives expressed in the verbal definitions accompanying my photographs come from mental health clients in the self-help and advocacy movement, among whom the opinions vary. Thus, those perspectives reflect experiences of particular individuals of a particular segment of clients. In other words, these verbal definitions are examples of more general themes that the photographs are intended to express. One advantage of using images, as compared with words, is that the former are far more capable of expressing multiple meanings of a complex phenomenon simultaneously. Furthermore, recovery is not an experience unique to people diagnosed with serious mental illnesses or other disabilities (Anthony, 1993; Davidson et al.,

2005). Many of the readers must have had some serious, life challenges that caused them to undergo some recovery processes. Stating this, however, should not be taken as undermining the enormity of both internal and external obstacles that people with serious mental illness face in recovery. Instead, what I mean is there is no “our experience vs. their experience,” only the human experience. This is the ultimate meaning of recovery that I hope to convey to the readers of my dissertation using my visual model. (Note: To view the following images most accurately, display them at 100 percent.)

A Visual Recovery Model

by Kazumi Uota



Figure 1. Glow of Life

Recovery has so very little to do with alcohol, drugs, mental illness, death, destruction, public opinion. It's how to recover or discover that pure sweet innocence within, that was meant to be the diamond essence from the Creator just for you. The only true shiny object that is the glow of life and goodness.

(C. Morrison, personal communication, 2007)



Figure 2. Labeling

A diagnosis is a myth written about me.
By people unwilling to relate to my humanity.

(Panther, n.d.)



Figure 3. Harm

When I was in a psychiatric facility, because I questioned conditions, I was dragged into solitary confinement and held down on a bare mattress, forcibly injected with powerful psychiatric drugs, and held in solitary confinement. And I found since then that this is routine, that this is happening all over the—all over the psychiatric system. Usually forced psychiatric drugging occurs behind institutional walls, but in the last few years coerced drugging is now out in the community. Thirty-six U.S. states and the District of Columbia have involuntary outpatient commitment laws, which allow people to be court ordered to take psychiatric drugs against their expressed wishes, even if they're living at home.

(D. Oaks testifying at an NCD hearing, National Council on Disability, 2000, p. 3)

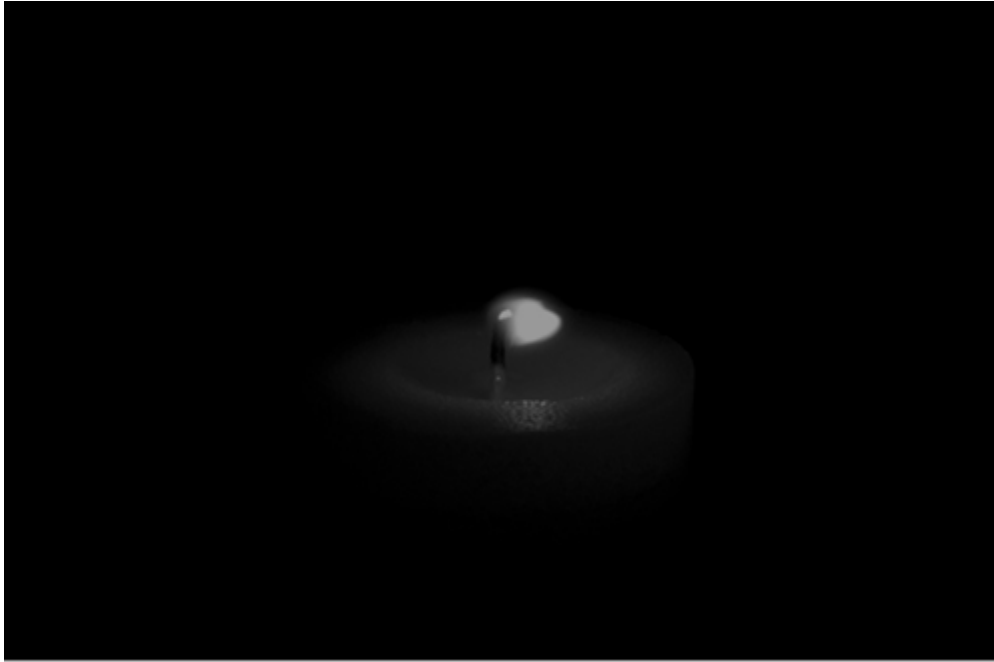


Figure 4. Despair

Being told that you have schizophrenia is a devastating experience. Especially, when I was told this, I was also told that I would always be ill, I was always going to need treatment and it was terrifying. It was . . . taking away hope at a time when I needed, more than anything else, people believing in me. And I needed support, I needed someone to say there are ways out of this morass you find yourself in and I wasn't hearing that. And what compounded it was that these people were the experts. They were the ones who were supposed to have the answers. So it was a terrible blow to be told by these professionals that I was never going to get better.

(Chamberlin, 2001, p. 20)



Figure 5. Caring

We do remember that even when we had given up, there were those who loved us and did not give up. They did not abandon us. They were powerless to change us and they could not make us better. They could not climb this mountain for us but they were willing to suffer with us. They did not overwhelm us with *their* optimistic plans for *our* futures but they remained hopeful despite the odds. Their love for us was like a constant invitation, calling us forth to be something more than all of this self-pity and despair. . . . One day, something changed in us. A tiny, fragile spark of hope appeared and promised that there could be something more than all of this darkness.

(Deegan, 1988, p. 14)



Figure 6. Awakening

Finally I could admit openly that my experiences were, and always had been, a spiritual journey—not sick, shameful, or evil. I was already a worthwhile person, right from the start, and there was a way to work with my own mind to transform fearful mental states to peaceful ones.

(Clay, 1994)



Figure 7. Engaging with Life

As I became involved with this social change movement 25 years ago, my main purpose was to try to change the system so that others would not have to experience what I had. In the language of the day, it was to liberate others. I soon realized, that what I and my colleagues were also doing was "liberating" ourselves, empowering ourselves. We recreated ourselves, individually and as a group. Some time later I realized that we were also "liberating" a system, making the system a better place for all of us - providers, clients, family members.

(Zinman, 2002)

This is the end of the visual recovery model. I hope that the combination of the three types of narratives (i.e., descriptions based on identified themes, verbal definitions found in personal accounts, and visual definitions of recovery) helped the reader to understand generally what recovery means, not only at the intellectual level, but also at the personal and emotional level. Such understanding of the concept of recovery will be helpful in appreciating the true significance of research on religion and spirituality in mental health. For recovery from mental illness is deeply intertwined with the matters related to religion and spirituality (e.g., renewing hope after despair, interconnection with others, coming to terms with one's self) regardless of whether a person in recovery chooses to call him/herself religious, spiritual, or a non-believer. With this insight, we will now move to the next section of the background and literature review, in which we will address another set of definitional concerns related to two other important constructs, namely religiousness and spirituality, before we finally turn to a discussion of existing studies on the roles of religion and spirituality in recovery from mental illness.

Religiousness vs. Spirituality

The social science literature indicates a lack of consensus regarding the existence and/or nature of the boundaries between religion and spirituality (Turner, Lukoff, Barnhouse, & Lu, 1995). This confusion may be attributed to two trends in recent American religious history. First, over the past 20 [now 30] years, new patterns of immigration have drastically changed the religious landscape of the United States. Once predominantly a Judeo-Christian society, America has become a religiously pluralistic society (Longo & Peterson, 2002). Second, the last century saw a rise of religious secularism, in which many Americans expressed their disillusionment with established religious institutions and began to seek spiritual practices elsewhere (Turner et al., 1995). As a result, our ideas of what makes up spiritual beliefs and practices have taken on more personalized meanings, and the terms spirituality and religiousness have undergone diversification in their meanings (Longo & Peterson, 2002; Zinnbauer, Pargament, & Scott, 1999).

Today, scholars and the general community subscribe to various definitions of religiousness and spirituality (Longo & Peterson, 2002; Zinnbauer et al., 1999). No two persons' definitions are exactly the same; Zinnbauer et al. identified three ways in which religiousness and spirituality are polarized by contemporary theorists: (1) organized religion versus personal spirituality; (2) substantive religion versus functional spirituality; and (3) negative religiousness versus positive spirituality. The first category, *organized religion versus personal spirituality*, emphasizes the organizational or social aspects of religion as opposed to the personal or transcendent qualities of spirituality (Zinnbauer et al., 1999). One such example from the research literature is Sullivan (1993)'s explanation of why she prefers to use the term spirituality over religion in her qualitative study with mental health clients. She writes: "The term spirituality was purposely chosen over the more narrow term, religion, to account for the individualized manner in which respondents describe their faith, experience, and practice" (Results section, para. 2).

The second category, *substantive religion versus functional spirituality*, refers to the fact that many functions once attributed to religion are now considered part of spirituality. Spirituality has come to signify whatever people do to achieve their highest goals, such as finding meaning in life, seeking wholeness, and experiencing interconnections with others, while

religion is increasingly described as a static, frozen entity though not without the sacred substance (Zinnbauer et al., 1999). One example of this view is Titone (1991), who describes spirituality as follows:

Spirituality may or may not include belief in God. . . . It pertains to one's relationship with ultimate sources of inspiration, energy, and motivation; it pertains to an object of worship and reverence; and it pertains to the natural human tendency toward healing and growth. (p. 8)

The third category, *negative religiousness versus positive spirituality*, designates spirituality as the “good guy” and religion as the “bad guy.” In other words, spirituality is associated with the loftier side of humanity, whereas religiousness is denigrated as mundane faith or institutional hindrances to the attainment of human potentials (Zinnbauer et al., 1999). Fallot (2007) confirms this polarization by describing how some mental health clients who participated in his spirituality discussion groups preferred to refer to themselves as “spiritual” rather than “religious” when they themselves or others had experienced rejection or even abuses by some religious groups.

Finally, Zinnbauer et al. (1999), recognizing the need for some agreement among researchers to create a consistent research program and to distinguish between the two constructs without polarizing them, suggest an alternative approach that “integrates rather than polarizes these constructs, and one that sets boundaries to the discipline, while acknowledging the diverse ways people express their religiousness and spirituality” (p. 911). As for the present research, it does not distinguish between religiousness and spirituality as such, but it does distinguish a group of people who profess “no special religion but consider themselves religious/spiritual” from others who identify with institutionalized religions.

Qualitative Research on Religiousness/Spirituality and Recovery

In his paper reviewing current religious/spiritual issues in mental health, Fallot (2007) summarizes mental health clients' perspectives on the mechanism of how religion and spirituality may facilitate or hamper recovery, using the published literature as well as data from his spirituality discussion groups for persons with serious mental illness.⁴ The following three subsections are based on this summary of clients' perspectives with some modification.

Religion and Spirituality as a Source of Strength

According to Fallot (2007) and other authors (K. E. Bussema & Bussema, 2000; Sullivan, 1993), mental health clients indicate several ways in which religion and spirituality may function as resources for recovery. First, religion and spirituality may help enhance clients' self-esteem through beliefs and practices that connect them to a force greater than themselves. Second, religion and spirituality offer unique coping strategies. In his interviews of 40 “successful” mental health clients, Sullivan (1993) found that 48 percent considered spiritual beliefs or

⁴ Two types of groups are involved. The first are structured spirituality discussion groups, ranging in length from 10 to more than 30 sessions, that Fallot conducted at an urban mental health agency serving people with severe mental disorders. The second are meetings to plan a treatment group for women trauma survivors with co-occurring mental health and substance abuse problems.

practices central to their achievement, and many considered prayer as an essential part of their lives to cope with their illness. Third, religion and spirituality provide significant sources of social support. While the range of such support may include everything from a surrogate family to direct aid, its spiritual dimension goes far beyond the bounds of human contacts, and includes a personal relationship with God (Sullivan, 1993). Fourth, religion and spirituality can instill a sense of hope. Embracing particular religious beliefs or engaging in spiritual activities may help clients maintain a hopeful vision of the future, to feel a greater sense of purpose in life, and to experience God as a helper in recovery.

Religion and Spirituality as a Source of Burden

Religion and spirituality may be burdensome as well as supportive in recovery from mental illness (Fallot, 2007, 2008). Pargament (2002) illustrates this point by listing a number of ways in which religious coping may be used in either positive or negative fashions, with the latter including “questioning the powers of God, expressions of anger toward God, expressions of discontent with the congregation and clergy, punitive religious appraisals of negative situations, and demonic religious appraisals” (p. 171). Similarly, Fallot (2007)’s spirituality discussion group members maintain that positive and negative consequences of religious/spiritual coping are, in fact, the opposite ends of a continuum. That is to say, beliefs that enhance one person’s self-esteem may weaken another’s through excessive self-blame and guilt. Practices that generally serve as effective coping strategies, such as prayer, may have negative results for some, including obsessive compulsion and delusional thinking. Finally, for certain individuals, religious or spiritual experiences are interlaced with a sense of despair, rather than hope. In their interviews with 17 adults in various psychosocial rehabilitation services, Bussema and Bussema (2000) found that a majority of the participants experienced anger toward God for their disability as well as doubts about their faith. Feelings of unworthiness and abandonment were a serious hindrance to the enjoyment of the trust and hope that religious faith could offer some of these clients.

Religion and Spirituality as a Source of Stigma

In addition to the sense of divine rejection, Bussema and Bussema (2000) found that the majority of their study participants expressed a deep sense of estrangement from their religious communities rather than a sense of mutual support and sharing. This finding was in accord with some of the experiences that members of Fallot’s (2007) spirituality discussion groups reported. Their tendency to blame themselves for their disability was reinforced by the attitudes of some religious groups which regarded mental illness as a sign of moral or spiritual weakness or failure. These groups sometimes told clients that their symptoms would be lessened if only they had a strong enough faith or commitment to morality. This type of understanding of disability in general is termed the “moral model” by scholars in disability studies, and is considered as a source of stigma associated with disability (Mackelprang & Salsgiver, 2009; Murphy & Pardeck, 2005).

Quantitative Research on Religiousness/Spirituality and Recovery

Prevalence of Religious/Spiritual Coping

Since at least the late 1980s, research has been conducted to uncover the prevalence of religious/spiritual coping among people diagnosed with serious mental illness. This research includes one study of 58 people receiving psychiatric rehabilitation services through a faith-based agency (E. F. Bussema & Bussema, 2007); another with 157 individuals with serious mental illness who were assessed for alternative healthcare practices (Ruscinova, Wewiorski, & Cash, 2002); a third with 356 individuals with persistent mental illness who attended one of 13 Los Angeles County mental health facilities (Reger & Rogers, 2002); a fourth with 406 patients from the same LA County facilities (Tepper et al., 2001); and, finally, one with 52 psychiatric inpatients in Minnesota (Kroll & Sheehan, 1989). A majority (50 to 80 percent; Mean = 73 percent) of the participants in each study reported that they used religious beliefs or activities to cope with their symptoms and daily difficulties. Of these studies, the survey conducted by Tepper et al. (2001) is most frequently cited. Their findings indicate that more than 80 percent of the participants (n=406) used religious coping, and that a majority of participants spent as much as half of their total coping time in religious practices. Activities such as prayer and reading the Bible were associated with greater levels of symptoms, frustration, and impairment.

Positive Roles of Religion and Spirituality

A fair number of studies have been conducted to test the relationship of religiousness and spirituality with various indicators of recovery from mental illness. Two of them used a rather large sample size: 1,835 users of clubhouses and consumer-run drop-in centers in Michigan (Bellamy et al., 2007) and 1,824 consumers who participated in the SAMHSA-funded Consumer Operated Services Program (COSP) (Corrigan et al., 2003). The Michigan study found that spirituality was positively associated with age, female, quality of life, hope, sense of community, and more depressive and psychotic symptoms (Bellamy et al., 2007), while the COSP-based study found that religiousness was associated with recovery, subjective social inclusion, quality of life, hope, less depressive-anxiety-overall symptoms, and diminished disability; and that spirituality was associated with recovery, objective and subjective social inclusion, hope, empowerment, less depressive symptoms, and diminished disability (Corrigan et al., 2003). Note that the findings of the above two studies on the relationship between spirituality and symptoms are contrary to each other.

Besides the above two studies, other smaller studies also have found that religiousness and spirituality were associated with:

- greater treatment goal attainment in a sample of 48 persons with serious psychiatric disabilities attending a psychosocial rehabilitation program in Los Angeles (Wong-McDonald, 2007).
- greater empowerment and involvement in recovery-enhancing activities in a sample of 178 individuals with serious mental illnesses receiving services in the public sector mental health system; the degree of association varied among different religious

coping styles (i.e., Collaborative, Deferring, Self-directing, and Plead)⁵; the Collaborative style had the strongest overall association with the outcome variables while the Self-directing style had the weakest (Yangarber-Hicks, 2004).

- less suicide attempts in a sample of 88 Swedish patients with adolescent-onset psychotic disorders followed for 10.6 years (Jarbin & Knorrning, 2004).
- lower levels of depressive symptoms in a sample of 104 elderly psychiatric inpatients (Bosworth et al., 2003).
- less severe depressive symptoms, shorter current length of stay, higher satisfaction with life, and lower rates of current and lifetime alcohol abuse in a sample of 88 Canadian psychiatric inpatients (Baetz, Larson, Marcoux, Bowen, & Griffin, 2002).
- better community outcome during a two-year follow-up in a sample of outpatients diagnosed with schizophrenia in India (Verghese et al., 1989).
- less readmission during a 12-month follow-up in a sample of 128 discharged African American patients diagnosed with schizophrenia (Chu & Klein, 1985).
- good post-hospital social adjustment in a sample of 210 former psychiatric patients diagnosed with schizophrenia (Schofield, Hathaway, Hastings, & Bell, 1954).

Negative Roles of Religion and Spirituality

Some authors have indicated that religion can be problematic for certain individuals with serious mental illness when religious contents become intertwined with their psychiatric symptoms. For example, in a retrospective chart analysis of 50 state hospital patients with various psychotic disorders, Brewerton (1994) observed that psychotic phenomena with religious themes occurred in the majority of the cases although their frequency and type of expression varied by diagnosis. Similarly, in a study of 193 psychiatric inpatients diagnosed with schizophrenia and related disorders, Siddle et al. (2002) found that 24 percent had religious delusions and that patients with religious delusions performed poorly on symptom severity, functioning, and amount of medication required, compared with those with other types of delusion. Lastly, another study of 133 psychiatric inpatients with psychosis has shown an association between severity of religious delusions and amount of religious activity prior to hospitalization (Getz, Fleck, & Strakowski, 2001). According to these authors, religion and spirituality are clinically relevant phenomena closely associated with psychiatric disability.

Apart from the question of religiosity associated with psychosis, other researchers are interested in a more general question: Does the way a person uses religious/spiritual coping have anything to do mental health outcomes? In a study of college students (n=200) in the Northeastern United States, difficulty forgiving God was found to be associated with anxious and

⁵ The collaborative style entails working together with God in solving problems; the deferring style implies making God solely responsible for the task; the self-directing style underscores the responsibility of the individual without relying on God's help; and the plead style refers to asking God for a miraculous intervention (Pargament et al., 1988, 1990).

depressed mood (Exline, Yali, & Lobel, 1999). In another study examining the types of religious/spiritual coping used by women trauma survivors with co-occurring mental and substance use disorders (n=666), negative religious/spiritual coping was found to be linked to more PTSD and other mental health symptoms (Fallot & Heckman, 2005). Lastly, semi-structured interviews with psychiatric patients (n=115) treated in one of Geneva's four outpatient facilities reveal that 14 percent of the patients experienced negative consequences of religious/spiritual coping, including an increase in spiritual despair, symptom severity, social isolation, suicide risk, substance use, and noncompliance to treatment, whereas 71 percent of the patients experienced the opposite as a result of religious/spiritual coping. For those patients who had unfavorable experiences, religion and spirituality were meaningful, yet they were a source of despair and suffering (Mohr et al., 2006).

In addition to the negative roles described above, religion has been linked to narrow-mindedness and a discriminatory attitude toward various minority groups. The task of discerning the exact nature of this connection, however, has not been straightforward. After reviewing several decades of psychological research on religion and prejudice, the American Psychological Association (2007) summarizes its findings in its *Resolution on Religious, Religion-Based and/or Religion-Derived Prejudice*. The document states that while dozens of studies (Altemeyer, 1988; Altemeyer & Hunsberger, 1992, 2005) have indicated positive linear relationships between broad measures of conventional religiousness (e.g., frequency of church attendance or scores on fundamentalism scale) and measures of negative social attitudes (e.g., prejudice, dogmatism, or authoritarianism), other studies (Allport, 1950; Allport & Ross, 1967) have observed a complex curvilinear relationship between religion and prejudice, with highly religious individuals reporting milder levels of prejudice than casually religious counterparts. Such a relationship has been found consistently in many subsequent studies on religion and prejudice using self-report measures. Moreover, recent studies based on non-self report measures are uncovering still more complex and varied sets of relationships between diverse expressions of personal religiousness and indicators of prejudiced attitudes (American Psychological Association Council of Representatives, 2007).

The literature specifically addressing the relationship between religion and prejudice against persons with mental illness demonstrates this complexity. For example, a UK study of 68 individuals from a predominantly white, middle-class, evangelical Anglican congregation indicates that the churchgoers, in fact, expressed less negative and rejecting attitude toward persons with mental illness than the population sample, as measured by a questionnaire (Gray, 2001). Conversely, a study of 144 undergraduate students from a large Midwestern university found that religious beliefs about mental illness (e.g., mental illness resulting from sin) were related to its negative secular beliefs and that students with different religious affiliations endorsed particular religious beliefs differently (Wesselmann & Graziano, 2010). On the latter point, another study of 160 equal number Catholic and Jewish high school students showed no group differences in their opinions about mental illness (Saper, 1986). Besides the question of variation among different religious affiliations is the question of variation among groups of individuals with different religious orientations. Walker (2006), using a sample of 117 college students from a Christian college in the Midwest, examined the relationships between Batson's

(1976) three dimensions of religious orientation (i.e., religion as Means, End, and Quest)⁶ and four types of attitude toward persons with mental illness (i.e., authoritarian, benevolence, community mental health ideology, and social restrictiveness). The study found no statistically significant correlations among two sets of variables except for a positive correlation between the Quest orientation and authoritarian attitude—a contradiction to Batson’s conceptualization. Lastly, one study is noteworthy for its relevance to the present dissertation in its focus on the relationship between an aspect of religiousness and an internalized prejudice or self-stigma experienced by people with mental illness. Rüsç, Todd, Bodenhausen, & Corrigan (2010) examined the links between meritocratic world views—which included the Protestant ethic—and implicit versus explicit stigma, using samples of 85 psychiatric outpatients and 50 members of the general public from the Chicago area. Their findings, among others, indicate that endorsement of the Protestant ethic by individuals with mental illness was associated with more self-stigma and a more stigmatizing attitude toward people with mental illness (i.e., perceived responsibility for their condition, perceived dangerousness, and general agreement with negative stereotypes), but not with implicit guilt-related stereotypes of mental illness.

Summary

The literature on religion and spirituality in mental health has indicated that religion and spirituality are important resources in recovery for many persons with serious mental illness (Tepper et al., 2001). But it has also shown that religion and spirituality can be harmful in recovery by causing excessive self-blame, guilt, and feelings of abandonment as well as promoting a view that mental illness is a sign of moral or spiritual failure (Fallot, 2007). While a number of quantitative studies have identified a positive link between religion/spirituality and better mental health outcomes among people with serious mental illness (e.g., Bosworth et al., 2003; Jarbin & Knorring, 2004), fewer quantitative studies have examined recovery as process as opposed to clinical outcome (Bellamy et al., 2007; Corrigan et al., 2003), and only one study that I am aware of has investigated the connection of religiousness (i.e., Protestant ethic) to self-stigma for people with serious mental illness (Rüsç et al., 2010). The present study contributes to this research field by investigating from a recovery-as-process perspective the relationship of religiousness and spirituality to psychosocial well-being and self stigma among mental health clients.

⁶ Batson’s (1976) three-dimensional model of religiousness is built upon Allport’s two-dimensional model consisting of the Extrinsic and Intrinsic dimensions, with the former signifying externally motivated religiousness and the latter internally motivated one (Allport, 1950; Allport & Ross, 1967). Batson alternatively referred to these two dimensions as the Means and End dimensions, respectively, and added a third dimension, the Quest dimension, which signified “an open-ended, active approach to existential questions that resists clear-cut, pat answers” (Batson & Schoenrade, 1991, p. 416). Batson and colleagues have indicated that individuals with the Quest orientation were less prejudiced, less dogmatic, and more responsive to the expressed needs of others than those with the Means and End orientations (Batson, 1976; Batson, Naifeh, & Pate, 1978; Donahue, 1985).

Chapter Three

Methods

Study Design

The present study uses a cross-sectional design and incorporates bivariate and multivariate analyses, using existing data collected between 1996 and 2000 by the Center for Self-Help Research (CSHR) in Berkeley, California, in affiliation with the Public Health Institute and the University of California, Berkeley School of Social Welfare. This dataset constitutes Wave 1 of a 4-time-point longitudinal survey of mental health clients attending self-help and/or community mental health agencies in the San Francisco Bay Area. The CSHR survey, comprising scales and questionnaires, was administered through in-person interviews by former mental health clients and professionals. The measures and some of the methods used in the present study came from the paper by Segal, Hardiman, and Hodges (2002) for which this dataset was originally collected, as well as an earlier paper by Segal, Silverman, and Temkin (1995a).

Study Sites

Twenty-one mental health organizations in six counties of the greater San Francisco Bay Area participated in Wave 1 of the CSHR survey. They were selected as 10 pairs of self-help and community mental health agencies based on their geographical proximity, with an exception of one community agency matched with two self-help agencies. The pairing was sought by the original researchers to compare service use by a single local population in the two different types of agencies. The median distance between paired sites was 2.5 miles (Segal et al., 2002).

A self-help agency is a mental health organization characterized by a client director, a governing board whose membership includes a majority of clients, and an organizational structure in which clients have hiring and firing power. The agency provides client-operated social support services based on self-help principles. On average, participating self-help agencies were in operation 5.3 days a week, assisting 43 members a day. They all encouraged mutual support among clients as well as organizational governance by clients. The range of support services offered by these agencies included peer support groups, material resources, a place for socialization, help in obtaining concrete goods, money management, counseling, payeeship services, case management, and information/referral services. Self-help agencies also provided opportunities for social advocacy at the local, state, and national levels (Segal et al., 2002).

By contrast, participating community mental health agencies offered professional, outpatient services for people with mental disabilities who were thought to have similar characteristics to the clients of the matched self-help agency sites. The range of services offered by the community mental health agencies included assessment, medication review, individual and group therapy, case management, and referral services (Segal et al., 2002).

Study Sample

All new clients entering the selected self-help agencies or community mental health agencies between 1996 and 2000 were recruited to participate in Wave 1 of the CSHR survey (Segal et al., 2002). The criterion for inclusion was that clients had not received any services in these organizations during the six months before entering the agencies. A total of 787 clients were asked to participate and 673 (86 percent) agreed. Of these, 226 were from self-help agencies (11 sites) and 447 from community mental health agencies (10 sites). No major differences were found in gender, ethnicity, and housing status between clients who agreed to participate and those who declined. The participation rates at self-help agencies and community mental health agencies were comparable—85 percent and 86 percent, respectively (Segal et al., 2002).

Data Collection

All data for the CSHR study were collected through in-person interviews. The Center trained former mental health clients and professionals to be interviewers. They used two interview schedules that had been pretested separately: the first schedule with a sample of 310 long-term users of self-help agencies in northern California (Segal, Silverman, & Temkin, 1995b) and the second with a sample of 30 community mental health clients. The first interview schedule, developed jointly by researchers and mental health clients, contained questions about demographic, housing, and income characteristics, together with measures of functional status, empowerment, and attitude toward self and others. These measures indicated the goals of the self-help movement. Additional information obtained through the first interview schedule included lifetime history of disability and service use by clients. The second interview schedule contained the Diagnostic Interview Schedule version IV (DIS-IV) (Segal et al., 2002), which allowed lay interviewers to make psychiatric diagnoses according to the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV) (Robins, Helzer, Croughan, & Ratcliff, 1981).

Measures

There are fourteen main variables in the present research: religious identification, church attendance, importance of religion, hopefulness, self-esteem, self-efficacy, personal empowerment, organizationally mediated empowerment, extra-organizational empowerment, independent social integration, network size, patient network, social distance, and attitude. Of these, religious identification, church attendance, and importance of religion are independent variables; the rest are dependent variables. Those dependent variables were selected from the existing dataset for use in this study based on the categories of the visual recovery model and the recovery themes derived from the literature in the previous chapter. Table 1 summarizes the approximate correspondence that exists between those variables and the said categories and themes. It shows that there are some inadequacies of fit around certain categories. For example, the first category, “glow of life,” does not have any matching variables. Similarly, the category “harm” does not have corresponding variables that measure the client’s exposure to various types of prejudice, discrimination, and oppression. These inadequacies are a natural part of secondary analysis, and will be taken into account when I suggest future research in the Discussion (Chapter 5).

Table 1

Comparison of the Dependent Variables Used in This Study with the Categories of the Visual Recovery Model and the Recovery Themes Derived from the Literature

Categories of the visual recovery model	Recovery themes derived from the literature	Corresponding variables selected for this study
Glow of life	Recovery as a lifelong process unique to each individual	n/a
Labeling	Loss of self/illness identification	Social distance Attitude Patient network
Harm	Symptoms, impairments, stigma, social consequences, and psychiatric treatment	CESD (depression) ^a BPRS (psychiatric disability) ^b
Despair	Despair following psychiatric diagnoses	Lack of hopefulness
Caring	Being supported by others Renewing hope and commitment	Network size Hopefulness
Awakening	Resuming control and responsibility Accepting illness and redefining self Managing symptoms Overcoming stigma	Personal empowerment Self-esteem Self-efficacy
Engaging with life	Being involved in meaningful activities and expanded social roles Exercising citizenship	Organizationally mediated empowerment Extra-organizational empowerment Independent social integration

^{a, b}These two are not dependent variables, but control variables within multivariate models.

Having clarified the connection between the visual recovery model and the dependent variables selected for this study, we will now turn our attention to the properties of the measurement instruments used in this study, starting with the three measures of religiousness, followed by those associated with the dependent variables mentioned above (see Table 2 on page 30 for a summary of the measures used in the present study).

Religious identification was determined by the question regarding which religion, if any, the respondent identified with. The range of possible responses included “Catholic,” “Protestant,” “Muslim,” “Jewish,” “Other,” “No special religion, but considers self religious/spiritual,” and “None.” For the purpose of this study, the first five categories were recoded as “religious,” the sixth as “spiritual,” and the seventh as “none.” Church attendance was determined by the question regarding, if any religious identification, about how many times a month, if any, the respondent went to church, temple, etc. The open-ended responses were

recoded into three values including “Not at all,” “1 to 4 times,” and “5 times or more.” Importance of religion was determined by the question regarding, if any religious identification, how important religion was to the respondent. The range of possible responses included “Extremely important,” “Very important,” “Somewhat important,” “Not too important,” and “Not at all important.” However, due to the few respondents who selected the last two categories, “Not too important” and “Not at all important,” they were collapsed into one category “Not important,” making a total of four values for the variable.

Hopefulness was determined through the scores on the Hope Scale created by Segal et al. (1995a), built on the work of Zimmerman (1990) and Beck (1974). This scale consists of 10 true or false statements describing the respondent’s sense of hopefulness or lack of it. The total score runs from 0 to 10, with higher scores indicating greater hope. Applying the scale to long-term users ($n=310$) of self-help agencies in the San Francisco Bay Area, Segal et al. (1995a) report that the scale’s internal consistency is $\alpha = .83$ at baseline and $\alpha = .83$ at 6 months; its stability coefficient (test-retest reliability) is equal to .61.

Self-esteem was determined through the scores on the Rosenberg Self-Esteem Scale (Rosenberg, 1989), which runs from 10 to 50, with higher scores indicating greater self-esteem. This is a 10-item scale with each item measuring the respondent’s perception of self-worth on a 5-point Likert scale (from “Strongly Disagree” to “Strongly Agree”). Previously published studies report its internal consistency to be $\alpha = .88$ (Fleming & Courtney, 1984); $\alpha = .82$ and $.83$ (Segal et al., 1995a). Segal et al. also report its stability coefficient over 6 months to be .62. The scale’s discriminant validity has been analyzed by Fleming and Courtney (1984) and convergent validity by Savin-Williams and Jaquish (1981).

Self-efficacy was determined through the scores on Segal et al.’s Self-Efficacy Scale, built on the work of Alfred Bandura (1977, 1982) and developed with Bandura’s consultation (1995a). This is a 15-item scale with each item measuring perceived confidence in performing a number of everyday tasks on a 5-point Likert scale (from “Completely Confident” to “Not at all Confident”). The total score runs from 15 to 75, with higher scores indicating greater self-efficacy. Segal et al. (1995a) report that the scale’s internal consistency is $\alpha = .89$ at baseline and $\alpha = .92$ at 6 months; its stability coefficient is equal to .61.

The three dimensions of empowerment (i.e., personal, organizationally mediated, and extra-organizational) were determined through the scores on each of the three Empowerment Scales developed by Segal et al. in collaboration with long term members of four self-help agencies in the San Francisco Bay Area (1995a). The Personal Empowerment Scale measures the amount of control that respondents have over common life domains, including shelter, income, and service provisions, as well as their ability to minimize the chance of unwanted events. The Organizationally Mediated Empowerment Scale measures respondents’ power to influence organizational structures with which they come into contact, including the amount of discretion they have in carrying out tasks, the power to mobilize scarce resources, and the ability to exercise responsibilities within the organization. The Extra-Organizational Empowerment Scale measures respondents’ involvement in political and other community activities outside their self-help agencies. These three scales, together with other related concepts (e.g., self-efficacy, self-esteem, hope, and locus of control), have been evaluated for convergent and discriminant validity, and have shown that they formed two distinct clusters of concepts: the first

included personal empowerment, locus of control, hope, and self-esteem; the second included organizationally mediated and extra-organizational empowerment (Segal et al., 1995a). Additionally, Segal et al. have shown that these three scales of empowerment (i.e., personal, organizationally mediated, and extra-organizational) had high levels of internal consistency at both baseline and six month follow-up: their values were $\alpha = (.84, .85), (.87, .90),$ and $(.73, .72),$ respectively.⁷ Their stability coefficients, which showed sensitivity to respondents' life circumstances, were .49, .62., and .61, respectively.

Independent social integration was determined through the scores on the Independent Social Integration Scale, an adapted version of Segal and Aviram's (1978) External Social Integration Scale. It measures respondents' participation in and use of the community in a self-initiated manner without others' help (Segal & Kotler, 1993). The scale contains questions regarding the ease and frequency with which respondents access various places and activities in the community without anyone's help, obtain basic necessities including meals and medical care, maintain contact with families and friends, join self-help activities and other groups, and engage in income producing or educational activities.

Network size was operationalized as the total number of friends, families, and others with whom the respondent shares instrumental and emotional support as well as other ties. This was determined using the responses to ten pairs of questions asking for the names of all people to whom the respondent could go for help, as well as the names of people who came to the respondent. These questions were adapted by Segal, Silverman, and Temkin (1997) from Lovell, Barrow and Hammer (1984), and include support activities such as sharing deepest thoughts and feelings, having someone to count on for whatever help that the person is capable of giving, offering advice, and sharing money. Patient network was operationalized as the inclusion of former psychiatric patients in the respondent's social network.

Social distance and attitude were operationalized using the scores on the Social Distance Scale. The original Social Distance Scale is an 18-item scale composed of two slightly different types of statements: the first type measuring the respondent's willingness to accept a former psychiatric patient in various social settings, and the second type measuring the respondent's attitude toward such person, both on a 6-point Likert Scale (Strongly Disagree to Strongly Agree). Those two types of statements were separated and made into two subscales, namely the social distance scale and the attitude scale used in the present analysis. The social distance scale runs between 13–78 and the attitude scale between 5–30, with higher scores indicating greater social distance and greater prejudice toward former psychiatric patients, respectively.

Additional variables were also used as statistical controls within the multivariate models, including gender, age, ethnicity (African American, white, other), education (in years), participation at self-help agencies, depression, psychiatric disability, and drug/alcohol problem. Self-helper was operationalized as the respondent who voluntarily joined a self-help agency as opposed to those who received mental health services at community mental health agencies or those who were referred to self-help agencies by mental health professionals. The severity of

⁷ Each pair of values enclosed by a set of parentheses belongs to each of the three empowerment scales: personal, organizational, and extra-organizational. The first value within each set of parentheses is from the baseline interview and the second from the six-month follow-up interview.

depression and psychiatric disability were determined, respectively, through the scores on the Center for Epidemiologic Studies Depression Scale (CES-D) (Radloff, 1977), which runs from 20 to 80, with higher scores indicating greater depression; and the Brief Psychiatric Rating Scale (BPRS) (Overall & Gorham, 1962), which runs from 24 to 168, with higher scores indicating greater severity of psychiatric symptoms. The presence of a drug/alcohol problem (yes/no) was determined by the question regarding which substance or substances, if any, was the respondent's biggest problem. If the respondent selected any substance(s) from the list, it counted as yes. If the respondent was unable to determine that or if the interviewer had evidence contrary to the respondent's answer, the interviewer provided his/her own assessment.

Table 2

Properties of the Measures Used in the Present Study

Measure	k-point Likert scale	Number of items in scale	α	Range		Mean	SD
				Potential	Actual		
Hopefulness	T/F	10	.9118	0-10	0-10	7.40	3.188
Self-esteem	5	10	.8940	10-50	10-50	30.60	8.337
Self-efficacy	5	15	.9270	15-75	15-75	48.94	12.869
Personal empowerment	4/5	20	.8486	20-90	23-90	63.24	11.60
Organizationally mediated empowerment	yes/no	17	.8300	0-17	0-15	1.60	2.411
Extra-organizational empowerment	yes/no	15	.7907	0-15	0-12	.62	1.496
Independent social integration	5	74	.9495	74-370	75-336	207.67	38.568
Network size	n/a	n/a	n/a	0-25	0-25	5.55	3.815
Patient network ^a	n/a	n/a	n/a	yes/no	yes/no	.30	.458
Social distance	6	13	.9287	13-78	13-78	32.60	12.262
Attitude	6	5	.8337	5-30	5-25	10.18	4.246
CESD	4	20	.9238	20-80	20-80	48.31	13.826
BPRS	7	24	.8421	24-168	24-85	37.76	11.560

Note. These measures were adopted from Segal, S. P., Hardiman, E. R., & Hodges, J. Q. (2002).

^a“Patient network” is a binary variable. The values provided are the proportion and standard deviation of the clients who reported having former psychiatric patients in their social networks.

Data Analysis

Statistical Methods

To address the aforementioned objectives of the present study, the following bivariate and multivariate analyses were conducted using IBM SPSS Statistics Version 19.

0. Before conducting the full analysis, two variables needed to be recoded, namely “organizationally mediated empowerment” and “extra-organizational empowerment.” Their histograms exhibited highly right-skewed distributions, and the linear regression models examining the relationship of each of these dependent variables to religiousness and spirituality while controlling for a set of demographic and clinical variables (i.e., self-esteem, gender, age, ethnicity, education, self-helper, depression, psychiatric disability, and drug/alcohol problem), did not meet the assumption of constant variance. Thus, I decided to recode them into binary variables considering the substantial percentages of observations with the value zero, 46.3 percent and 75.3 percent, respectively.
1. As the first step for ascertaining the relationship of religiousness and spirituality with psychosocial well-being of mental health clients (objective #1), two types of bivariate analyses were conducted, namely one-way Analysis of Variance (ANOVA) and Pearson chi-square tests, depending on the measurement levels of the dependent variables. ANOVA analyses were conducted between a categorical independent variable “religious identification” and each of the six continuous dependent variables: “hopefulness,” “self-esteem,” “self-efficacy,” “personal empowerment,” “independent social integration,” and “network size.” Chi-square tests were performed between “religious identification” and each of the two binary dependent variables: “organizationally mediated empowerment” and “extra-organizational empowerment.” Each of the above bivariate analyses was followed by a type of a multivariate regression analysis, using a common set of control variables mentioned in Step 0. Linear regression was used with five of the above six continuous dependent variables except “network size,” for which negative binomial regression was employed. With the remaining two binary dependent variables, logistic regression was performed.
2. To explore the relationship of religiousness and spirituality with self-stigma for mental health clients (objective #2), the above procedure (Step 1) was repeated, using the same independent variable “religious identification” and a different set of dependent variables, namely, “patient network,” “social distance,” and “attitude.” ANOVA analyses were conducted between “religious identification” and each of the two continuous dependent variables “social distance” and “attitude.” A Pearson chi-square test was conducted between “religious identification” and a binary dependent variable “patient network.” The first two bivariate analyses were followed by linear regression analyses and the last by a logistic regression analysis. Additionally, to further investigate the relationship in question, four more ANOVA analyses were conducted, using two different categorical measures of religiousness “church

attendance” and “importance of religion” as the independent variables and two measures of self-stigma “social distance” and “attitude” as the dependent variables.

Assumption Checking

Assumption checking is an important part of data analysis. Appendix B of this dissertation is devoted to describing how this part of data analysis was conducted, including the lists of assumptions of the statistical methods used in the present study, the results of multicollinearity tests, the graphical and numerical results of diagnostic procedures for ANOVA and regression analyses, and written summaries of these diagnostic procedures. Appendix B begins with its outline (a small table of contents) and an index to help the reader to navigate through the appendix and link the statistical outputs presented in the Results (Chapter 4) to the diagnostic results of the methods used.

Multiple Testing

Many hypothesis tests were conducted in the present study involving 12 ANOVA analyses, 3 Pearson chi-square tests, and 11 regression analyses, with each analysis accompanied by a series of pairwise comparisons or tests on regression coefficients. When an individual hypothesis test is performed at level α , the probability of falsely rejecting the null hypothesis is α . However, the probability of obtaining at least one false rejection out of all tests is much greater. This is called the multiple testing problem (Wasserman, 2004). The study addresses this problem by observing how many null hypotheses were rejected when an adjustment for multiple testing was applied, compared with when no such adjustment was made during the above-noted, ANOVA and regression analyses.

Human Subjects Approval

The present dissertation research was approved by the UC Berkeley Committee for Protection of Human Subjects (CPHS) as a non-exempt, expedited case (Protocol ID: 2010-12-2662). To protect the confidentiality of the study participants, all the identifiers had been removed before the data were given to me by the study’s principal investigator Steven P. Segal, Ph.D. The CD on which the data had been saved was stored in a locked drawer in the Office of Mental Health and Social Welfare Research Group, Haviland Hall, at the University of California, Berkeley during the entire study period.

Chapter Four

Results

Religious Identification

Table 3 summarizes the religious identification of the sample. Sixty-eight percent of the sample identify with some institutionalized religion (religious group); 14.5 percent do not identify with any special religion, but consider themselves religious/spiritual (spiritual group); and 17.5 percent identify with none (none group). Of those who belong to the first group, Christians are the majority, comprising 61.8 percent of the total sample, followed by Buddhists (2.0 percent), adherents of Native American religions (.9 percent), Muslims (.6 percent), and Jews (.6 percent).

Table 3

Religious Identification

Religious identification	Count	Percentage
Identify with institutionalized religion		
Christian	403	61.8
Buddhist	13	2.0
Native American	6	.9
Muslim	4	.6
Jewish	4	.6
Other/multiple	14	2.1
Subtotal	(444)	(68.0)
No special religion but consider self religious/spiritual	95	14.5
None	114	17.5
Total	653	100.0

Demographic and Other Characteristics

Table 4 presents data on the demographic, clinical, and agency characteristics of the sample by religious identification. Inspection of Table 4 reveals a number of differences and similarities among respondents of different religious identification. The most noticeable differences are in gender and ethnicity. Nearly equal percentages of men (48.4 percent) and women (51.6 percent) were in the religious group, but only 37.9 percent of the spiritual group and 34.2 percent of the none group were female. Similarly, while the proportion of African Americans in the religious group was 33.5 percent, it was only 22.2 percent in the spiritual group and 7.3 percent in the none group. The reverse was also true. While as high as 72.7 percent of the none group were Caucasian, only 47.8 percent of the religious group and 50.0 percent of the spiritual group were Caucasian.

A difference in marital status also was represented. Almost two-thirds (64.9 percent) of the none group had never been married compared with 47.0 percent of the religious group and 54.7 percent of the spiritual group. At the time of the interview, only half as many clients of the none group were married as those of the religious group and of the spiritual group (3.5 percent versus 7.0 percent and 7.4 percent). A similar pattern of differences is observed in employment status. Again during the interview, 86 percent of the none group were neither working for pay nor volunteering compared with 79.6 percent of the religious group and 72.6 percent of the spiritual group. That is to say, only two-thirds as many clients of the none group were working for pay as those of the religious group and of the spiritual group (6.4 percent versus 9.2 percent and 9.8 percent). Similarly, the mean previous months' income was slightly lower for the none group (\$493) compared with \$517 for the religious group and \$525 for the spiritual group. However, these observed differences in both marital and employment statuses seem to be a matter of degree, since few clients stay married and most are supported by SSI.

In fact, the spiritual group, which had the highest rates of marriage and employment, also had the highest incident rates of homelessness and drug and alcohol problems as well as the highest mean score on psychiatric disability (45.3 percent, 44.2 percent, 41.4, respectively); the religious group had the second highest (32.7 percent, 35.1 percent, 37.2); and the none group had the lowest (29.8 percent, 28.9 percent, 36.9). Additionally, the none group had the largest percentage of self-helpers (36.8 percent) compared with 32.7 percent in the religious group and 30.5 percent in the spiritual group. These mixed findings about the groups' social functioning, and clinical and agency characteristics suggest that each of the three religious identification groups was composed of a wide variety of clients with heterogeneous traits.

Lastly, the mean ages of the religious group and the spiritual group were nearly identical (39.65 years versus 39.69 years), while that of the none group was younger by almost 2.5 years (37.25 years). The mean years of education (12.17-12.41 years) and the mean depression scores (48.1-48.9) were very similar among the three groups.

Table 4

Demographic and Other Characteristics as a Percentage of the Sample

Characteristic	Religious (<i>n</i> = 444)	Spiritual (<i>n</i> = 95)	None (<i>n</i> = 114)
Gender			
Female	51.6	37.9	34.2
Age (mean $\pm$ SD years)	39.65 (9.275)	39.69 (11.156)	37.25 (10.241)
Ethnicity			
Caucasian	47.8	50.0	72.7
African American	33.5	22.2	7.3
Hispanic	8.4	11.1	10.9
Native American	2.9	8.9	1.8
Asian/Pacific Islander	2.6	2.2	6.4
Other/multiple	4.8	5.5	.9
Education (mean $\pm$ SD years)	12.23 (2.391)	12.41 (2.923)	12.17(2.692)
Marital status			
Married	7.0	7.4	3.5
Separated/divorced	41.3	32.7	28.9
Widowed	4.7	5.3	2.6
Never married	47.0	54.7	64.9
Employment status ^a			
Working for pay	9.2	9.8	6.4
Volunteering	14.4	19.6	8.3
Not working	79.6	72.6	86.0
Monthly income (mean $\pm$ SD dollars received last month)	517 (406)	525 (396)	493 (350)
Homeless ^b	32.7	45.3	29.8
Self-helper	32.7	30.5	36.8
Drug/alcohol problem	35.1	44.2	28.9
Depression (mean $\pm$ SD CESD) ^c	48.5 (13.9)	48.9 (12.3)	48.1(15.0)
Psychiatric disability (mean $\pm$ SD BPRS) ^c	37.2 (11.3)	41.4 (10.7)	36.9 (12.8)

^aThe percentages for "employment status" do not add up to 100 percent within each group because some people both worked for pay and volunteered.

^bThis means literally homeless, living in a shelter, street, car, trailer, boat, garage, and warehouse.

^cThe mean differences are statistically significant for BPRS ($F = 5.664$; $df = 2, 642$; $p = .004$), but not for CESD ($F = .081$; $df = 2, 649$; $p = .922$).

ANOVA: Religious/Spiritual Identification, Well-being, & Self-stigma

A series of ANOVA analyses were used to test the relationships of religiousness and spirituality with two sets of psychosocial variables indicating clients' well-being and self-stigma, respectively. The first set of variables included hopefulness, self-esteem, self-efficacy, personal empowerment, organizationally mediated empowerment, extra-organizational empowerment, independent social integration, and network size, while the second set included patient network, social distance, and attitude regarding psychiatric patients in general.

Table 5 summarizes the distribution of these variables as well as the results of overall ANOVA F tests using each of the above variables as the dependent variable and the religious identification as the independent variable. (Note that F tests were substituted by chi-square tests for three binary variables: organizational empowerment, extra-organizational empowerment, and patient network.) A significant F test indicates that there are some differences among the group means. To determine which F tests were significant, two different methods were applied. The first method used .05 as the level for each test without any adjustment for multiple testing, which yielded six significant overall F tests, including self-esteem ($F = 4.840$, $df=2$, 649 , $p = .008$), extra-organizational empowerment ($X^2 = 18.759$, $df = 2$, $p < .001$), independent social integration ($F = 3.898$, $df=2$, 650 , $p = .021$), network size ($F = 15.871$, $df=2$, 650 , $p = < .001$), social distance ($F = 11.149$, $df=2$, 638 , $p = < .001$), and attitude ($F = 6.038$, $df=2$, 643 , $p = .003$). The second method called the Bonferroni adjustment used .0045 (.05/11) as the level for each test, which recognized only four of the above six overall F tests as significant, excluding self-esteem and independent social integration.

Table 6 shows the results of post hoc tests that evaluated mean differences among groups following each significant ANOVA F test. The first block displays the results of post hoc tests without adjustment for multiple testing, whereas the second block displays the results with some adjustment. The letters (n), (r), and (s) indicate the group names: "none," "religious," and "spiritual," respectively. The values in front of these letters are group means for each psychosocial variable. The pairs of group means that are joined by a line indicate that they are not statistically significantly different at the specified level.

The most notable thing about the first block is that for every psychosocial variable listed, the spiritual group always had the highest group mean except for independent social integration; the religious group had the second highest; and the none group had the lowest of all three groups. However, the observed differences between the spiritual group and the religious group were not statistically significant except for extra-organizational empowerment. By contrast, the group differences between the none group and the other two groups were statistically significant for four psychosocial variables, including self-esteem, network size, social distance, and attitude. Having made this general observation, we will now review the results of post hoc tests for each dependent variable, starting with self-esteem. On average, clients of the religious and spiritual groups had significantly higher self-esteem than clients of the none group (mean $\pm$ SD, 30.7 ± 8.2 and 31.6 ± 6.8 versus 28.3 ± 9.4). Second, twice as many clients of the spiritual group reported participating in at least one extra-organizational empowerment activity within the previous year than clients of the none and religious groups (mean $\pm$ SD, 42.1 ± 49.6 percent versus 20.2 ± 40.3 percent and 21.8 ± 41.4 percent). There was no statistically significant mean difference between the none group and the religious group. Third, clients of the religious group

indicated significantly higher independent social integration than clients of the none group (mean $\pm$ SD, 210 ± 37 versus 198 ± 40). However, the difference was only 6 percent, and the other two between-group differences were not significant. Fourth, clients of the religious and spiritual groups had significantly larger social networks than clients of the none group (mean $\pm$ SD, 5.86 ± 3.76 persons and 6.17 ± 4.11 persons versus 3.79 ± 2.93 persons). Fifth, clients of the religious and spiritual groups indicated significantly greater social distance from psychiatric patients in general than clients of the none group (mean $\pm$ SD, 33.5 ± 11.8 and 33.7 ± 11.6 versus 27.6 ± 13.5). Finally, clients of the religious and spiritual groups reported significantly more negative attitudes toward psychiatric patients in general than clients of the none group (mean $\pm$ SD, 10.3 ± 4.1 and 11.0 ± 4.3 versus 9.0 ± 4.7).

To evaluate mean differences between groups in the second block, I used a combination of Tukey HSD post hoc tests and the Bonferroni adjustment so that I could maintain the overall family α at .05. Namely, I used Tukey's p -values multiplied by 4 (rows). The resulting plot of the group means is similar to the one on the top with the exception that the bottom plot has only four (as opposed to six) dependent variables, including extra-organizational empowerment, networks size, social distance, and attitude, and that the group means for attitude have two overlapping lines. In the previous analysis, the mean attitude score of the none group was significantly lower than those of the religious and spiritual groups. However, in this analysis, the only significant difference is found between the none group and the spiritual group. The difference between the none group and the religious group is no longer judged to be significant. The implications of these different results by the two different methods of dealing with the problem of multiple testing will be discussed in detail in the Discussion (Chapter 5). Meanwhile, we will continue to review the findings of the present study. The next section contains the results of a series of multiple regression analyses built on the same set of the independent and dependent variables used in the ANOVA analyses, with an addition of control variables related to clients' demographic, clinical, and agency characteristics.

Table 5

ANOVA: Means and Standard Deviations of the Indicators of Psychosocial Well-Being and Self-stigma by Religious Identification

Dependent variable	Mean (SD)			df	F	p
	Religious	Spiritual	None			
Hopefulness	7.44 (3.14)	7.64 (2.81)	6.91 (3.76)	2 645	1.571	.209
Self-esteem	30.7 (8.2)	31.6 (6.8)	28.3 (9.4)	2 649	4.840	.008
Self-efficacy	49.4 (12.7)	48.0 (11.2)	46.8 (14.7)	2 648	1.970	.140
Personal empowerment	63.9 (11.9)	62.9 (11.3)	61.2 (10.6)	2 649	2.494	.083
Organizationally mediated empowerment ^a	.559 (.497)	.495 (.503)	.496 (.502)	2	2.305	.316
Extra-organizational empowerment ^a	.218 (.414)	.421 (.496)	.202 (.403)	2	18.759	<.001
Independent social integration	210 (37)	206 (39)	198 (40)	2 650	3.898	.021
Network size	5.86 (3.76)	6.17 (4.11)	3.79 (2.93)	2 650	15.871	<.001
Patient network ^a	.311 (.463)	.368 (.485)	.228 (.421)	2	5.058	.080
Social distance	33.5 (11.8)	33.7 (11.6)	27.6 (13.5)	2 638	11.149	<.001
Attitude	10.3 (4.1)	11.0 (4.3)	9.0 (4.7)	2 643	6.038	.003

^aThese three variables (i.e., organizationally mediated empowerment, extra-organizational empowerment, & patient network) are binary variables. With the first two, the values provided as group means are the proportions of respondents for each religious identification group who participated in at least one relevant empowering activity. With the third variable, they are the proportions of respondents who had at least one former psychiatric patient in their social network. To examine the association of these three variables with religious identification, Pearson chi-square tests were conducted instead of *F* tests.

Table 6

Following Up Significant ANOVA Findings on Table 5 with Post Hoc Tests.

Dependent variable	Mean scores by religious identification		
<i>Without Adjustment for Multiple Comparisons^a</i>			
Self-esteem	28.3 (n)	<u>30.7 (r)</u>	31.6 (s)
Extra-org empowerment	<u>.202 (n)</u>	<u>.218 (r)</u>	.421(s)
Independent social integration	<u>198 (n)</u>	<u>206 (s)</u>	210 (r)
Network size	3.79 (n)	<u>5.86 (r)</u>	6.17 (s)
Social distance	27.6 (n)	<u>33.5 (r)</u>	33.7 (s)
Attitude	9.0 (n)	<u>10.3 (r)</u>	11.0 (s)
<i>With Bonferroni/Tukey HSD Adjustment^b</i>			
Extra-org empowerment	<u>.202 (n)</u>	<u>.218 (r)</u>	.421(s)
Network size	3.79 (n)	<u>5.86 (r)</u>	6.17 (s)
Social distance	27.6 (n)	<u>33.5 (r)</u>	33.7 (s)
Attitude	<u>9.0 (n)</u>	<u>10.3 (r)</u>	11.0 (s)

Note: The letters (n), (r), and (s) indicate “none,” “religious,” and “spiritual,” respectively. The pairs of means that are joined by a line indicate that they are not statistically significantly different at the level specified by each method.

^aThe six overall ANOVA *F* tests with $p < .05$ from Table 5 were followed by Fisher’s LSD post hoc tests at the .05 level. LSD is equivalent to multiple individual *t* tests between all pairs of groups without attempting to adjust the observed significance level for multiple comparisons (SPSS Help).

^bThe four overall ANOVA *F* tests with $p < .0045$ (.05/11) from Table 5 were followed by a combination of Tukey HSD post hoc tests and Bonferroni adjustment to maintain the overall family α at .05.

Regression: Religious/Spiritual Identification, Well-being, & Self-stigma

In the bivariate analyses conducted above, six psychosocial variables (or four if one chooses to adjust for multiple testing) were judged to be correlated with religiousness and/or spirituality. Those included self-esteem, extra-organizational empowerment, independent social integration, network size, social distance, and attitude. The next step in data analysis was to determine if these relationships would hold after some of the demographic and other characteristics of clients were accounted for. To this aim, I added a set of control variables to the analysis: self-esteem, gender, age, ethnicity, education, self-helper, depression, psychiatric disability, and drug and alcohol problem. These control variables are included in each of the subsequent regression models presented in this section (see Tables 7-14, 17-19) although I will not mention them each time to avoid repetition. Lastly, my initial plan for multivariate analyses was to run only six multiple regression models based on the significant findings of the bivariate analyses. However, I later decided to extend multivariate analysis to all 11 psychosocial variables because I learned from a UCB statistical consultant that a non-significant relationship in a bivariate analysis could turn out to be significant in a corresponding multivariate analysis, and vice versa (J. Long, personal communication, November 15, 2011).

The first of these 11 multivariate analyses is found in Table 7, relating hopefulness to religiousness, spirituality, and a set of control variables mentioned above. The linear regression model is significant, Adjusted $R^2 = .434$; DF Reg. = 12; DF Res. = 584; $n = 597$; $F = 39.036$; Sig. $< .001$. However, the table shows that mental health clients who identified with religion or spirituality were no more hopeful than those who had no such identification. (Although some of the control variables turned out to be significant predictors of hopefulness, they are not the variables of interest of the present study, thus they will not be discussed in this dissertation.)

Table 8 illustrates the relationship of religiousness and spirituality with self-esteem using a multivariate approach. The linear regression model is significant, Adjusted $R^2 = .421$; DF Reg. = 11; DF Res. = 589; $n = 601$; $F = 40.631$; Sig. $< .001$. The table shows that mental health clients who identified with religion or spirituality indicated significantly higher level of self-esteem than those who did not identify with either of the two. Specifically, in comparison with the no-identification group, religious clients, on average, scored higher on the Self-Esteem scale by 1.530 points ($p = .032$) and spiritual clients scored higher by 2.646 points ($p = .004$), holding the other variables at constant. The mean difference between religious and spiritual clients was not statistically significant.

Table 9 summarizes the relationship of religiousness and spirituality to self-efficacy. The linear regression model is significant, Adjusted $R^2 = .178$; DF Reg. = 12; DF Res. = 586; $n = 599$; $F = 11.758$; Sig. $< .001$. However, both religiousness and spirituality were found to be of little importance in explaining the amount of self-efficacy reported by clients.

Table 7

Linear Regression Analysis with Religious Identification as an Independent Variable and Hopefulness as a Dependent Variable

	Unstandardized coefficients		Standardized coefficients	<i>t</i>	<i>p</i>
	<i>B</i>	<i>SE</i>	Beta		
Religious identification ^a					
Religious	.338	.270	.050	1.250	.212
Spiritual	.550	.353	.061	1.561	.119
Self-esteem	.114	.016	.298	7.280	<.001
Female	.337	.202	.053	1.665	.097
Age	.011	.010	.035	1.109	.268
Ethnicity ^b					
African American	-.222	.241	-.031	-.920	.358
Other ethnicity	.148	.257	.019	.575	.566
Education	-.107	.039	-.086	-2.730	.007
Self-helper	.012	.218	.002	.053	.958
CESD	-.095	.010	-.422	-9.960	<.001
BPRS	-.010	.009	-.038	-1.119	.263
Drug/alcohol problem	.215	.210	.033	1.024	.306
Spiritual ^c	.212	.288	.024	.738	.461

Note. Adjusted $R^2 = .434$; DF Reg. = 12; DF Res. = 584; $n = 597$; $F = 39.036$; Sig. < .001.

^aBaseline group is "none."

^bBaseline group is "Caucasian."

^cThis row comes from the same regression model as the above model with the exception that the baseline group for religious identification has been changed from "none" to "religious" to compare the mean difference between "religious" and "spiritual" after controlling for all other factors in the regression equation.

Table 8

Linear Regression Analysis with Religious Identification as an Independent Variable and Self-Esteem as a Dependent Variable

	Unstandardized coefficients		Standardized coefficients	<i>t</i>	<i>p</i>
	<i>B</i>	<i>SE</i>	Beta		
Religious identification ^a					
Religious	1.530	.712	.087	2.151	.032
Spiritual	2.646	.925	.113	2.859	.004
Female	.811	.534	.049	1.519	.129
Age	-.016	.027	-.019	-.592	.554
Ethnicity ^b					
African American	1.992	.632	.108	3.150	.002
Other ethnicity	1.078	.677	.053	1.592	.112
Education	.005	.104	.002	.052	.959
Self-helper	1.040	.574	.059	1.811	.071
CESD	-.380	.020	-.643	-19.250	<.001
BPRS	.046	.024	.065	1.897	.058
Drug/alcohol problem	1.351	.552	.078	2.445	.015
Spiritual ^c	1.115	.758	.048	1.471	.142

Note. Adjusted R^2 = .421; DF Reg. = 11; DF Res. = 589; n = 601; F = 40.631; Sig. < .001.

^aBaseline group is "none."

^bBaseline group is "Caucasian."

^cThis row comes from the same regression model as the above model with the exception that the baseline group for religious identification has been changed from "none" to "religious" to compare the mean difference between "religious" and "spiritual" after controlling for all other factors in the regression equation.

Table 9

Linear Regression Analysis with Religious Identification as an Independent Variable and Self-Efficacy as a Dependent Variable

	Unstandardized coefficients		Standardized coefficients	<i>t</i>	<i>p</i>
	<i>B</i>	<i>SE</i>	Beta		
Religious identification ^a					
Religious	.929	1.329	.034	.699	.485
Spiritual	-.882	1.735	-.024	-.508	.611
Self-esteem	.548	.077	.352	7.150	<.001
Female	-1.085	.994	-.042	-1.091	.276
Age	.123	.051	.092	2.405	.016
Ethnicity ^b					
African American	.720	1.187	.025	.607	.544
Other ethnicity	-1.528	1.265	-.048	-1.208	.227
Education	.523	.193	.103	2.707	.007
Self-helper	-1.422	1.073	-.051	-1.326	.186
CESD	-.030	.047	-.032	-.631	.529
BPRS	-.073	.045	-.066	-1.607	.109
Drug/alcohol problem	2.373	1.035	.088	2.293	.022
Spiritual ^c	-1.811	1.416	-.049	-1.279	.201

Note. Adjusted $R^2 = .178$; DF Reg. = 12; DF Res. = 586; $n = 599$; $F = 11.758$; Sig. < .001.

^aBaseline group is "none."

^bBaseline group is "Caucasian."

^cThis row comes from the same regression model as the above model with the exception that the baseline group for religious identification has been changed from "none" to "religious" to compare the mean difference between "religious" and "spiritual" after controlling for all other factors in the regression equation.

The next three tables address the relationships of religiousness and spirituality to three domains of empowerment from a multivariate perspective. The first domain is personal empowerment, whose relationship to religiousness and spirituality is described in Table 10. The linear regression model is significant, Adjusted $R^2 = .213$; DF Reg. = 12; DF Res. = 587; $n = 600$; $F = 14.538$; Sig. $< .001$. The table indicates that clients who identified with religion or spirituality reported significantly greater personal empowerment than clients who had no religious or spiritual identification. The mean personal empowerment score for the latter clients was exceeded by those for religious and spiritual clients by 3.432 points ($p = .004$) and 4.073 points ($p = .008$), respectively, after accounting for all other factors. The difference between religious and spiritual clients was not statistically significant.

The second domain of empowerment is organizationally mediated empowerment. Its relationship to religiousness and spirituality is addressed in Table 11. As mentioned in the Method (Chapter 3), the variable “organizationally mediated empowerment” had been recoded as binary, thus the type of regression analysis chosen for this variable is logistic regression. The model is significant, Chi-square = 59.327; $df = 12$; Sig. $< .001$; $n = 598$; Missing cases = 75. But its percentage of correct classification is rather low, namely, 66.2 percent. It seems that religiousness and spirituality did not play a significant role in distinguishing clients who participated in at least one organizationally mediated empowerment activity within the past six months.

The third domain of empowerment is extra-organizational empowerment. Just as in the previous analysis, the variable that represented extra-organizational empowerment had been recoded as binary, thus a logistic regression model was chosen to describe the relationship of religiousness and spirituality to this construct. Table 12 shows that the model is significant, Chi-square = 79.335; $df = 12$; Sig. $< .001$; Percent correct classification = 75.9 percent; $n = 601$; Missing cases = 72. It also shows that clients who identified with spirituality reported significantly greater participation in activities related to extra-organizational empowerment than clients who identified with religion or those who did not indicate any religious/spiritual identification. For spiritual clients, the odds of participating in at least one extra-organizational empowerment activity within the previous year were 2.506 times the odds for religious clients ($p = .001$) and 2.383 times the odds for clients without any religious or spiritual identification ($p = .013$), when all other factors were taken into account. No statistically significant difference was found between religious clients and those without any religious or spiritual identification.

Having addressed the relationships of religiousness and spirituality with empowerment, we will now focus on the other psychosocial variables. Table 13 describes the roles of religiousness and spirituality in explaining the amount of independent social integration in clients’ lives. The linear regression model is significant, Adjusted $R^2 = .143$; DF Reg. = 12; DF Res. = 588; $n = 601$; $F = 9.356$; Sig. $< .001$. The table indicates that clients who identified with religion reported significantly higher independent social integration than clients who did not identify with religion or spirituality. The mean independent social integration score for religious clients was 9.704 points higher than the mean score for clients without religious or spiritual identification ($p = .016$), holding the other variables at constant. There were no statistically significant mean differences between spiritual clients and those without religious/spiritual identification, as well as between religious and spiritual clients.

Table 10

Linear Regression Analysis with Religious Identification as an Independent Variable and Personal Empowerment as a Dependent Variable

	Unstandardized coefficients		Standardized coefficients	<i>t</i>	<i>p</i>
	<i>B</i>	<i>SE</i>	Beta		
Religious identification ^a					
Religious	3.432	1.175	.138	2.920	.004
Spiritual	4.073	1.532	.124	2.659	.008
Self-esteem	-.024	.068	-.017	-.355	.722
Female	2.681	.876	.115	3.059	.002
Age	.012	.045	.010	.274	.784
Ethnicity ^b					
African American	-2.287	1.046	-.088	-2.187	.029
Other ethnicity	-1.176	1.113	-.041	-1.057	.291
Education	.097	.170	.021	.569	.570
Self-helper	1.039	.945	.042	1.100	.272
CESD	-.278	.041	-.334	-6.728	<.001
BPRS	-.184	.040	-.183	-4.599	<.001
Drug/alcohol problem	-2.616	.911	-.108	-2.870	.004
Spiritual ^c	.641	1.245	.019	.515	.607

Note. Adjusted $R^2 = .213$; DF Reg. = 12; DF Res. = 587; $n = 600$; $F = 14.538$; Sig. <.001.

^aBaseline group is "none."

^bBaseline group is "Caucasian."

^cThis row comes from the same regression model as the above model with the exception that the baseline group for religious identification has been changed from "none" to "religious" to compare the mean difference between "religious" and "spiritual" after controlling for all other factors in the regression equation.

Table 11

Logistic Regression Analysis with Religious Identification as an Independent Variable and Organizationally Mediated Empowerment (Recoded as Binary) as a Dependent Variable

	<i>B</i>	<i>SE</i>	Wald	<i>df</i>	<i>p</i>	Exp(<i>B</i>) ^c
Religious identification ^a						
Religious	.359	.243	2.173	1	.140	1.431
Spiritual	.119	.314	.143	1	.705	1.126
Self-esteem	.004	.014	.065	1	.798	1.004
Female	.184	.180	1.047	1	.306	1.202
Age	-.001	.009	.003	1	.955	.999
Ethnicity ^b				1		
African American	-.118	.215	.302	1	.583	.889
Other ethnicity	.092	.229	.161	1	.688	1.096
Education	.076	.035	4.715	1	.030	1.079
Self-helper	1.351	.204	43.860	1	<.001	3.860
CESD	-.003	.008	.096	1	.756	.997
BPRS	.019	.008	5.356	1	.021	1.019
Drug/alcohol problem	-.146	.187	.604	1	.437	.864
Spiritual ^d	-.240	.255	.885	1	.347	.787

Note. Chi-square = 59.327; *df* = 12; Sig. <.001; Percent correct classification = 66.2 percent; *n* = 598; Missing cases = 75.

^aBaseline group is "none."

^bBaseline group is "Caucasian."

^cExp(*B*) = Odds Ratio

^dThis row comes from the same regression model as the above model with the exception that the baseline group for religious identification has been changed from "none" to "religious" to compare the mean difference between "religious" and "spiritual" after controlling for all other factors in the regression equation.

Table 12

Logistic Regression Analysis with Religious Identification as an Independent Variable and Extra-Organizational Empowerment (Recoded as Binary) as a Dependent Variable

	<i>B</i>	<i>SE</i>	Wald	<i>df</i>	<i>p</i>	Exp(<i>B</i>) ^c
Religious identification ^a						
Religious	-.050	.305	.027	1	.869	.951
Spiritual	.868	.351	6.112	1	.013	2.383
Self-esteem	.049	.018	7.892	1	.005	1.051
Female	-.215	.213	1.015	1	.314	.806
Age	.021	.011	3.492	1	.062	1.021
Ethnicity ^b						
African American	.247	.253	.954	1	.329	1.280
Other ethnicity	.578	.261	4.903	1	.027	1.782
Education	.098	.042	5.475	1	.019	1.103
Self-helper	.111	.230	.235	1	.628	1.118
CESD	.002	.010	.056	1	.813	1.002
BPRS	.047	.010	24.108	1	<.001	1.048
Drug/alcohol problem	.080	.217	.134	1	.714	1.083
Spiritual ^d	.919	.265	11.974	1	.001	2.506

Note. Chi-square = 79.335; *df* = 12; Sig. <.001; Percent correct classification = 75.9 percent; *n* = 601; Missing cases = 72.

^aBaseline group is "none."

^bBaseline group is "Caucasian."

^cExp(*B*) = Odds Ratio

^dThis row comes from the same regression model as the above model with the exception that the baseline group for religious identification has been changed from "none" to "religious" to compare the mean difference between "religious" and "spiritual" after controlling for all other factors in the regression equation.

Table 13

Linear Regression Analysis with Religious Identification as an Independent Variable and Independent Social Integration as a Dependent Variable

	Unstandardized coefficients		Standardized coefficients	<i>t</i>	<i>p</i>
	<i>B</i>	<i>SE</i>	Beta		
Religious identification ^a					
Religious	9.704	4.013	.119	2.418	.016
Spiritual	5.926	5.233	.055	1.132	.258
Self-esteem	.748	.231	.162	3.231	.001
Female	-1.806	3.003	-.024	-.602	.548
Age	-.198	.154	-.050	-1.290	.198
Ethnicity ^b					
African American	2.584	3.582	.030	.721	.471
Other ethnicity	2.311	3.812	.024	.606	.545
Education	3.019	.583	.200	5.179	<.001
Self-helper	5.724	3.236	.070	1.769	.077
CESD	-.416	.142	-.152	-2.936	.003
BPRS	-.151	.137	-.046	-1.106	.269
Drug/alcohol problem	-.155	3.119	-.002	-.050	.960
Spiritual ^c	-3.778	4.266	-.035	-.885	.376

Note. Adjusted $R^2 = .143$; DF Reg. = 12; DF Res. = 588; $n = 601$; $F = 9.356$; Sig. < .001.

^aBaseline group is "none."

^bBaseline group is "Caucasian."

^cThis row comes from the same regression model as the above model with the exception that the baseline group for religious identification has been changed from "none" to "religious" to compare the mean difference between "religious" and "spiritual" after controlling for all other factors in the regression equation.

Table 14 summarizes the relationship of religiousness and spirituality to network size from a multivariate perspective. One unique aspect is that it shows the results of a negative binomial regression analysis, which can be used for modeling overdispersed count dependent variables such as “network size” (Hilbe, 2007). Initially I attempted to describe the data using a linear regression model, but it did not satisfy the assumption of constant variance and I had to find a more suitable regression model for this type of dependent variable. The table shows that the negative binomial regression model is significant, Likelihood ratio chi-square = 93.352; $df = 12$; Sig. <.001; $n = 601$; Missing cases = 72. Clients who identified with religion or spirituality seemed to indicate having significantly wider social networks than clients who did not identify with religion or spirituality. With a negative binomial regression, the exponentiated coefficient, Exp (B), represents the incident rate ratio (IRR) of a group to the baseline group. In the present analysis, the incident rate refers to the rate of network size per client, which is estimated by the average number of people in one’s network for given values of all independent variables. The incident rate for religious clients was 1.452 times the incident rate for clients without religious or spiritual identification ($p = <.001$). Likewise, the incident rate for spiritual clients was 1.462 times the incident rate for the same baseline group ($p = <.001$) holding the other variables at constant. There was no statistically significant difference between religious and spiritual clients.

In the beginning of this section, I stated that I did not plan to discuss any control variables even if they were found to be significant predictors of the dependent variables. However, I will make two exceptions. Table 14 shows that psychiatric disability (BPRS) and drug and alcohol problems were positively correlated with network size in the present sample. These findings were rather puzzling, and I decided to investigate further. Table 15 displays the results of a series of Pearson correlation analyses I conducted between BPRS and various types of social networks, including the entire network, patients, agency staff, friends, and family members. Each of these variables represented the number of individuals in a client’s social network who fit under these categories. The results seem to indicate that the positive correlation between psychiatric disability and network size ($r = .116$, $p = .003$) was a result of an increased number of agency staff in the social networks of clients with greater psychiatric disability as seen in the positive correlation between BPRS and agency staff ($r = .128$, $p = .001$) and no correlation between BPRS and other types of social network. Similarly, Table 16 compares the average numbers of specific types of relationships between clients with drug and alcohol problems and those without such problems. The results indicate that the social networks of clients with drug and alcohol problems included significantly more people with whom clients were likely to get into trouble ($t = 5.467$, $df = 342.9$, $p = <.001$), people who came to clients for small amounts of money ($t = 3.662$, $df = 438.7$, $p = <.001$), and people whom clients looked for when they wanted to hang out ($t = 2.432$, $df = 448.8$, $p = .015$).

Table 14

Negative Binomial Regression Analysis with Religious Identification as an Independent Variable and Network Size as a Dependent Variable

Parameter	<i>B</i>	<i>SE</i>	Hypothesis test			<i>Exp(B)</i> ^d
			Wald chi-square	<i>df</i>	<i>p</i>	
Religious identification ^a						
Religious	.373	.0778	22.926	1	<.001	1.452
Spiritual	.379	.0973	15.217	1	<.001	1.462
Self-esteem	.018	.0043	16.704	1	<.001	1.018
Female	.199	.0544	13.393	1	<.001	1.220
Age	-.002	.0028	.320	1	.571	.998
Ethnicity ^b						
African American	.010	.0639	.024	1	.877	1.010
Other ethnicity	-.054	.0700	.586	1	.444	.948
Education	.021	.0110	3.706	1	.054	1.021
Self-helper	.071	.0593	1.430	1	.232	1.074
CESD	.002	.0026	.521	1	.470	1.002
BPRS	.010	.0025	14.775	1	<.001	1.010
Drug/alcohol problem	.129	.0561	5.278	1	.022	1.137
(Scale)	1					
(Dispersion parameter) ^c	.223	.0256				
Spiritual ^e	.007	.0755	.008	1	.928	1.007

Note. Likelihood ratio chi-square = 93.352; *df* = 12; Sig. <.001; *n* = 601; Missing cases = 72.

^aBaseline group is "none."

^bBaseline group is "Caucasian."

^cWald 95 percent confidence interval of dispersion parameter is (.178, .280).

^d*Exp(B)* = Incidence Rate Ratio.

^eThis row comes from the same regression model as the above model with the exception that the baseline group for religious identification has been changed from "none" to "religious" to compare the mean difference between "religious" and "spiritual" after controlling for all other factors in the regression equation.

Table 15

Why Psychiatric Disability (BPRS) is Positively Correlated with Network Size

		BPRS	Network size	Patient	Agency staff	Friend	Family
BPRS ^a	Pearson Correlation	1	.116	.054	.128	.034	.022
	Sig. (2-tailed)		.003	.161	.001	.379	.565

Note. Variables “patient,” “agency staff,” “friend,” and “family” represent the number of such individuals in the respondent’s social network, respectively.

^a*n*=665.

Table 16

t Tests: Characteristics of the Social Network Enjoyed by Drug/Alcohol Users as Mean Counts of Specific Types of Relationships, Compared with Non Users

Type of relationship	Drug/alcohol ^a	Mean count (persons)	<i>t</i>	<i>df</i>	<i>p</i> (2-tailed)
• If you hang out with them, you are likely to get into trouble.	user non user	.52 .19	5.467	342.879	<.001
• You can go to them for small amounts of money,	user non user	1.45 1.30	1.050	666	.294
• They can come to you for small amounts of money.	user non user	1.19 .69	3.662	438.681	<.001
• You share your most private feelings with them.	user non user	.96 .97	-.024	666	.981
• They share their most private feelings with you.	user non user	.86 .80	.489	666	.625
• You look for them when you want to hang out.	user non user	1.27 .95	2.432	448.793	.015
• They look for you when they want to hang out.	user non user	1.03 .93	.687	666	.492

^a*n* (drug/alcohol user) = 238, *n* (non user) = 430.

The last eight regression models dealt with the relationships of religiousness and spirituality to psychosocial well-being of mental health clients. The next three regression models address the relationships of religiousness and spirituality to self-stigma, relying on a multivariate approach. Since the data did not contain direct measures of self-stigma, this was achieved by observing the associations of religiousness and spirituality to three proxies of such construct: (1) inclusion of psychiatric patients in one's social network; (2) scores on the Social Distance scale regarding psychiatric patients; and (3) scores on the Attitude scale regarding psychiatric patients.

Table 17 summarizes the roles of religiousness and spirituality in explaining the presence of other psychiatric patients in clients' social networks, using a logistic regression model since the dependent variable was binary. The table shows that the model is significant, but the percentage of correct classification is somewhat low, Chi-square = 24.874; $df = 12$; Sig. = .015; Percent correct classification = 68.6 percent; $n = 601$; Missing cases = 72. It also shows that clients who identified with religion or spirituality were more likely to include at least one psychiatric patient in their social networks than clients who did not indicate any religious or spiritual identification. For religious clients, the odds of having at least one psychiatric patient in their networks were 1.676 times the odds for clients without religious/spiritual identification ($p = .054$). Similarly, the odds for spiritual clients were 1.951 times the odds for clients without religious/spiritual identification ($p = .045$) after controlling for all other variables in the model. There was no statistically significant difference between religious and spiritual clients.

Table 18 describes the association of religiousness and spirituality to social distance regarding psychiatric patients. The linear regression model is significant, Adjusted $R^2 = .075$; DF Reg. = 12; DF Res. = 578; $n = 591$; $F = 4.998$; Sig. < .001. Clients with religious or spiritual identification indicated significantly greater social distance from psychiatric patients than clients who did not report such identification. In comparison with the latter group of clients, those who identified with religion, on average, scored higher on the Social Distance scale by 5.233 points ($p < .001$) and those who identified with spirituality scored higher by 4.872 points ($p = .007$) after accounting for all other variables in the model. There was no statistically significant difference between clients who identified with religion and spirituality.

Finally, Table 19 displays the relationship of religiousness and spirituality to prejudiced attitude toward psychiatric patients among people with serious mental illness. It shows that the model's Adjusted R^2 is very low, namely .033, which means that only 3.3 percent of the variation in the dependent variable are explained by all the independent variables in the model, including the common control variables listed in the table. None the less the model is significant, DF Reg. = 12; DF Res. = 582; $n = 595$; $F = 2.673$; Sig. = .002. The results of the regression analysis indicate that clients who identified with religion or spirituality reported significantly more negative attitudes toward psychiatric patients in general than clients who did not report any religious or spiritual identification. In comparison with the latter group of clients, on average, those with religious identification scored higher on the Attitude scale by 1.221 points ($p = .014$) and those with spiritual identification scored higher by 1.944 points ($p = .003$) holding the other variables at constant. These increases in the mean attitude scores were not only statistically significant, but also meaningful because the actual scores on the Attitude scale ranged between 5 and 25 with the Mean (SD) of 10.18 (4.246).

Table 17

Logistic Regression Analysis with Religious Identification as an Independent Variable and Patient Network as a Dependent Variable

	<i>B</i>	<i>SE</i>	Wald	<i>df</i>	<i>p</i>	Exp(<i>B</i>) ^c
Religious identification ^a						
Religious	.516	.268	3.702	1	.054	1.676
Spiritual	.669	.334	4.008	1	.045	1.951
Self-esteem	.012	.015	.644	1	.422	1.012
Female	.489	.188	6.735	1	.009	1.630
Age	.006	.010	.426	1	.514	1.006
Ethnicity ^b						
African American	-.598	.231	6.706	1	.010	.550
Other ethnicity	.024	.233	.011	1	.917	1.025
Education	.007	.036	.032	1	.858	1.007
Self-helper	.164	.203	.652	1	.419	1.178
CESD	.007	.009	.551	1	.458	1.007
BPRS	.012	.008	1.855	1	.173	1.012
Drug/alcohol problem	.332	.193	2.957	1	.086	1.394
Spiritual ^d	.152	.257	.350	1	.554	1.164

Note. Chi-square = 24.874; *df* = 12; Sig. = .015; Percent correct classification = 68.6 percent; *n* = 601; Missing cases = 72.

^aBaseline group is "none."

^bBaseline group is "Caucasian."

^cExp(*B*)=Odds Ratio.

^dThis row comes from the same regression model as the above model with the exception that the baseline group for religious identification has been changed from "none" to "religious" to compare the mean difference between "religious" and "spiritual" after controlling for all other factors in the regression equation.

Table 18

Linear Regression Analysis with Religious Identification as an Independent Variable and Social Distance as a Dependent Variable

	Unstandardized coefficients		Standardized coefficients	<i>t</i>	<i>p</i>
	<i>B</i>	<i>SE</i>	Beta		
Religious identification ^a					
Religious	5.233	1.389	.195	3.768	<.001
Spiritual	4.872	1.816	.135	2.683	.007
Self-esteem	.004	.080	.003	.051	.959
Female	.354	1.040	.014	.340	.734
Age	-.027	.053	-.021	-.509	.611
Ethnicity ^b					
African American	4.329	1.254	.152	3.451	.001
Other ethnicity	2.737	1.315	.088	2.082	.038
Education	.279	.201	.056	1.388	.166
Self-helper	-1.300	1.118	-.048	-1.163	.245
CESD	.031	.049	.034	.636	.525
BPRS	.128	.047	.119	2.725	.007
Drug/alcohol problem	.793	1.079	.030	.735	.462
Spiritual ^c	-.361	1.492	-.010	-.242	.809

Note. Adjusted $R^2 = .075$; DF Reg. = 12; DF Res. = 578; $n = 591$; $F = 4.998$; Sig. < .001.

^aBaseline group is "none."

^bBaseline group is "Caucasian."

^cThis row comes from the same regression model as the above model with the exception that the baseline group for religious identification has been changed from "none" to "religious" to compare the mean difference between "religious" and "spiritual" after controlling for all other factors in the regression equation.

Table 19

Linear Regression Analysis with Religious Identification as an Independent Variable and Attitude as a Dependent Variable

	Unstandardized coefficients		Standardized coefficients	<i>t</i>	<i>p</i>
	<i>B</i>	<i>SE</i>	Beta		
Religious identification ^a					
Religious	1.221	.495	.130	2.469	.014
Spiritual	1.944	.643	.156	3.025	.003
Self-esteem	-.019	.028	-.036	-.673	.501
Female	.107	.370	.012	.288	.773
Age	-.022	.019	-.048	-1.156	.248
Ethnicity ^b					
African American	1.015	.443	.103	2.292	.022
Other ethnicity	.659	.469	.061	1.406	.160
Education	.049	.072	.028	.686	.493
Self-helper	.582	.397	.062	1.464	.144
CESD	.011	.017	.035	.624	.533
BPRS	.032	.017	.084	1.885	.060
Drug/alcohol problem	.229	.383	.025	.598	.550
Spiritual ^c	.723	.525	.058	1.377	.169

Note. Adjusted $R^2 = .033$; DF Reg. = 12; DF Res. = 582; $n = 595$; $F = 2.673$; Sig. = .002.

^aBaseline group is "none."

^bBaseline group is "Caucasian."

^cThis row comes from the same regression model as the above model with the exception that the baseline group for religious identification has been changed from "none" to "religious" to compare the mean difference between "religious" and "spiritual" after controlling for all other factors in the regression equation.

We have now reviewed the findings of all the multiple regression analyses conducted in the present study. Table 20 summarizes these findings according to the dependent variable of each model. There were three different types of regression analyses: (1) linear regression, (2) logistic regression; and (3) negative binomial regression. Each type of regression is indicated by the letter after the name of the dependent variable. (L) means logistic regression, (NB) means negative binomial regression, and No Mark means linear regression. For each regression model, I tested the following three null hypotheses:

- With “none” as the baseline group, the regression coefficient on “religious” is really equal to zero.
- With “none” as the baseline group, the regression coefficient on “spiritual” is really equal to zero.
- With “religious” as the baseline group, the regression coefficient on “spiritual” is really equal to zero.

Table 20 shows that there were 14 null hypotheses that were rejected at the .05 level.⁸ They are marked with “x” under the column heading “Reject H_0 when $p < 0.05$.” The results of these hypothesis tests are summarized as follows: Both religiousness and spirituality were positively associated with self-esteem, personal empowerment, network size, patient network, social distance, and attitude. Religiousness, but not spirituality, was positively associated with independent social integration. Spirituality, but not religiousness, was positively associated with extra-organizational empowerment. With the exception of extra-organizational empowerment, there were no statistically significant mean differences between religiousness and spirituality. All these relationships were found to hold after controlling the other variables in the regression models, including clients’ self-esteem, gender, age, ethnicity, education, self-helper, depression, psychiatric disability, and drug and alcohol problem.

The last column of the Table 20 addresses the problem of multiple testing in regression analyses. Just as we had to adjust the significance level for each test when we evaluated between-group differences following ANOVA F tests, we must do the same when we conduct multiple hypothesis tests to evaluate the significance of regression coefficients if we want to maintain the overall family α at a specified value, such as .05. In the case of the present analysis, I used .0015 (.05/33) as the level for each test to account for the increased chance of at least one false rejection due to multiple testing. As seen in Table 20, this procedure reduced the number of rejected null hypotheses from 14 to 4. The four associations that remained significant after the Bonferroni adjustment are (1) spirituality and extra-organizational empowerment;⁹ (2) religiousness and network size, (3) spirituality and network size, (4) religiousness and social distance. The significance of these findings will be addressed in the Discussion (Chapter 5). But before proceeding to the last chapter, we will review another set of ANOVA analyses which examined the relationship between the degree of religiousness and self-stigma among mental health clients.

⁸ Strictly speaking, the association between patient network and religiousness was not significant at the .05 level since the p -value was .054. This was a borderline case. Thus, I did not include this in the total number of the null hypotheses rejected at the .05 level, and marked it with Δ instead of x.

⁹ This association is significant only when the baseline group is “religious.”

Table 20

Adjusting for Multiple Testing In Regression Analyses (Continue to Next Page)

Dependent variable (regression type)	Independent variable (baseline group)	<i>B</i>	<i>SE B</i>	Beta	<i>p</i>	Reject H_0 when $p <$	
						.05 ^a	.0015 ^b
Hopefulness	Religious (n)	.338	.270	.050	.212		
	Spiritual (n)	.550	.353	.061	.119		
	Spiritual (r)	.212	.288	.024	.461		
Self-esteem	Religious (n)	1.530	.712	.087	.032	x	
	Spiritual (n)	2.646	.925	.113	.004	x	
	Spiritual (r)	1.115	.758	.048	.142		
Self-efficacy	Religious (n)	.929	1.329	.034	.485		
	Spiritual (n)	-.882	1.735	-.024	.611		
	Spiritual (r)	-1.811	1.416	-.049	.201		
Personal empowerment	Religious (n)	3.432	1.175	.138	.004	x	
	Spiritual (n)	4.073	1.532	.124	.008	x	
	Spiritual (r)	.641	1.245	.019	.607		
Organizationally mediated emp (L)	Religious (n)	.359	.243		.140		
	Spiritual (n)	.119	.314		.705		
	Spiritual (r)	-.240	.255		.347		
Extra-org Empowerment (L)	Religious (n)	-.050	.305		.869		
	Spiritual (n)	.868	.351		.013	x	
	Spiritual (r)	.919	.265		.0005	x	x
Independent social integration	Religious (n)	9.704	4.013	.119	.016	x	
	Spiritual (n)	5.926	5.233	.055	.258		
	Spiritual (r)	-3.778	4.266	-.035	.376		
Network size (NB)	Religious (n)	.373	.0778		<.001	x	x
	Spiritual (n)	.379	.0973		<.001	x	x
	Spiritual (r)	.007	.0755		.928		
Patient network (L)	Religious (n)	.516	.268		.054	Δ	
	Spiritual (n)	.669	.334		.045	x	
	Spiritual (r)	.152	.257		.554		

Social distance	Religious (n)	5.233	1.389	.195	<.001	x	x
	Spiritual (n)	4.872	1.816	.135	.007	x	
	Spiritual (r)	-.361	1.492	-.010	.809		
Attitude	Religious (n)	1.221	.495	.130	.014	x	
	Spiritual (n)	1.944	.643	.156	.003	x	
	Spiritual (r)	.723	.525	.058	.169		

Note. Regression Type: (L) = logistic regression, (NB) = negative binomial regression, No mark = linear regression. The baseline group for religious identification: (n) = none, (r) = religious.

^aUsing .05 as the level for each test, the chance of at least one false rejection from multiple tests is greater than .05.

^bUse .0015 (.05/33) as the level for each test to guarantee that the overall family α is less than or equal to .05 (Bonferroni adjustment).

ANOVA: Degree of Religiousness & Self-stigma

The bivariate and multivariate analyses of the present study have revealed that religiousness and spirituality are positively associated with social distance and prejudiced attitude toward psychiatric patients. The last set of ANOVA analyses explored if these associations varied according to the degree of religiousness measured by the frequency of church attendance and perceived importance of religion reported by clients.

Before presenting the findings of these ANOVA analyses, I will remind the reader of the definition of religiousness and spirituality used in the present study. One of the questions in the original interview schedule asked clients which religion, if any, they identified with. I recoded their categorical responses to this question as follows: (1) clients who indicated identification with any institutionalized religion as “religious”; (2) clients who selected the statement “no special religion, but considers self religious/spiritual” as “spiritual”; and clients who selected “none” as “none.” Of those three groups of clients, the first and second groups had been followed by questions regarding their perception of the importance of their religion and the frequency of their attendance at churches, temples, etc.

Figure 8 compares the distributions of monthly church attendance between clients who identified with institutionalized religion (religious group) and those who did not have any special religion but considered themselves religious/spiritual (spiritual group). Note that although the latter group did not identify with a specific religion, they still attended churches, temples, or other religious/spiritual places quite frequently, even compared with clients who identified with specific institutionalized religions (mean $\pm$ SD, 1.43 ± 3.87 versus 2.42 ± 4.67). The difference in the mean frequencies between the two groups was not statistically significant ($t = 1.789$, $df = 506$, $p = .074$). Additionally, the shapes of the two distributions indicated a need to recode “church attendance” into a categorical variable to conduct a correlation analysis. Thus, I created three values from its continuous responses: (1) do not attend at all, (2) attend 1 to 4 times a month, and (3) attend 5 or more times a month.

Similarly, Table 21 summarizes the distributions of clients’ responses to the question regarding the importance of religion. Note that the majority of clients from both religious and spiritual groups considered their religion to be very important or extremely important (67.1 percent and 73.1 percent, respectively). Conversely, the percentages of clients of the religious and spiritual groups who considered their religion to be not important were 13.1 percent and 3.7 percent, respectively. There was no statistically significant difference in the response patterns of the two groups ($\chi^2 = 6.495$, $df = 3$, $p = .090$).

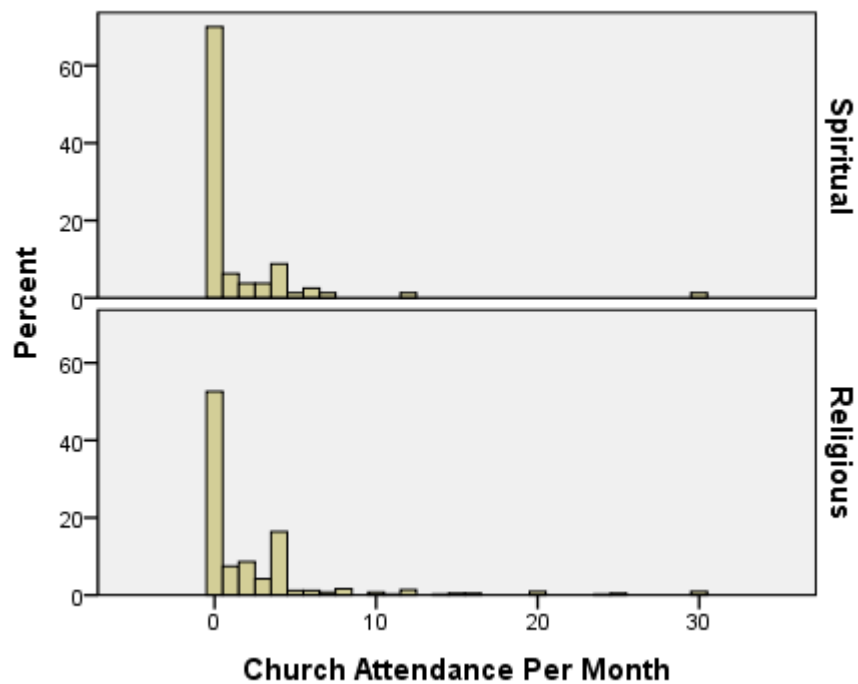


Figure 8. Comparison of church attendance between the religious group (n=428) and the spiritual group (n=80). The mean $\pm$ SD monthly church attendance is 2.42 ± 4.67 for the religious group and 1.43 ± 3.87 for the spiritual group. The difference is not statistically significant ($t = 1.789$, $df = 506$, $p = .074$).

Table 21

Crosstabulation of Religious Identification (Excludes None) and Importance of Religion

Count (row percent)	Importance of religion				Total
	Not important	Somewhat important	Very important	Extremely important	
Religious identification					
Religious	58 (13.1%)	88 (19.8%)	148 (33.3%)	150 (33.8%)	444 (100%)
Spiritual	3 (3.7%)	19 (23.2%)	27 (32.9%)	33 (40.2%)	82 (100%)
Total	61 (11.6%)	107 (20.3%)	175 (33.3%)	183 (34.8%)	526 (100%)

Note. There is no statistically significant difference in the response patterns of the religious and spiritual groups in terms of perceived importance of religion ($X^2 = 6.495$, $df = 3$, $p = .090$).

Table 22 summarizes the means and standard deviations of clients' social distance scores and attitude scores by church attendance and perceived importance of religion. It also displays the results of four overall ANOVA F tests. Note that both church attendance and importance of religion have one extra category, "no religion." This category refers to those clients who did not indicate any religious or spiritual identification, and who had been coded as "none" previously. This group of clients was added to each ANOVA analysis so that their social distance and attitude scores could be compared with those of clients who reported different degrees of religiousness measured by church attendance and perceived importance of religion. The table shows that all four ANOVA F tests (social distance by church attendance, $F = 8.590$, $df = 3, 606$, $p = <.001$; social distance by importance of religion, $F = 6.599$, $df = 4, 623$, $p = <.001$; attitude by church attendance, $F = 3.924$, $df = 3, 611$, $p = .009$; attitude by importance of religion, $F = 4.744$, $df = 4, 628$, $p = .001$) were significant regardless of whether I chose to adjust for multiple testing, using .0125 (.05/4) as the significance level for each test.

Table 23 shows the results of post hoc tests that evaluated mean differences between groups following each ANOVA F test. As is the case with the first series of ANOVA analyses, the first block displays the results of pairwise comparisons without adjustment for multiple testing, whereas the second block displays the results with some adjustment. The pairs of group means that are joined by a line indicate that they are not statistically significantly different at the specified level.

Without considering statistical significance, a quick inspection of the first block reveals that clients without religious or spiritual identification indicated the lowest levels of social distance (mean $\pm$ SD, 27.58 ± 13.49) and prejudiced attitude toward psychiatric patients (mean $\pm$ SD, 9.04 ± 4.66) compared to clients who indicated any degree of religiousness. However, it also reveals that the group of clients who came second after those without religious/spiritual identification was those who indicated the highest degree of religiousness, that is, clients who attended church five or more times a month (mean $\pm$ SD, 31.87 ± 11.47 [social distance], 10.08 ± 4.67 [attitude]) and clients who considered their religion extremely important (mean $\pm$ SD, 32.39 ± 11.49 [social distance], 9.85 ± 4.00 [attitude]). The rest of the results are rather mixed, and does not show any clear pattern.

Now, taking statistical significance into account, we will review the results of post hoc tests for each row. On average, clients without religious or spiritual identification reported significantly less social distance than clients who indicated such identification regardless of the frequency of church attendance (mean $\pm$ SD, 27.58 ± 13.49 versus 31.87 ± 11.47 , 33.89 ± 11.05 , 34.19 ± 12.47) or the level of perceived importance of religion (mean $\pm$ SD, 27.58 ± 13.49 versus 32.39 ± 11.49 , 33.50 ± 12.24 , 34.33 ± 11.77 , 35.33 ± 12.23). The between-group differences based on the frequency of church attendance or perceived importance of religion among clients who identified with religion or spirituality were not statistically significant. As for the relationship of church attendance and perceived importance of religion to prejudiced attitude toward psychiatric patients, the differences between clients with and without religious/spiritual identification were not clearly defined. Namely, the mean difference between clients without religious/spiritual identification and those who attended church five or more times a month was not statistically significant (mean $\pm$ SD, 9.04 ± 4.66 versus 10.08 ± 4.67). Similarly, the mean differences between clients without religious/spiritual identification and those who considered

their religion extremely important or somewhat important were not statistically significant (mean $\pm$ SD, 9.04 ± 4.66 versus 9.85 ± 4.00 , 10.08 ± 3.98).

Finally, before concluding this chapter, I want to briefly mention the second block of post hoc tests. To evaluate between-group differences while holding the overall family α at .05, I again used a combination of Tukey HSD post hoc tests and the Bonferroni adjustment. That is, I multiplied Tukey's p -values by 4 (rows). The resulting plot of group means has more overlapping lines, having lost five significant mean differences than before.¹⁰ Now, the difference in the mean social distance scores between clients without religious/spiritual identification and those who attended church five or more times a month was no longer statistically significant (mean $\pm$ SD, 27.58 ± 13.49 versus 31.87 ± 11.47) although the differences in the mean social distance scores remained significant between those without religious/spiritual identification and all categories of perceived importance of religion (mean $\pm$ SD, 27.58 ± 13.49 versus 32.39 ± 11.49 , 33.50 ± 12.24 , 34.33 ± 11.77 , 35.33 ± 12.23). As for the relationship of church attendance and importance of religion to prejudiced attitude, two mean differences remained significant: one between clients without religious/spiritual identification and those who attended church one to four times a months (mean $\pm$ SD, 9.04 ± 4.66 versus 10.69 ± 4.00), and another between clients without religious/spiritual identification and those who considered their religion very important (mean $\pm$ SD, 9.04 ± 4.66 versus 11.18 ± 4.49). The rest of the between-group differences were not significant.

¹⁰ The number of significant mean differences between groups was reduced from 13 to 8 by applying the Bonferroni adjustment for multiple comparisons.

Table 22

ANOVA: Means and Standard Deviations for Social Distance and Attitude Scores by Church Attendance and Perceived Importance of Religion

Factor	Mean	SD	N	df	F	p
<i>Dependent variable: Social distance</i>						
Test 1: Church attendance				3, 606	8.590	<.001
No religion ^a	27.58	13.485	113			
Do not attend at all	34.19	12.471	277			
1 to 4 times a month	33.89	11.048	168			
5 or more times a month	31.87	11.469	52			
Test 2: Importance of religion				4, 623	6.599	<.001
No religion ^a	27.58	13.485	113			
Not important	35.33	12.232	60			
Somewhat important	33.50	12.238	106			
Very important	34.33	11.771	171			
Extremely important	32.39	11.491	178			
<i>Dependent variable: Attitude</i>						
Test 3: Church attendance				3, 611	3.924	.009
No religion ^a	9.04	4.657	113			
Do not attend at all	10.51	4.256	279			
1 to 4 times a month	10.69	4.002	171			
5 or more times a month	10.08	4.665	52			
Test 4: Importance of religion				4, 628	4.744	.001
No religion ^a	9.04	4.657	113			
Not important	10.48	4.007	61			
Somewhat important	10.08	3.978	106			
Very important	11.18	4.490	172			
Extremely important	9.85	3.998	181			

^aThe category "no religion" is the same as "none," which indicates a group of respondents who do not identify with any religion or spirituality. They were not asked about church attendance or importance of religion. The rest of the categories including "do not attend at all" and "not important" apply to respondents who indicated some religious/spiritual identification.

Table 23

Following Up Significant ANOVA Findings on Table 22 with Post Hoc Tests

ANOVAs	Mean scores by church attendance and importance of religion				
<i>Without Adjustment for Multiple Comparisons^a</i>					
Social distance by church attendance	no religion	5+	1-4	0	
	27.58	31.87	33.89	34.19	
Social distance by importance of religion	no religion	extremely	somewhat	very	not
	27.58	32.39	33.50	34.33	35.33
Attitude by church attendance	no religion	5+	0	1-4	
	9.04	10.08	10.51	10.69	
Attitude by importance of religion	no religion	extremely	somewhat	not	very
	9.04	9.85	10.08	10.48	11.18
<i>With Bonferroni/Tukey HSD Adjustment^b</i>					
Social distance by church attendance	no religion	5+	1-4	0	
	27.58	31.87	33.89	34.19	
Social distance by importance of religion	no religion	extremely	somewhat	very	not
	27.58	32.39	33.50	34.33	35.33
Attitude by church attendance	no religion	5+	0	1-4	
	9.04	10.08	10.51	10.69	
Attitude by importance of religion	no religion	extremely	somewhat	not	very
	9.04	9.85	10.08	10.48	11.18

Note. Note: The pairs of means that are joined by a line indicate that they are not statistically significantly different at the level specified by each method.

^aThe four overall ANOVA F tests with $p < .05$ from Table 22 were followed by Fisher's LSD post hoc tests at the .05 level. LSD is equivalent to multiple individual t tests between all pairs of groups without attempting to adjust the observed significance level for multiple comparisons (SPSS Help).

^bThe four overall ANOVA F tests with $p < .0125$ (.05/4) from Table 22 were followed by a combination of Tukey HSD post hoc tests and Bonferroni adjustment to maintain the overall family α at .05.

Chapter Five

Discussion

A primary goal of this dissertation was to study the roles of religion and spirituality in recovery from mental illness by investigating the relationships of religiousness and spirituality with proxies of both psychosocial well-being and self-stigma through bivariate and multivariate analyses. In this study recovery was understood as a process; religiousness was defined as self-identification with a specific institutionalized religion; and spirituality was framed as perception of self as religious/spiritual without identifying with a specific religion.

Findings of the Present Study

Among users of self-help and community mental health agencies, both religiousness and spirituality were significantly associated with proxies of both psychosocial well-being and self-stigma.

The above findings supported the first major hypothesis of the present study—namely that religiousness and spirituality are on the whole positively associated with various proxies of psychosocial well-being. However, the second major hypothesis—namely that self-stigma is associated with religiousness, but not with spirituality—was not supported.

One of the many ways in which religion and spirituality are being polarized in current popular and scientific writings is to assign a negative valence to religion and a positive valence to spirituality (Zinnbauer et al., 1999). The above-mentioned second major hypothesis was based on this widespread view of religion and spirituality. However, the findings of this study do not seem to support such a view. Specifically, both religiousness and spirituality were found to be positively associated with self-esteem, personal empowerment, social network size, and patient network, as well as increased social distance and prejudiced attitude toward psychiatric patients in general. Additionally, religiousness, but not spirituality, was related to better independent social integration. Spirituality, but not religiousness, was linked to greater extra-organizational empowerment. With the exception of extra-organizational empowerment, there were no statistically significant mean differences between religiousness and spirituality. All these relationships were found to hold after controlling for clients' demographic, clinical, and agency characteristics.

But how do we explain the absence of difference between the two groups? Particularly with respect to self-stigma, what are the causes of elevated social distance and attitude scores for clients who identified with spirituality? The present study does not answer these questions. Yet, these findings may suggest that spirituality is not as free from organizational ties as commonly believed. Recall that clients who identified themselves as spiritual attended churches, temples, or other religious/spiritual places quite frequently even compared with clients who identified with religion (mean $\pm$ SD, 1.43 ± 3.87 versus 2.42 ± 4.67 , see Figure 8 on page 60). Furthermore, some forms of spirituality such as 12 step fellowships share many aspects of institutionalized religion, including meetings, 12 steps, and sponsors (spiritual mentors). Alternatively, the absence of difference may be explained as follows: it is neither religion nor spirituality after all that makes people prejudiced, but religion and spirituality are merely a medium through which

human nature can be expressed. Thus, it is people themselves that bring prejudice to religion and spirituality. But these explanations are merely speculations, and answers must be sought through future research.

There are two points I want to make about the findings of this study. The first is the absence of correlation between religiousness/spirituality and hopefulness. This result was rather unexpected considering that hope is such a central construct in religion and spirituality. In fact, others studies that have examined some components of the recovery process (Bellamy et al., 2007; Corrigan et al., 2003) have indicated that hope was positively associated with both religiousness and spirituality. The second item is the variable “patient network.” This variable indicates whether clients had other psychiatric patients in their social networks. Originally this variable was meant to be a behavioral indicator of self-stigma based on the assumption that if a client was affected by stigma of mental illness, he or she would avoid contact with other psychiatric patients. Thus, it was thought that a client with a negative view of psychiatric patients would be negatively associated with “patient network.” However, the results show that although religiousness and spirituality were associated with increased social distance and prejudiced attitude toward psychiatric patients in general, the two were also positively (though very weakly) associated with patient network. There are a few ways to interpret this apparently conflicting results. One is to emphasize the borderline quality of the association of religiousness and spirituality with patient network. Another is to conclude that responses to interview questions do not always coincide with actual behaviors. And the last is to argue that patient network reflects clients’ life circumstances rather than their view of mental illness. I am inclined to think that all these factors were involved.

The relationship between religiousness and self-stigma was non-linear.

This finding partially supported the third hypothesis of the present study—namely that the relationship between religiousness and self-stigma is curvilinear. The American Psychological Association (2007) has traced the history of psychological research on religion and prejudice. Its summary states that dozens of studies have found that religion and prejudice have positive linear relationships (Altemeyer, 1988; Altemeyer & Hunsberger, 1992, 2005), while other studies have shown that religion and prejudice have complex curvilinear relationships in which highly religious individuals have reported milder levels of prejudice than casually religious counterparts (Allport, 1950; Allport & Ross, 1967; Batson & Stocks, 2005). The present study has found that this relationship is not linear: clients without religious/spiritual identification indicated the lowest levels of social distance and prejudiced attitude toward psychiatric patients in general than clients who indicated any degree of religiousness. However, the group of clients who came second after those without religious/spiritual identification indicated the highest degree of religiousness, that is, clients who attended church five times or more a month and clients who considered their religion extremely important. The rest of the results were rather mixed and did not show any clear pattern. Thus, there is not enough evidence to say that the relationship between religion and self-stigma is curvilinear, but it does appear to be non-linear.

Adjusting for multiple testing reduced the number of rejected null hypotheses considerably.

In a situation such as the present study, where we conduct many hypothesis tests at a time, if each test is conducted at level α , the probability of a false rejection of the null hypothesis for any one test is α . But the probability of at least one false rejection out of all tests is much greater. This is called the multiple testing problem (Wasserman, 2004). This problem is not limited to any particular type of statistical tests, but in social science research it is addressed most often in the context of post hoc tests for ANOVA and MANOVA procedures (Agresti & Finlay, 1999; Moore & McCabe, 2006; Segal et al., 2002). In the present research, however, this problem was addressed for regression analyses as well because the idea is the same whether multiple tests are performed to evaluate mean differences or to test the significance of many regression coefficients at a time. Whenever the p -value of a regression coefficient is examined, it counts as one test. For example, if the researcher is to conduct a regression model with 10 independent variables of interest, excluding mere control variables, the Bonferroni method with the overall family α at .05 requires the researcher to test each coefficient at the level .005 (.05/10).

Using the present research as an example to demonstrate the above point, I compared the number of rejected null hypotheses before and after the Bonferroni adjustment. With the 11 multiple regression models each with 3 independent variables of interest, a total of 33 hypothesis tests were conducted to evaluate the significance of regression coefficients. Without any adjustment, there were 14 null hypotheses that were rejected. (These results are presented in the first paragraph of this chapter.) By applying the Bonferroni adjustment and setting the overall family α at .05, the number of rejected null hypotheses was reduced from 14 to 4. The four associations that remained significant after this procedure are (1) spirituality and extra-organizational empowerment;¹¹ (2) religiousness and network size, (3) spirituality and network size, and (4) religiousness and social distance. Likewise, I applied a combination of Tukey HSD post hoc tests and the Bonferroni adjustment in the two sets of ANOVA analyses in the present study. This procedure reduced the number of significant between-group differences from 11 to 7 for the first set of ANOVAs and 13 to 8 for the second set of ANOVAs. The magnitude of these changes in the number of rejected null hypotheses indicates the significance of addressing this issue in social work research.

Strengths and Weaknesses of the Present Study

The present study has several weaknesses. First, it used data whose sampling method was not probabilistic. Though efforts were made to match self-help agencies and community mental health agencies based on their geographical proximities, participating agencies were selected in a non-random fashion. Furthermore, the data were drawn from just one region in California, namely the highly diverse San Francisco Bay Area, which may not be representative of other regions in the state or the nation. Thus, findings from the present study have a limited generalizability (external validity). Second, the study's design, that is, a quantitative cross-sectional analysis, is not especially suitable for studying recovery as a process even if it focuses on psychosocial constructs such as hope and empowerment, which are generally considered to be essential elements of the recovery process. Recovery from the perspective of mental health

¹¹ This association is significant only when the baseline group is "religious."

clients is a life journey unique to each individual. Although there is significance in investigating a segment of that process for a group of clients using a quantitative approach, it is not the same as investigating that process itself, and the results of such research more or less resemble the results inspired by a model of recovery as outcome. Moreover, a cross-sectional approach is weak in establishing causal relationships (internal validity) between the independent variable (religion/spirituality) and the dependent variables (psychosocial factors). Third, the measures of religiousness and spirituality used in the present study, that is, self-identification, frequency of church attendance, and perceived importance of religion, neither address specific aspects of religiousness or spirituality that are associated with the dependent variables, nor attend to individual clients' specific styles or orientations toward religion and spirituality that may produce different outcomes. Fourth, some of the multiple regression models used in the present study had very low values of R^2 , indicating that some important independent variables were not included in the models.

Although the present study has certain weaknesses discussed above, it also has some strengths. First, this study represents a first view of the relationship of religiousness and spirituality to self-stigma among people with serious mental illness. Previous studies have focused on the relationship of religion and prejudice of mental illness in the general population. Spirituality, in particular, has not been considered as a possible correlate of self-stigma among people with serious mental illness. Second, the present study focused on psychosocial well-being and self-stigma, two important constructs in recovery as seen from the perspective of mental health clients. Third, many measures of psychosocial factors used in the present study had been analyzed for validity and reliability and had been shown to fall within the acceptable ranges. Fourth, the present study is concerned not only with the results of statistical analyses, but also with the process of arriving at the results, including assumption checking and adjustment for multiple testing. The diagnostic results of the statistical analyses conducted in the study are presented in Appendix B of this dissertation.

Implications of the Present Study

In this study, clients who identified with institutionalized religion and clients who considered themselves religious/spiritual without identifying with a specific religion displayed very similar patterns of responses to the measures of both psychosocial well-being and self-stigma. The differences between the two groups of clients appeared to be a matter of degree and not of quality. In fact, multivariate analyses indicated that the differences in the means of psychosocial outcomes between these two groups were not statistically significant for all 11 psychosocial factors but one. This finding, although limited in generalizability, gives us an opportunity to rethink the currently accepted polarized view of "negative religiousness versus positive spirituality" (Zinnbauer et al., 1999, p. 902).

The present study has some implications for social work practice as well. Some mental health agencies today have begun to offer individual or group counseling that explicitly focuses on spirituality (Fallot, 2008). However, the results of the present study are mixed. On the one hand, they indicate that the majority of mental health clients regarded their religion or spirituality very important and that religion and spirituality were positively associated with psychosocial variables such as self-esteem, personal empowerment, and social network size. On the other hand, religion and spirituality were found to be associated with increased social distance and

prejudice toward psychiatric patients in general. Should social workers support the incorporation of spirituality in the mental health services? My answer to this question is yes, but with a caveat that religion and spirituality can have both positive and negative consequences just as any human intervention does. The important point is that we need to find ways to enhance the positive roles that religion and spirituality play in the lives of people with serious mental illness while minimizing their negative roles. To achieve this aim, I want to share some of the recommendations that Fallot (2007, 2008) has given to human service providers such as social workers: (1) There is a need for training and education for human service providers in spirituality; (2) Those clients who report that spirituality is important to their recovery may be given a functional spirituality assessment; (3) If the client wishes to discuss spiritual issues related to recovery with the provider, the two can follow through on this assessment and explore a range of options including a referral to an appropriate community resource; (4) Clinicians should have a culturally sensitive, individualized approach to understanding the role of religion and spirituality in the client's life; (5) Clinicians should become familiar with the religious/spiritual expressions common among the people they serve as well as the individual and community spiritual resources that are sensitive to the needs of mental health clients; (6) Clinicians should be aware that certain kinds of spiritual/religious activities, beliefs, communities, and dynamics may be harmful to recovery. In short, Fallot argues that human service providers should develop cultural competence to work with mental health clients who use religious/spiritual resources to support their recovery.

Just as human service providers can better address the spiritual needs of mental health clients through acquiring cultural competence in religion and spirituality, researchers can make a difference by engaging in further research that will reveal a clearer picture of the relationship of religiousness and spirituality with various components of recovery. For example, are there measurable differences between religion and spirituality in terms of how they impact symptoms, disabilities, well-being, and self-stigma of mental health clients? Is religion's relationship with formal institutions as detrimental as scholars speculate? Put differently, is spirituality free from the ill of humanity that is often attributed to such a connection? It turns out that the present research is not unique in failing to distinguish religion from spirituality. Corrigan et al. (2003) also report that their study has failed to confirm a more beneficial impact of spirituality over religion. They partly attribute this failure to a benevolent aspect of religion, namely support systems that religious institutions can offer to mental health clients, and partly to the fact that the differential consequence of spirituality and religiousness has not been clearly nor consistently supported in research on the general population (Zinnbauer et al., 1999). Another thread of future research involves the limitations of the present study mentioned above. Namely, the types of future research that are being called for are the ones that can look into some of the following concerns: (1) the process through which religion and spirituality may impact the lives of mental health clients over time; (2) causal roles that religion and spirituality may play in recovery; (3) specific aspects of religiousness or spirituality that are associated with recovery or lack thereof, as well as individual clients' specific styles or orientations toward religion and spirituality that may produce different consequences; (4) other relevant factors that were not accounted for in the present analysis, and that may have confounded or moderated the relationships of religiousness and spirituality to various measures of recovery and self-stigma, for example, the level of exposure to stigma associated with mental illness, the quality and amount of support from others, and the level of social functioning. In sum, my specific recommendations for future research include ethnographic studies that will investigate how religion and spirituality may play out in

the lives of individual clients over an extended period of time, as well as well-designed longitudinal quantitative studies with relevant variables that can reveal the overall impacts of religion and spirituality on groups of clients over time.

The final two implications of the present study are not related to the main findings of the study, but to the two extra components of this dissertation: (1) an emphasis on reporting the results of assumption checking and adjustment for multiple testing; and (2) the visual recovery model introduced in the Background and Literature Review (Chapter 2).

Assumption checking is an integral part of any statistical analysis. Without it, we have no way of knowing whether the statistical model we use accurately describes the phenomenon we are interested in. Despite its great importance, testing of statistical assumptions seems to have been de-emphasized by the social work research community. It has been very rare to find peer-review journal articles written by social work researchers that mention the assumptions of statistical tests used in their studies. What has been rarer is to find journal articles that have adjusted their statistical analyses using an appropriate control for an increased chance of Type I error due to multiple testing (e.g., Bonferroni adjustment). But both of these procedures are extremely important in presenting the results of quantitative studies without misleading the audience. What I have attempted to do in this dissertation is to demonstrate how a researcher can present these additional materials along with the main findings of the study. My recommendation is that reporting of the results of these two procedures should become part of the requirements for publication in peer-review social work journals (Holden et al., 2008).

In contrast to the rigorous handling of statistical methods sought in this dissertation, the purpose of the visual recovery model introduced in Chapter 2 was to help the reader who may have little knowledge of recovery not only understand its concept intellectually, but also grasp its meaning intuitively. The use of narratives, both verbal and visual, has become a popular educational/training tools for medical students and physicians. Rita Charon (2001), director of the Program in Narrative Medicine at Columbia University's College of Physicians and Surgeons, describes the advantages of narratives as follows:

A scientifically competent medicine alone cannot help a patient grapple with the loss of health or find meaning in suffering. Along with scientific ability, physicians need the ability to listen to the narratives of the patient, grasp and honor their meanings, and be moved to act on the patient's behalf. This is narrative competence, that is, the competence that human beings use to absorb, interpret, and respond to stories (p. 1897).

I must wait to hear from the readers to find out how effective my visual recovery model was in achieving its purpose. However, one possible application of that model together with the verbal narratives of mental health clients would be to use them as educational and training tools for future and current social work practitioners interested in incorporating spirituality in their practice with mental health clients.

Conclusion

Religion and spirituality in mental health is a fascinating research area where the complexity of human nature is vividly played out. Researchers are confronted with many

contradictions, uncertainties, and multiple meanings of the phenomena that they are studying. For this reason, knowledge that comes out of this research field should be appreciated as a product of both science and the humanity of researchers and of the participants who were willing to share their most intimate experiences and thoughts with the rest of the world. I feel very privileged to have had the opportunity to conduct this research and am grateful for the knowledge and insight that I have gained about people diagnosed with serious mental illness as well as about myself.

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Appendix A: New Users Data Variables

Demographic & Clinical Variables

gender	d3a
age	d1
ethnicity	d2b
education	d91-d96
marital status	d4a
employment status	em1a1-em1a3
monthly income	money
homelessness	d11a (4, 7, some 8)
self-helper	cov1
drug/alcohol problem	drug6a1, drug6a2, drug6b (drug1b- drug1g, drug 2a1-drug2a3, drug2b1- drug2b3, drug2c1-drug2c3, drug2d1- drug2d3, drug2e1-drug2e3) ^a
depression (cesd)	cesd
psychiatric disability (bprs)	bprs

Independent Variables

religious identification	d14a
church attendance	d14c
importance of religion	d14b

Dependent Variables

hopefulness	hope1-hope10
self-esteem	selfes
self-efficacy	selfef
personal empowerment	peremp ^b
organizationally mediated empowerment	omemp
extra-organizational empowerment	eoemp
independent social integration	isi
network size	name1-name25
patient network	sn161-sn1625 ^c
social distance	sd1, sd4, sd7, sd9-sd18
attitude	sd2, sd3, sd5, sd6, sd8

Variables on Table 15 & 16

patient	sn161-sn1625
agency staff	sn201-sn2025
friend	sn131-sn1325
family	sn141-sn1425
type of relationship	

get into trouble	sn181-sn1825
you go for small amounts of money	sn3a1-sn3a25
they come for small amounts of money	sn3b1-sn3b25
you share your feelings	sn8a1-sn8a25
they share their feelings	sn8b1-sn8b25
you look for them to hang out	sn9a1-sn9a25
they look for you to hang out	sn9b1-sn9b25

^a The main New Users Data variables used to create the “drug/alcohol problem variable” include drug6a1, drug6a2, and drug6b. The rest of the variables in the parentheses were consulted because the above three variables had many N/A’s.

^b The present study uses a slightly modified version of the original “peremp” variable.

^c sn161-sn1625 includes a series of 25 variables whose names consist of “sn16” followed by a number between 1 and 25. This is true with all other variable sets containing variables starting with letters “sn.”

Appendix B: Assumption Checking for Statistical Models

Assumption checking is an integral part of statistical analysis. Without it, we have no way of knowing whether the statistical model we use accurately describes the phenomenon we are interested in. This appendix contains the results of diagnostic procedures I have applied to check the assumptions of the statistical models and tests used in this dissertation with help of the following references and statistical consultants.

- Agresti and Finlay (1999)
- Freedman (2005)
- Hilbe (2007)
- Jewell and Hubbard (2010)
- Kutner, Nachtsheim, Neter, and Li (2005)
- Lahiff (2005)
- Moore and McCabe (2006)
- Selvin (2004)
- Shlonsky, D'Andrade, and Brookhart (2002)
- UCLA Academic Technology Services, Statistical Consulting Group Website (2012a)
- Wasserman (2004)

UC Berkeley Statistical Consultants: James Long, Ngoc Tran, & Miles Lopes

Outline of the Appendix B

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Index

This index was created to help the reader to link the output tables found in the main body of the dissertation with the results of diagnostic procedures. Please note that although assumptions were checked for all the statistical analyses conducted in the present study, the results are presented here only for those analyses in which the null hypotheses regarding religiousness and/or spirituality were rejected at the .05 level. Additionally, the diagnostic findings of the two logistic regression analyses on Tables 12 and 17 will not be mentioned individually, but summarized in the *Summary of Regression Diagnostics* at the end of this appendix.

Statistical output for which assumptions were checked	Assumption checking	Page	Statistical output for which assumptions were checked	Assumption checking	Page
<i>ANOVA</i>			<i>Regression</i>		
Table 5, Self-esteem	Figure B1	Pg. 86	Table 8	Figure B10	Pg. 98
Table 5, Extra-org emp	n/a*	n/a	Table 10	Figure B11	Pg. 99
Table 5, Ind soc integ	Figure B2	Pg. 87	Table 13	Figure B12	Pg. 100
Table 5, Network size	Figure B3	Pg. 88	Table 14	Figure B13	Pg. 101
Table 5, Social distance	Figure B4	Pg. 89	Table 14	Figure B14	Pg. 102
Table 5, Attitude	Figure B5	Pg. 90	Table 18	Figure B15	Pg. 103
Table 22, Test 1	Figure B6	Pg. 91	Table 19	Figure B16	Pg. 104
Table 22, Test 2	Figure B7	Pg. 92			
Table 22, Test 3	Figure B8	Pg. 93			
Table 22, Test 4	Figure B9	Pg. 94			

*A Pearson chi-square test was applied to examine the association of extra-organizational empowerment with religious identification.

One-Way ANOVA

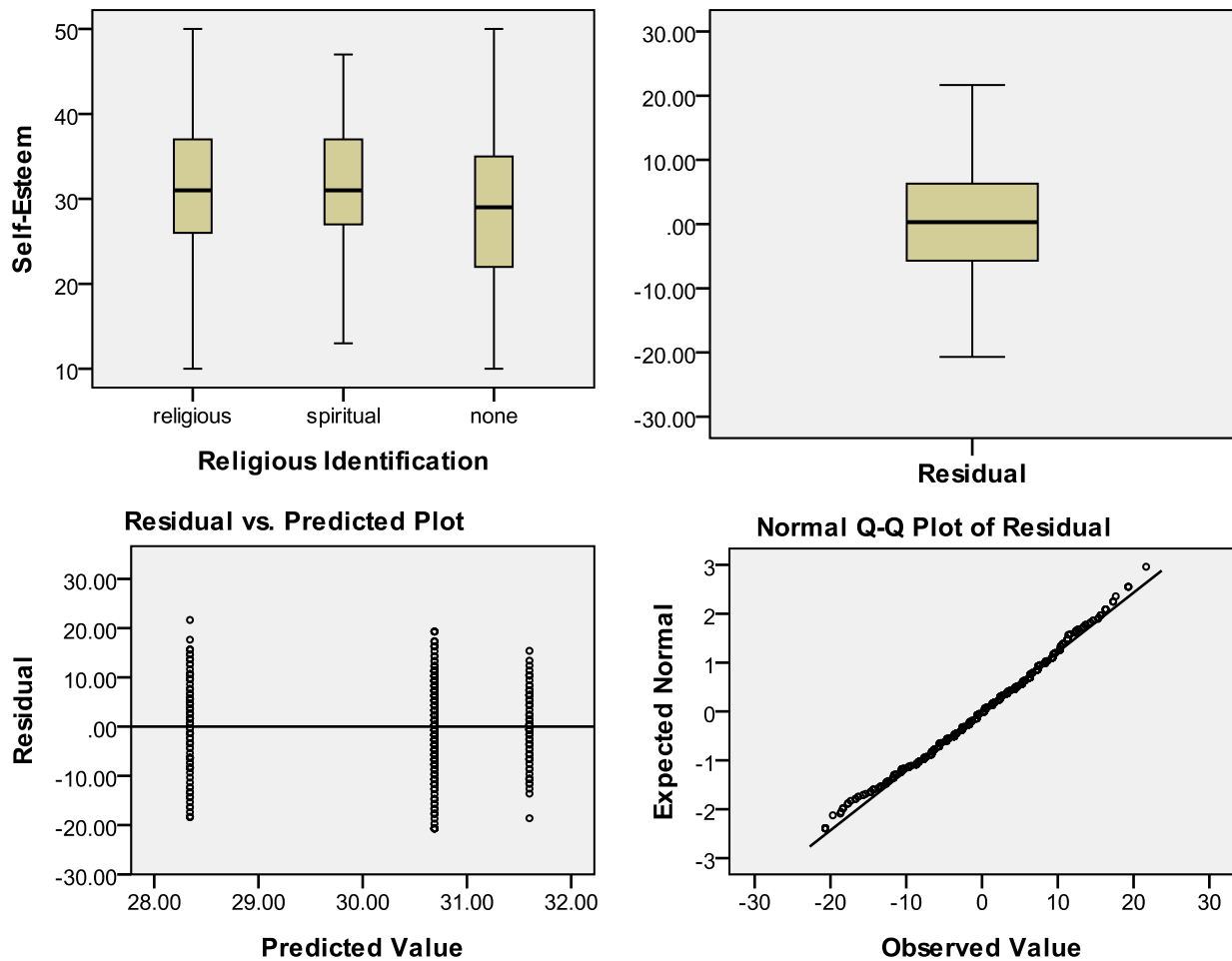
List of Assumptions

1. The dependent variable is continuous and the independent variable is categorical.
2. The k populations are independent.
3. The k samples are independently drawn from normally distributed populations.
4. The variances for the k populations are the same.

Results of Diagnostic Procedures (Figures B1-B9)

The following nine pages contain numerical and graphical results of diagnostic procedures that tested the assumptions of the ANOVA analyses conducted in this dissertation.

Figure B1. Assumption Checking for Table 5. ANOVA: Self-Esteem by Religious Identification
($n_{\text{religious}}=443$, $n_{\text{spiritual}}=95$, $n_{\text{none}}=114$)

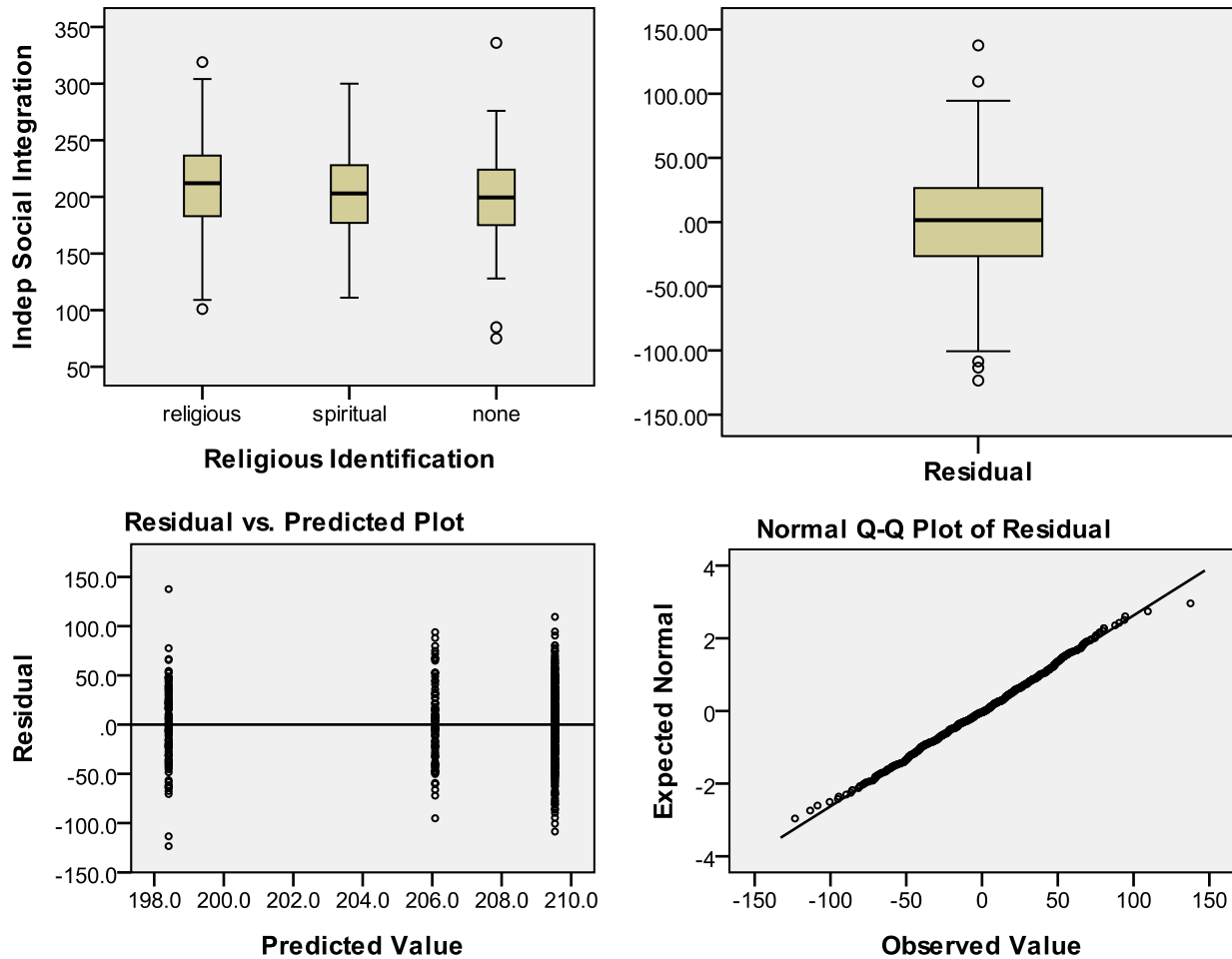


Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
RES	.041	652	.013	.992	652	.001

a. Lilliefors Significance Correction

$$\text{max SD} / \text{min SD} = 9.4/6.8 = 1.38 < 2$$

Figure B2. Assumption Checking for Table 5. ANOVA: Independent Social Integration by Religious Identification ($n_{\text{religious}}=444$, $n_{\text{spiritual}}=95$, $n_{\text{none}}=114$)



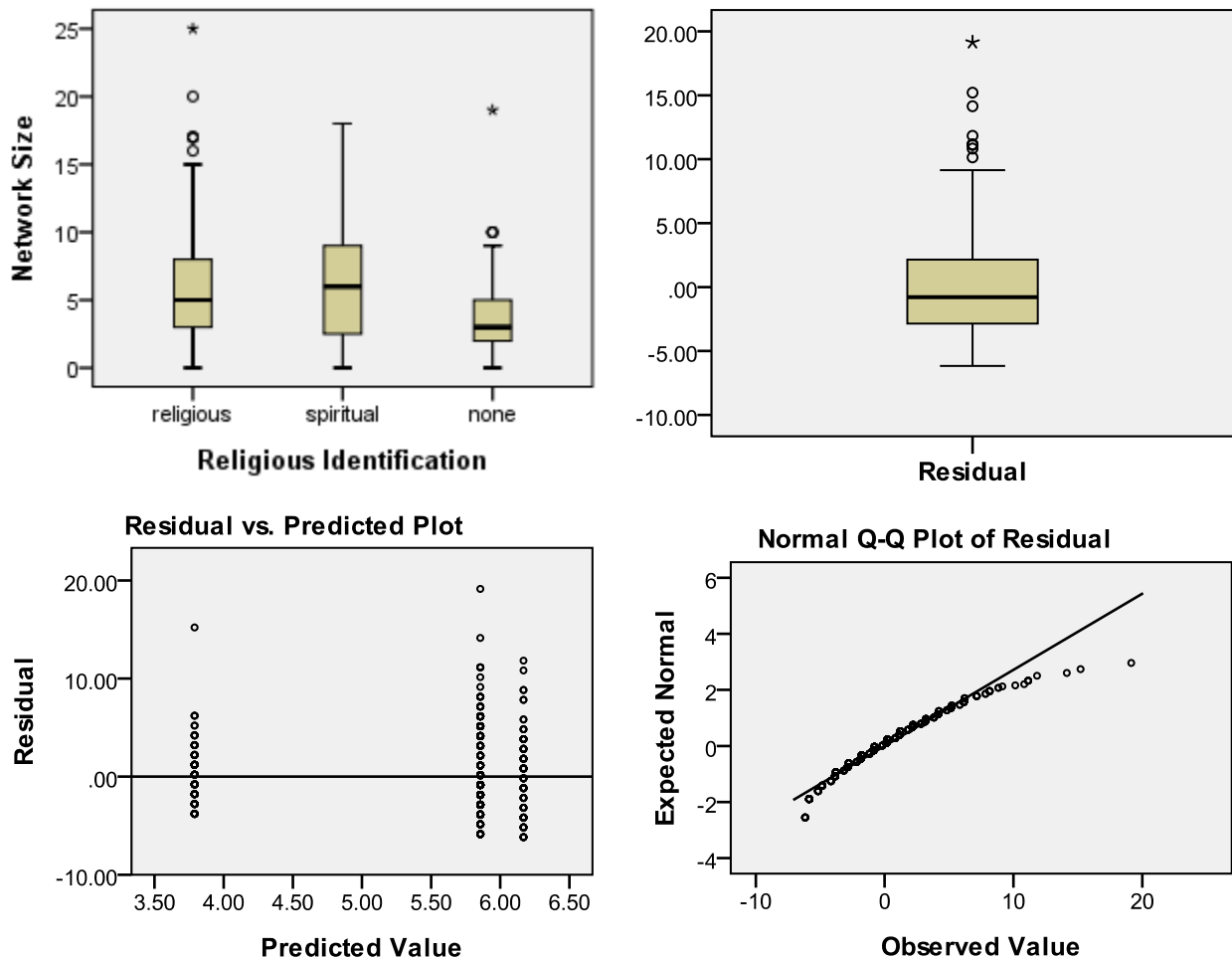
Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
RES	.025	653	.200*	.998	653	.823

a. Lilliefors Significance Correction

*. This is a lower bound of the true significance.

$$\text{max SD /min SD} = 40/37 = 1.08 < 2$$

Figure B3. Assumption Checking for Table 5. ANOVA: Network Size by Religious Identification
($n_{\text{religious}}=444$, $n_{\text{spiritual}}=95$, $n_{\text{none}}=114$)



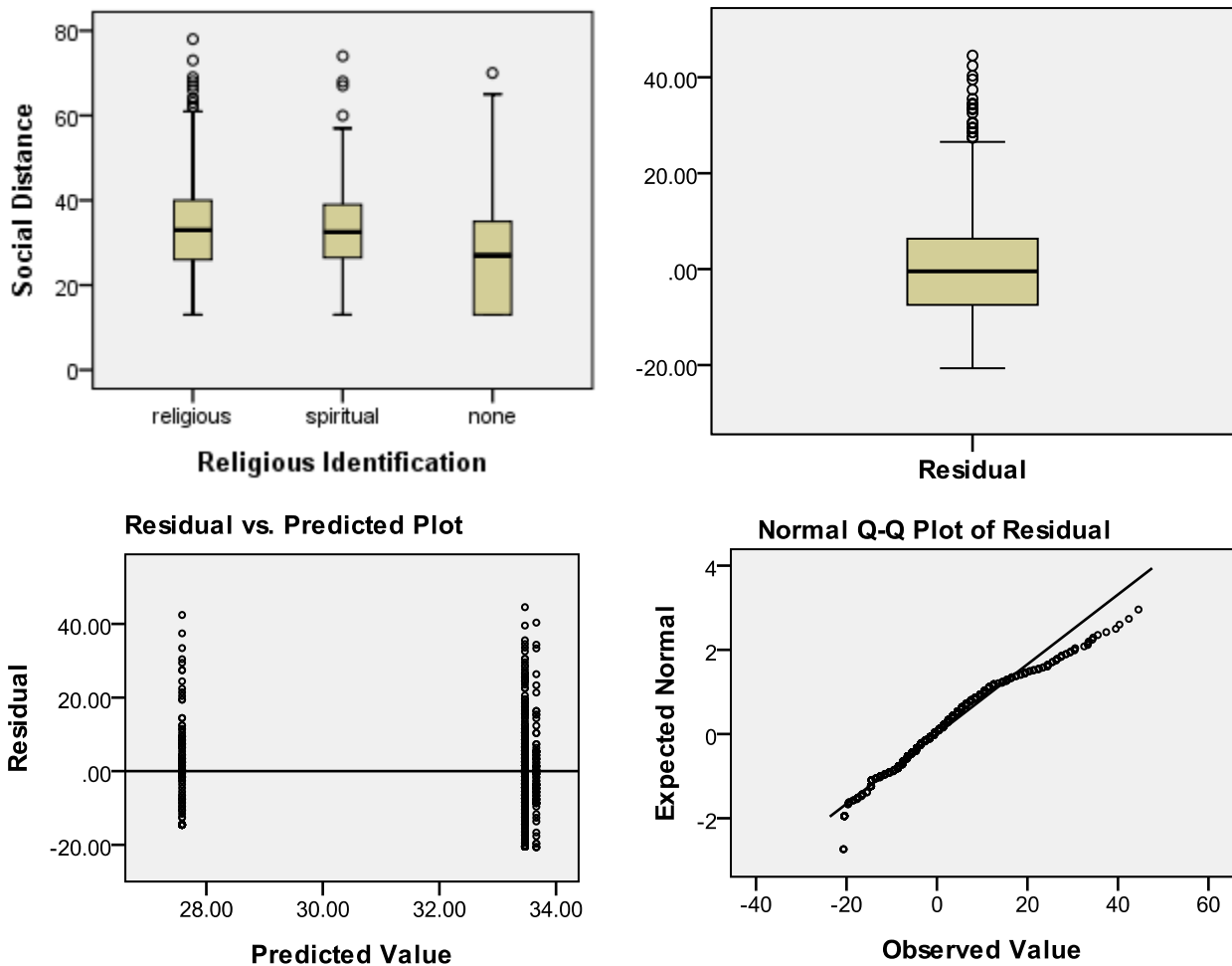
Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
RES	.087	653	.000	.958	653	.000

a. Lilliefors Significance Correction

$$\text{max SD /min SD} = 4.11/2.92 = 1.41 < 2$$

Figure B4. Assumption Checking for Table 5. ANOVA: Social Distance by Religious Identification ($n_{\text{religious}}=436$, $n_{\text{spiritual}}=92$, $n_{\text{none}}=113$)



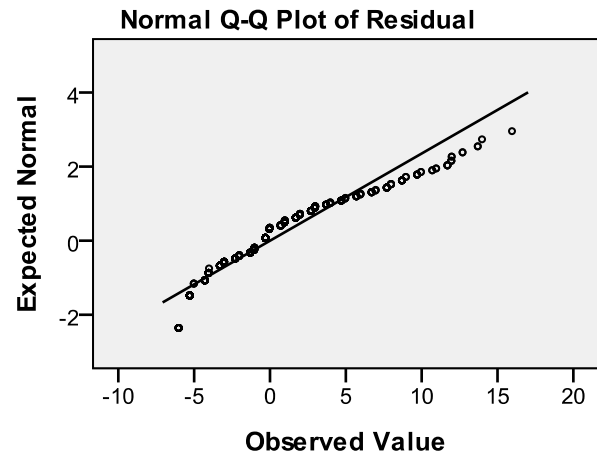
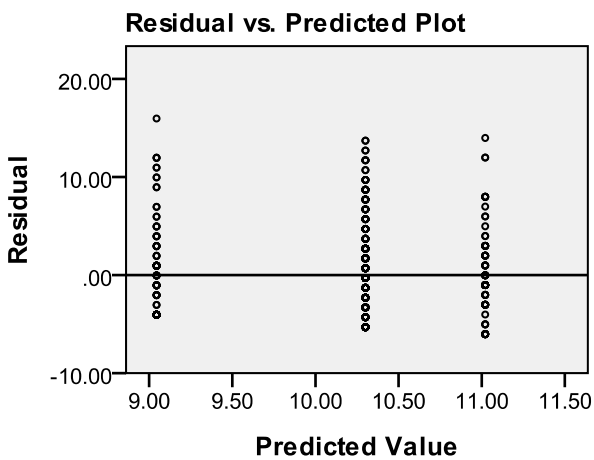
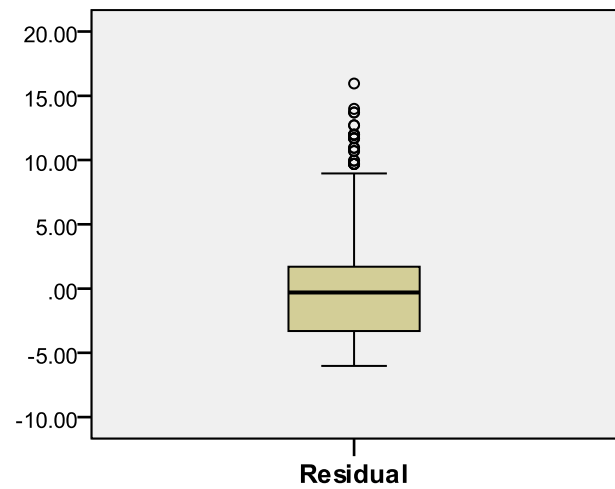
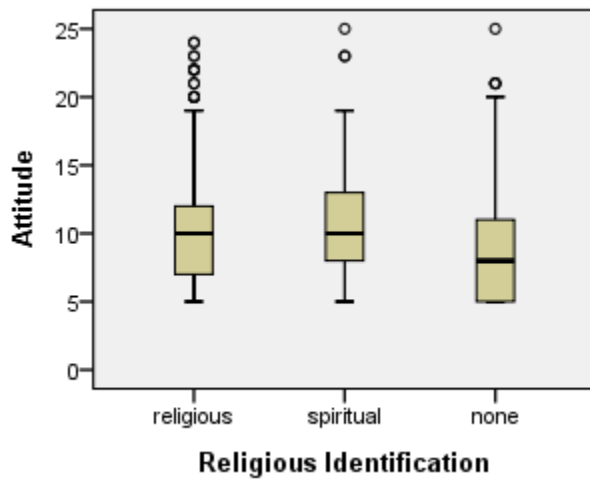
Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
RES	.072	641	.000	.963	641	.000

a. Lilliefors Significance Correction

$$\text{max SD} / \text{min SD} = 13.5 / 11.6 = 1.16 < 2$$

Figure B5. Assumption Checking for Table 5. ANOVA: Attitude by Religious Identification
($n_{\text{religious}}=439$, $n_{\text{spiritual}}=94$, $n_{\text{none}}=113$)



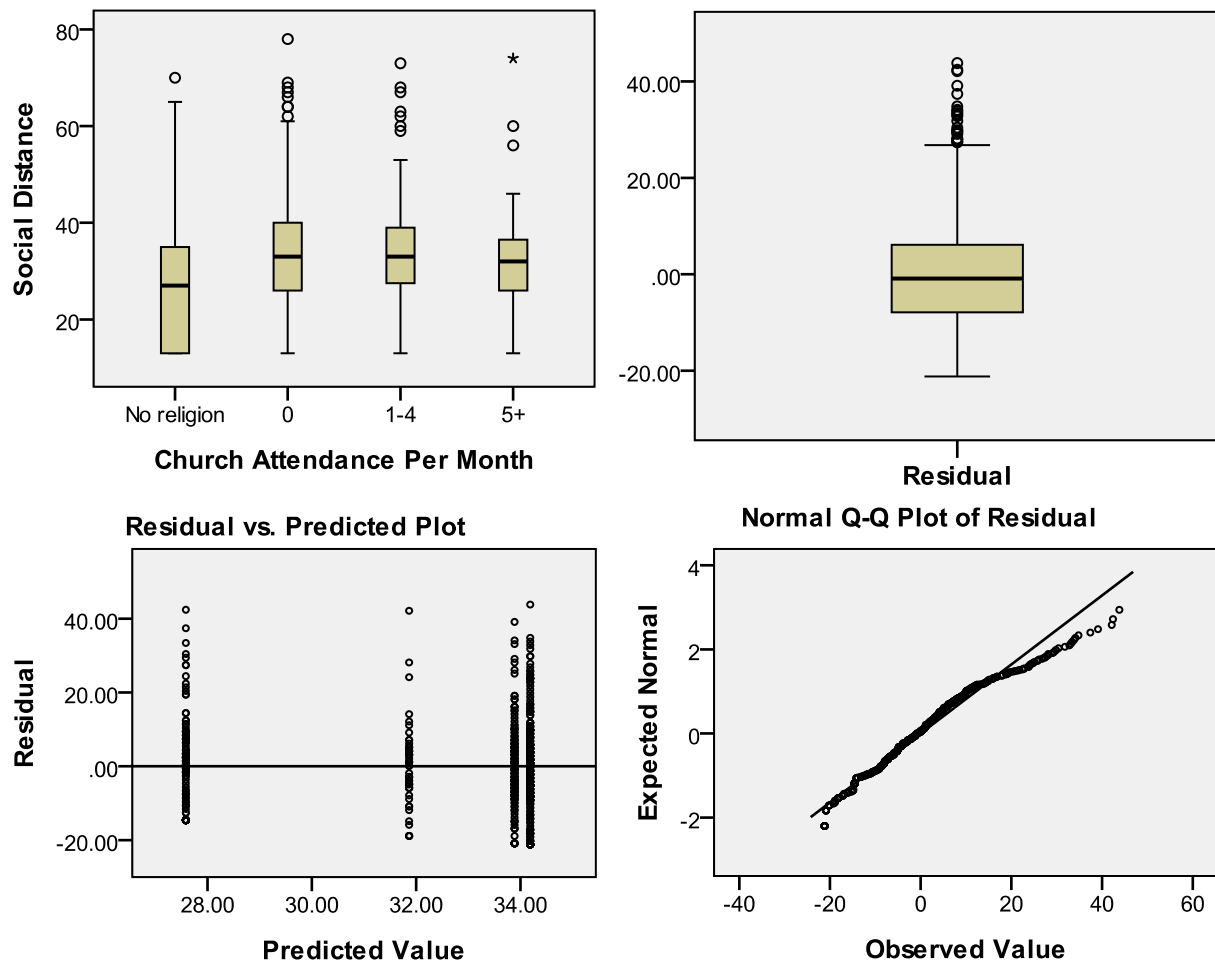
Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
RES	.147	646	.000	.921	646	.000

a. Lilliefors Significance Correction

$$\text{max SD} / \text{min SD} = 4.7 / 4.1 = 1.15 < 2$$

Figure B6. Assumption Checking for Table 22. ANOVA: Social Distance by Church Attendance
($n_{no\ rel}=113$, $n_0=277$, $n_{1-4}=168$, $n_{5+}=52$)



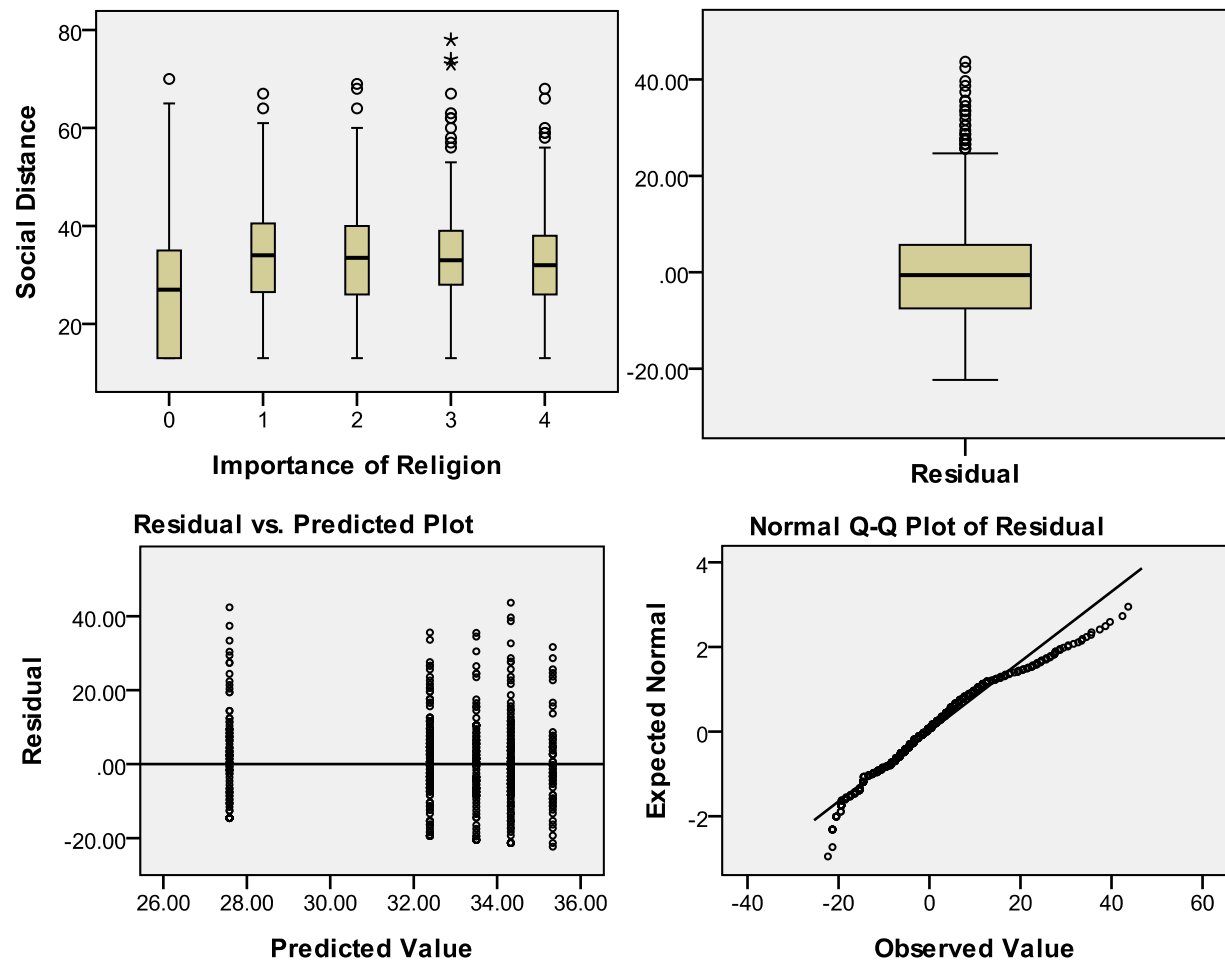
Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
RES	.068	610	.000	.965	610	.000

a. Lilliefors Significance Correction

$$\max SD / \min SD = 13.485 / 11.048 = 1.22 < 2$$

Figure B7. Assumption Checking for Table 22. ANOVA: Social Distance by Perceived Importance of Religion ($n_0=113$, $n_1=60$, $n_2=106$, $n_3=171$, $n_4=178$)



Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
RES	.073	628	.000	.965	628	.000

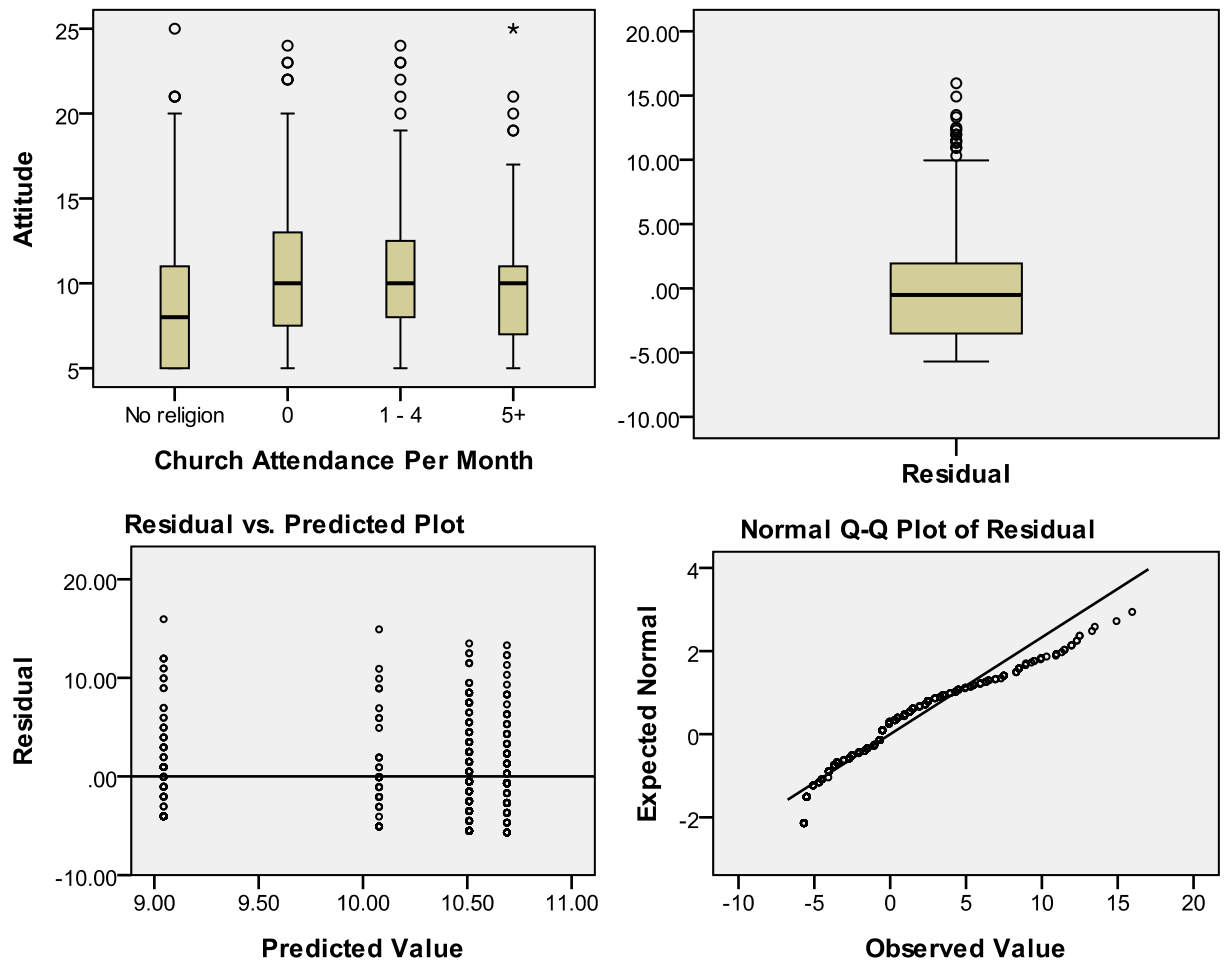
a. Lilliefors Significance Correction

$$\text{max SD /min SD} = 13.485/11.491 = 1.17 < 2$$

Value labels for importance of religion:

- 0=do not identify with religion or spirituality
- 1=not important
- 2=somewhat important
- 3=very important
- 4=extremely important

Figure B8. Assumption Checking for Table 22. ANOVA: Attitude by Church Attendance
($n_{\text{no rel}}=113$, $n_0=279$, $n_{1-4}=171$, $n_{5+}=52$)



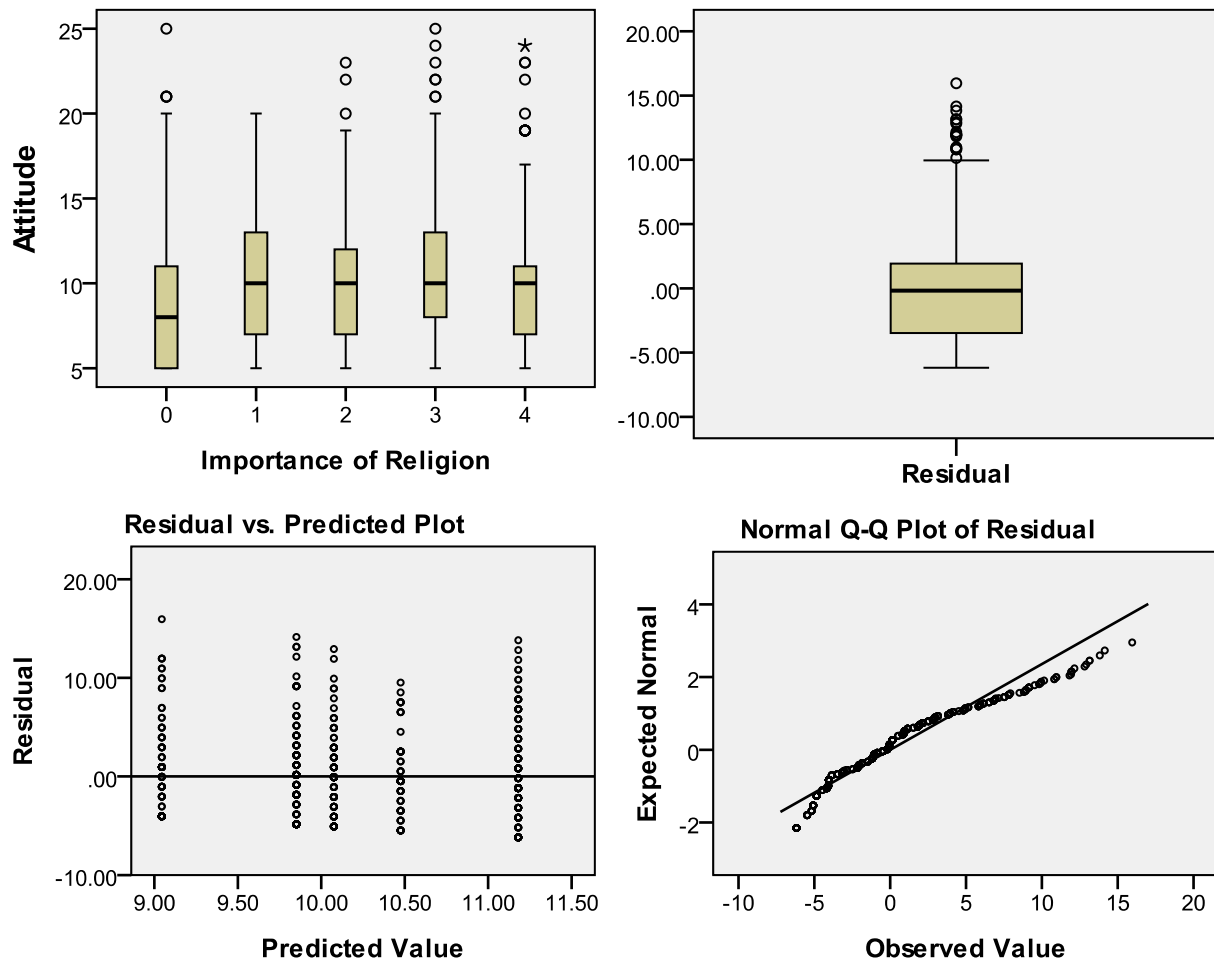
Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
RES	.136	615	.000	.922	615	.000

a. Lilliefors Significance Correction

$$\text{max SD /min SD} = 4.665/4.002 = 1.17 < 2$$

Figure B9. Assumption Checking for Table 22. ANOVA: Attitude by Perceived Importance of Religion ($n_0=113$, $n_1=61$, $n_2=106$, $n_3=172$, $n_4=181$)



Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
RES	.134	633	.000	.928	633	.000

a. Lilliefors Significance Correction

$$\text{max SD /min SD} = 4.657/3.978 = 1.17 < 2$$

Value labels for importance of religion:

- 0=do not identify with religion or spirituality
- 1=not important
- 2=somewhat important
- 3=very important
- 4=extremely important

Summary of ANOVA Diagnostics

Assumption checking in Figures B1 through B9 on pages 86-94 involves three independent variables and five dependent variables. The independent variables include “religious identification,” “church attendance,” and “importance of religion.” They are all categorical variables with three to five levels. The dependent variables include continuous measures of “self-esteem,” “independent social integration,” “network size,” “social distance,” and “attitude.”

Graphical and numerical summaries of the data indicate that the assumption of constant variance holds approximately for each ANOVA test conducted. In particular, note that the ratio of maximum and minimum standard deviations (max SD /min SD) of the dependent variable for the three religious identification groups is less than two for all tests. As for the normality assumption, the two dependent variables “independent social integration” and “self-esteem” appear to have normal distributions across the three religious identification groups with a few or no outliers. The significant results on Kolmogorov-Smirnov and Shapiro-Wilk tests for “self-esteem” seem to be due to the fact that these tests are very sensitive to minor departure from normality when the sample size is large (Lahiff, 2005). On the other hand, the rest of the dependent variables, “network size,” “social distance,” and “attitude”—used in seven of the nine ANOVA tests—clearly show some departure from normality with a fair number of outliers. Yet the sufficiently large sample sizes of the data allow me to apply the central limit theorem and say that the sampling distributions of the group means of these variables can be assumed approximately normal and the ANOVA procedures can be used (UCLA Academic Technology Services, Statistical Consulting Group, 2012b). Finally, the present study uses a convenience sample, which will largely limit the study’s generalizability.

Regression

Lists of Assumptions

In this dissertation, three types of regression analyses were conducted.

Assumptions Common to All Three Types of Regression

1. The observations are sampled independently from each other.
2. The independent variables can be either continuous or categorical, and assume fixed values.
3. The model includes all relevant variables, and excludes irrelevant variables.
4. The independent variables in a model are not highly correlated with each other.

Linear Regression

1. The dependent variable is continuous.
2. The regression line is linear.
3. The variance of the errors is constant.
4. The distribution of the errors is normal.

Logistic Regression

1. The dependent variable is binary.
2. The true conditional probabilities are a logistic function of the independent variables.

Negative Binomial Regression

1. The dependent variable can be a count variable.
2. Negative binomial regression may be used when the conditional variance of the dependent variable is greater than the conditional mean (called over-dispersion). It has the same mean structure as Poisson regression with an additional parameter to model the over-dispersion (i.e., conditional mean = λ ; conditional variance = $\lambda + \alpha\lambda^2$, where λ is the rate of the outcome and α [or $1/r$] is a dispersion parameter).
3. The dependent variable does not have negative numbers or excess zeros generated by more than one data gathering process.
4. The exposure variable, which indicates the degree of exposure to the event of interest, does not have zeros.

Tests on Multicollinearity

When two or more independent variables in a regression model are highly correlated among themselves (multicollinearity), the estimates of the regression coefficients become unstable and the standard errors may become extremely inflated. To determine if the set of independent variables used in the present study has a problem of multicollinearity, I had SPSS calculate the values of “tolerance” and “variance inflation factor (VIF)” for each independent variable in the regression models. The tolerance represents the percent of variance in any one

independent variable that cannot be explained by other independent variables in the same regression model, while the VIF is the inverse of the tolerance ($1/\text{tolerance}$). As a general rule, the tolerance values less than .10 or the VIF values greater than 10 warrant further investigation (UCLA Academic Technology Services, Statistical Consulting Group, 2012c). Table B1 indicates that the “tolerance” and “VIF” values related to the present study are in the acceptable range.

Table B1. Tolerance and VIF Values for Independent Variables Used in the Present Study

Independent variables	Tolerance	VIF
Religious identification		
Religious	.584	1.713
Spiritual	.606	1.649
Self-esteem	.569	1.758
Female	.923	1.083
Age	.950	1.053
Ethnicity		
African American	.812	1.231
Other ethnicity	.874	1.144
Education	.958	1.044
Self-helper	.911	1.097
CESD	.532	1.881
BPRS	.826	1.210
Drug/alcohol problem	.934	1.071

Note. To obtain the tolerance and VIF values, linear regression commands with the “tol” option were used. The choice of the dependent variable does not affect tolerance and VIF because they indicate the correlation among the independent variables.

Results of Diagnostic Procedures (Figures B10-B16)

The following seven pages contain numerical and graphical results of diagnostic procedures that tested the assumptions of the regression analyses conducted in this dissertation.

Figure B10. Assumption Checking for Table 8. Linear Regression Analysis with Religious Identification as an Independent Variable and Self-Esteem as a Dependent Variable (n=601)

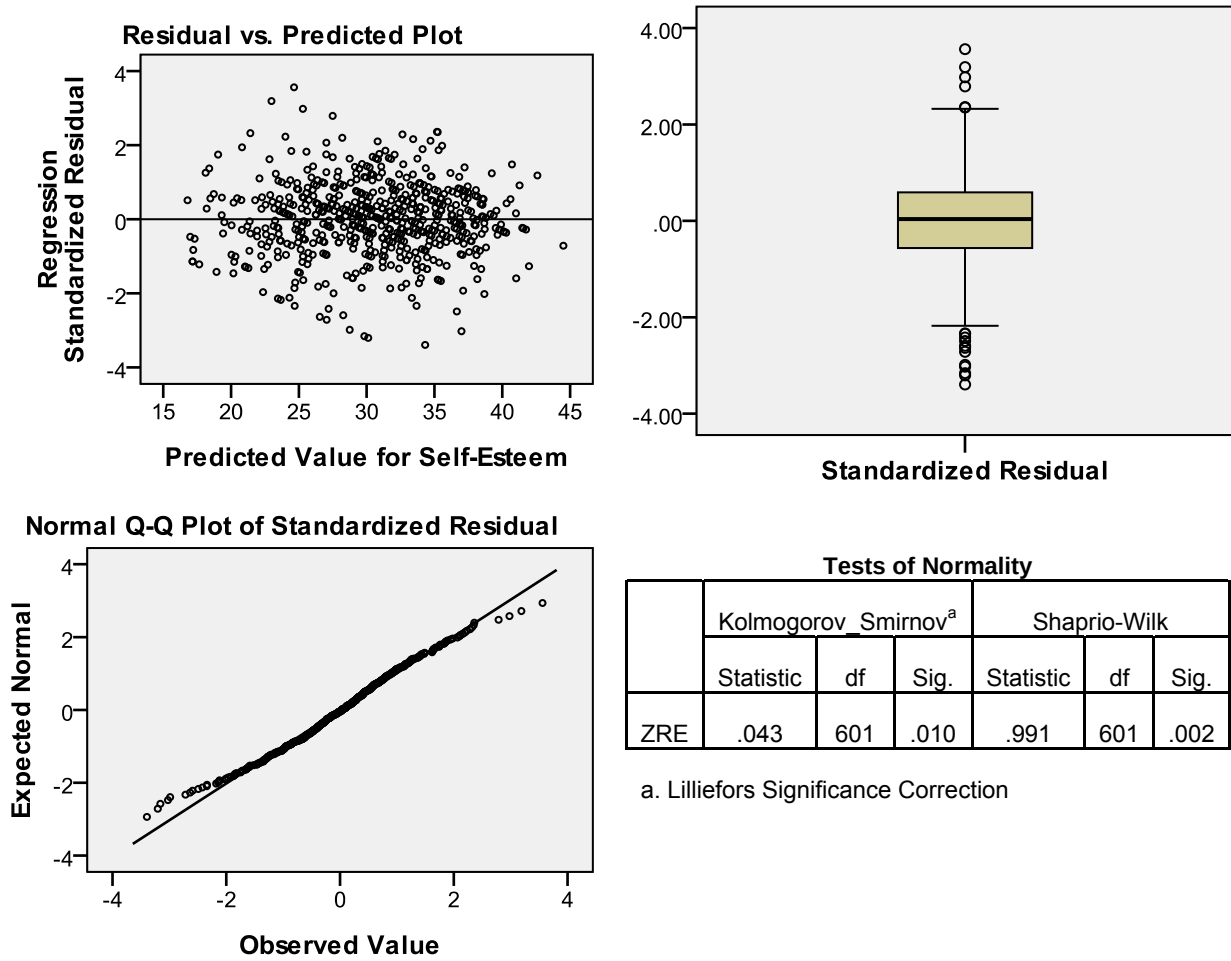


Figure B11. Assumption Checking for Table 10. Linear Regression Analysis with Religious Identification as an Independent Variable and Personal Empowerment as a Dependent Variable (n=600)

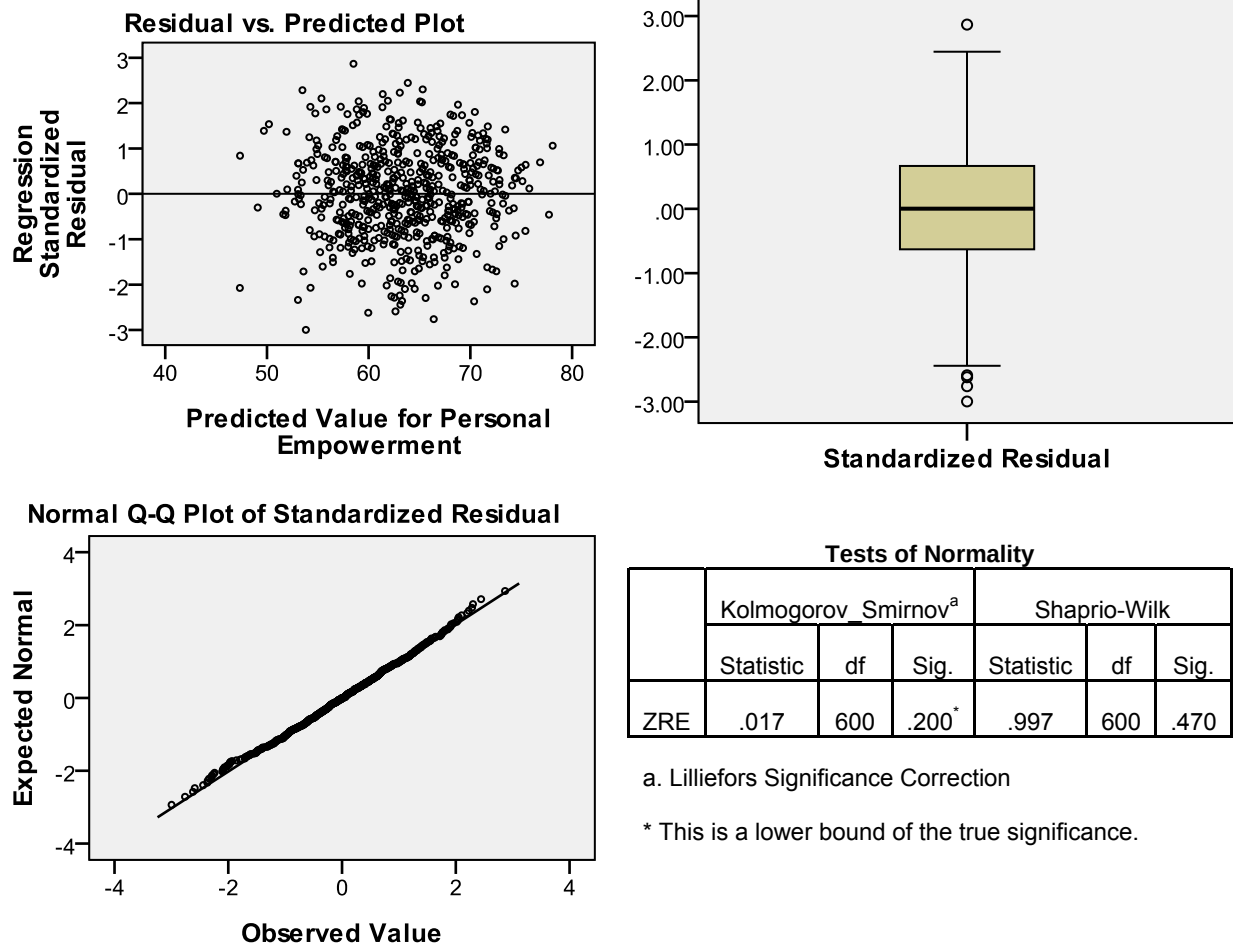


Figure B12. Assumption Checking for Table 13. Linear Regression Analysis with Religious Identification as an Independent Variable and Independent Social Integration as a Dependent Variable (n=601)

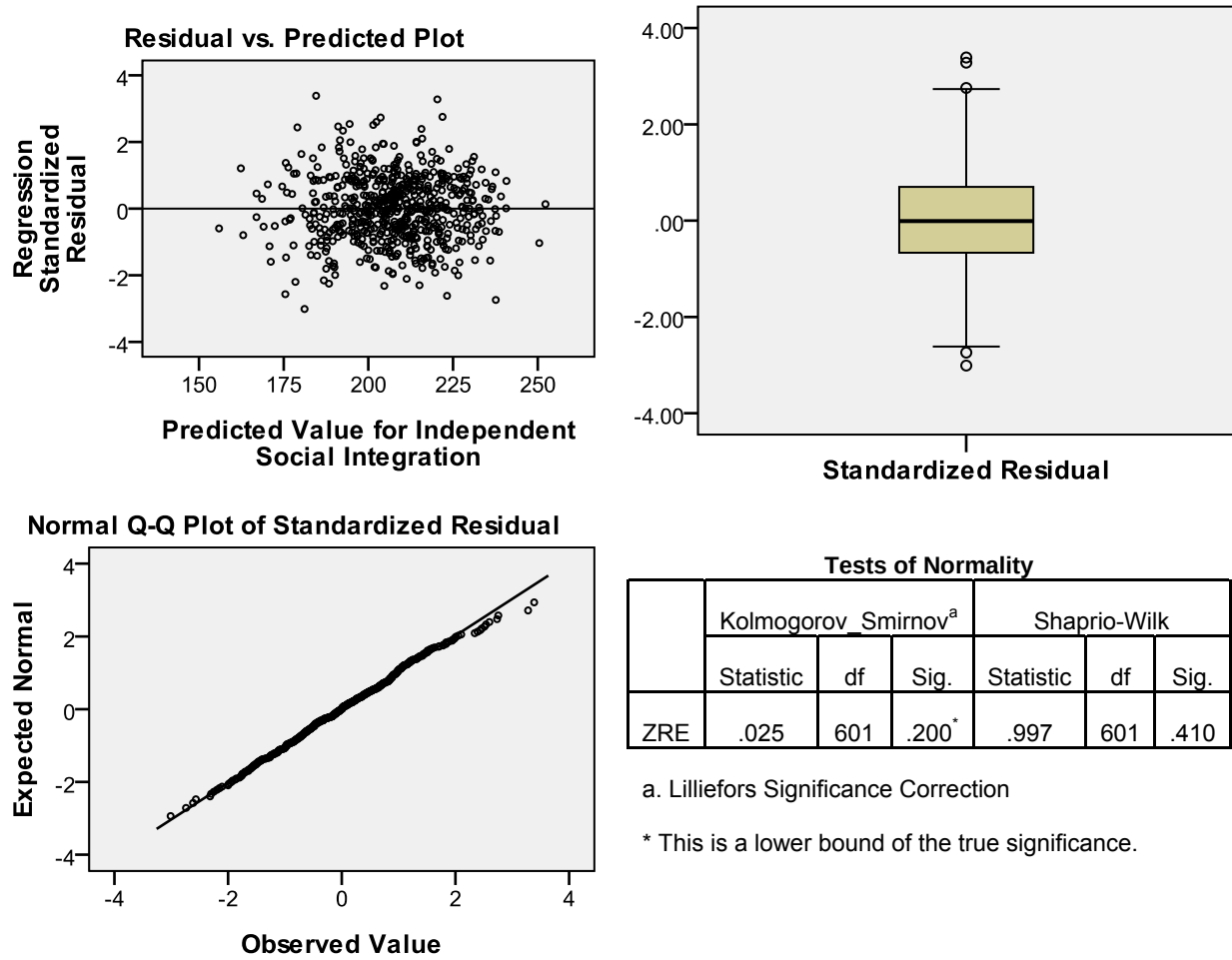


Figure B13. Assumption Checking for Table 14. Linear Regression Analysis with Religious Identification as an Independent Variable and Network Size as a Dependent Variable (n=601)

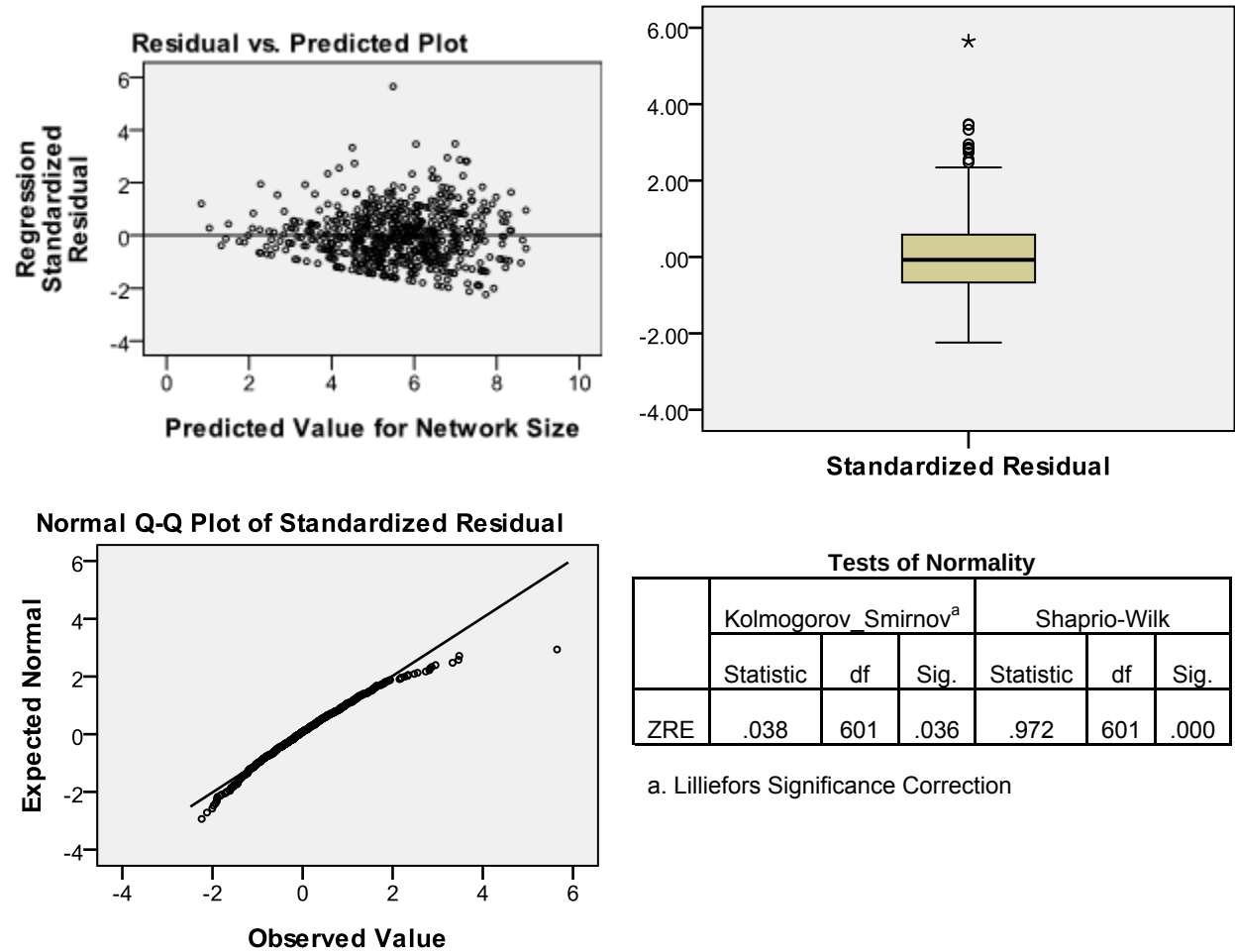


Figure B14. Assumption Checking for Table 14. Poisson/Negative Binomial Regression Analyses with Religious Identification as an Independent Variable and Network Size as a Dependent Variable (n=601)

Poisson Regression

Goodness of Fit			
	Value	Df	Value/df
Deviance	1370.468	588	2.331
Scaled Deviance	1370.468	588	
Pearson Chi-Square	1262.660	588	2.147
Scaled Pearson Chi-Square	1262.660	588	
Log Likelihood	-1657.304		

Negative Binomial Regression

Goodness of Fit			
	Value	Df	Value/df
Deviance	698.332	587	1.190
Scaled Deviance	698.332	587	
Pearson Chi-Square	574.812	587	.979
Scaled Pearson Chi-Square	574.812	587	
Log Likelihood	-1548.525		

Estimate and 95 percent Wald confidence interval of dispersion parameter :
.223 (.178, .280) Does not include zero.

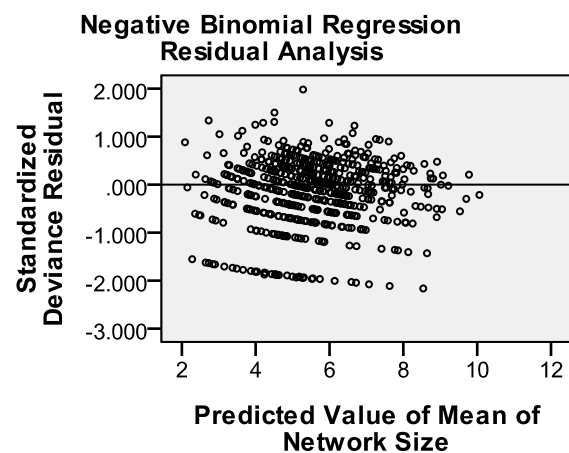
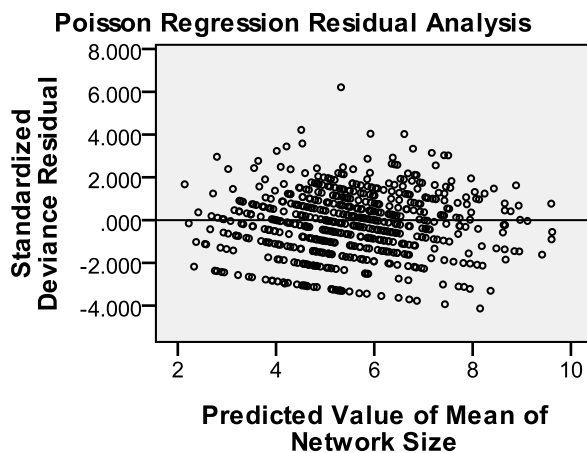


Figure B15. Assumption Checking for Table 18. Linear Regression Analysis with Religious Identification as an Independent Variable and Social Distance as a Dependent Variable (n=591)

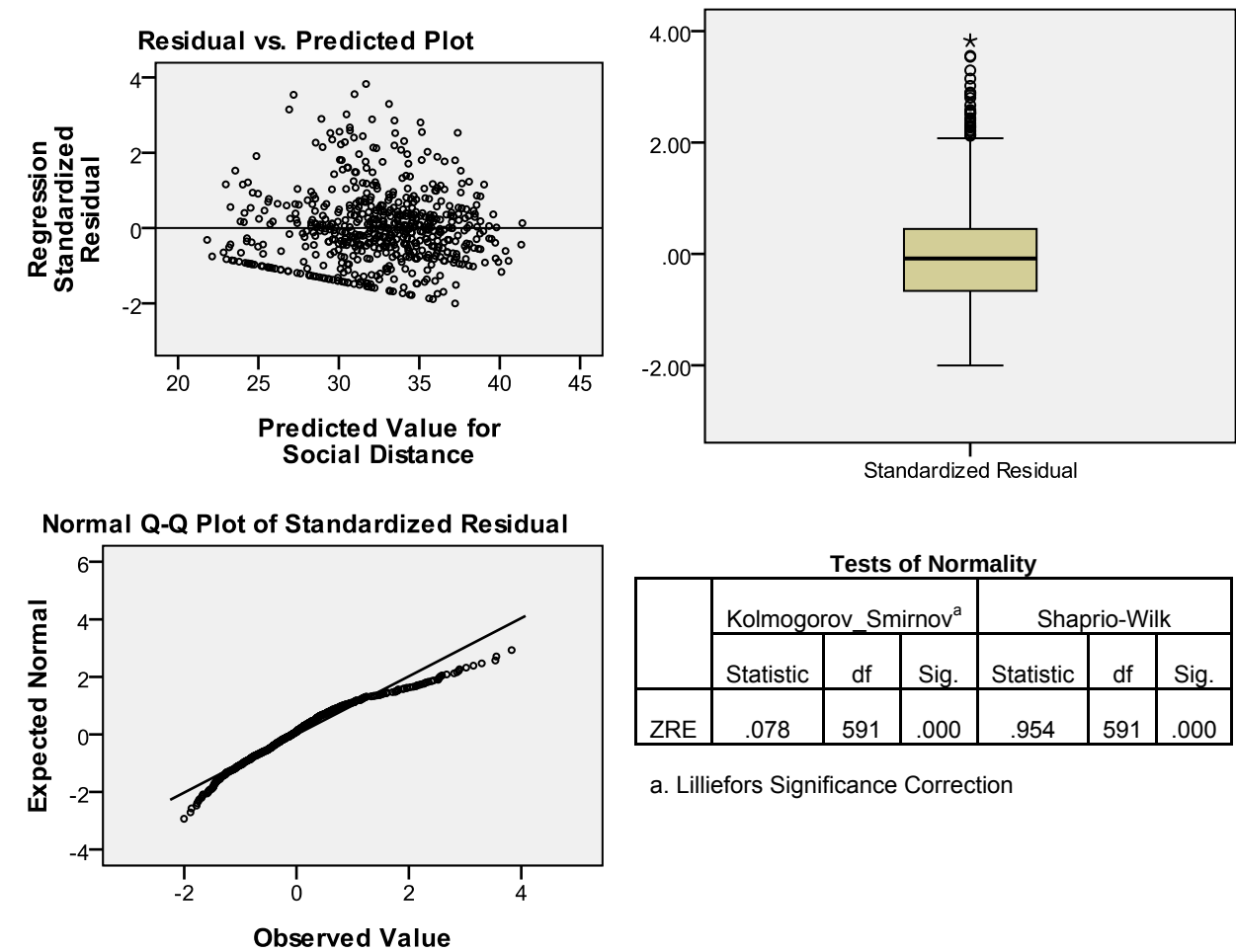
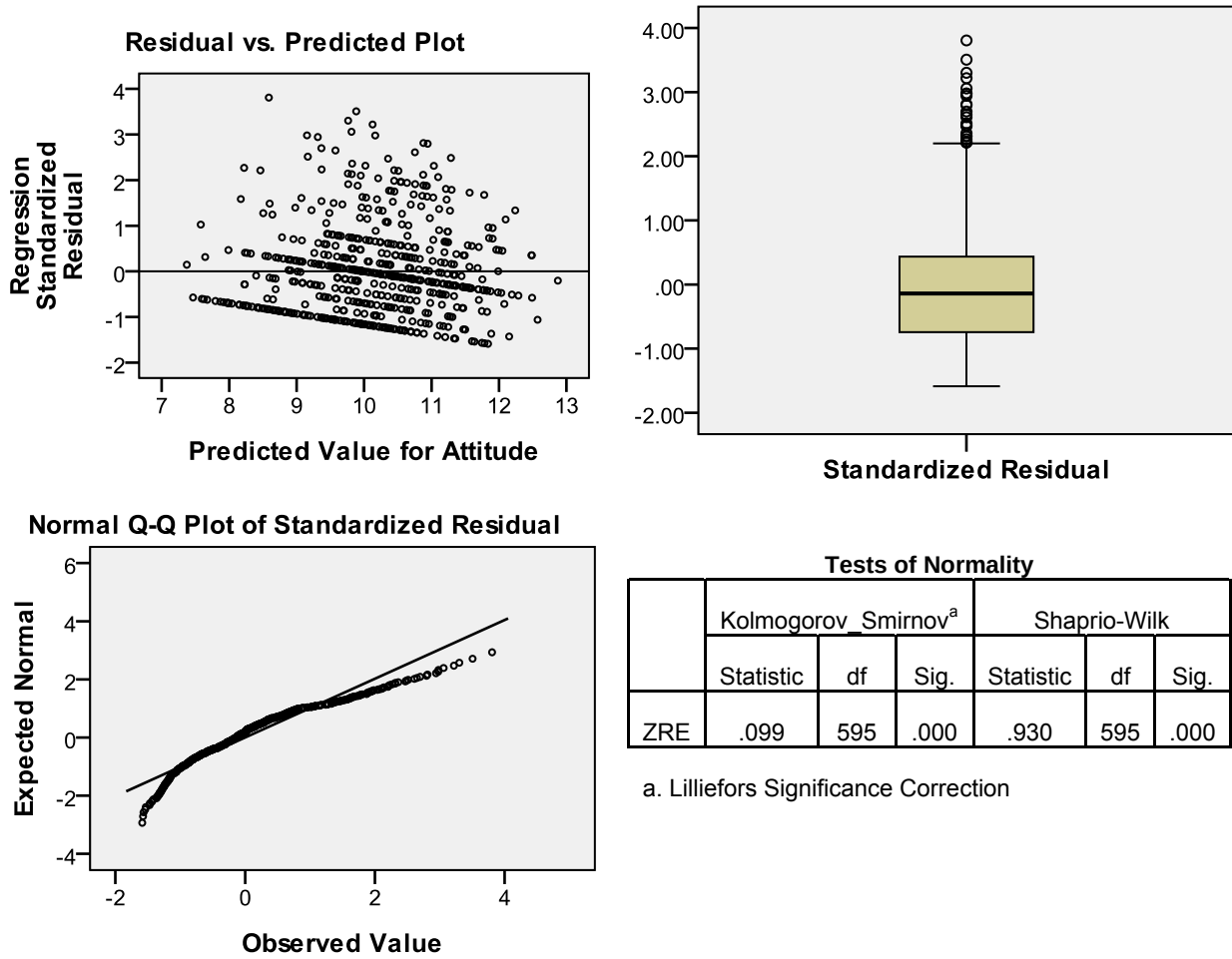


Figure B16. Assumption Checking for Table 19. Linear Regression Analysis with Religious Identification as an Independent Variable and Attitude as a Dependent Variable (n=595)



Summary of Regression Diagnostics

The results of assumption testing reported in Figures B10 through B16 on pages 98-104 concern 12 independent variables and 6 dependent variables. The independent variables include 7 categorical variables: “religious,” “spiritual,” “female,” “African American,” “other ethnicity,” “self-helper,” and “drug/alcohol problem”; and 5 continuous variables: “self-esteem,” “age,” “education in years,” “depression,” and “psychiatric disability.” The dependent variables are all continuous, and include “self-esteem,” “personal empowerment,” “independent social integration,” “network size,” “social distance,” and “attitude.”

Table B1 on page 97 displays the values of tolerance and VIF for each of the 12 independent variables, with the tolerance ranging from .532 to .958, and the VIF from 1.044 to 1.881. These values suggest that there is no serious threat of multicollinearity.

The residual vs. predicted plots in Figures B10-B12, B15, and B16 indicate that both the assumptions of linearity and of constant variance hold approximately for these five linear regression models, each with a dependent variable, “self-esteem,” “personal empowerment,” “independent social integration,” “social distance,” and “attitude,” respectively. Additionally, the rest of the diagnostic plots and tests suggest that the first three models (i.e., models with “self-esteem,” “personal empowerment,” and “independent social integration”) satisfy the normality assumption as well, at least approximately for the first model. As for the last two models (i.e., models with “social distance” and “attitude”), the distributions of the residuals show an apparent departure from normality with a number of outliers. Yet the sufficiently large sample size allows me to apply the central limit theorem and say that the sampling distributions of the estimates of the regression coefficients can be assumed approximately normal and the t distribution is useful for tests and confidence intervals (Lahiff, 2005).

On the other hand, the residual vs. predicted plot in Figure B13 exhibits the shape of a right-opening megaphone, suggesting that the variance is not constant for this linear regression model. In fact, the dependent variable of this model, “network size,” is a count variable with a right-skewed distribution. Thus, the data was re-fitted using Poisson/negative binomial regression models (see Figure B14), which are suited for modeling count response data (Hilbe, 2007). Between the Poisson and negative binomial models, the latter model was chosen because the 95 percent confidence interval of the dispersion parameter does not include zero, implying that the conditional variance of the dependent variable is greater than the conditional mean (over-dispersion). The plot of negative binomial regression residual analysis shows that most of the standardized deviance residuals are within ± 2.0 and more or less evenly distributed about the $y=0$ line, which indicates that the data roughly satisfies the distributional assumption of the negative binomial model.

It is worth noting that outliers of each model were examined to determine whether they were data entry errors or some other unusual cases. All data points were found to be within the potential range of each measure (see Table 2), and no single or small group of data points was identified as uniquely influential by computing a standardized DFBETA (i.e., a regression subcommand in SPSS) value for each observation for each independent variable. DFBETA can tell how each regression coefficient is changed by including a single observation (UCLA Academic Technology Services, Statistical Consulting Group, 2012c). Removing outliers from

analysis has both advantages and disadvantages. It can remove the influence of unusual observations, and makes the statistics more representative of the sample in some situations (Agresti & Finlay, 1999), yet these observations are part of the dataset. Since I did not find any particular reasons why some of the observations in the present dataset had much higher or lower values than others, I decided to keep all of them. The sample I used for the present study is a convenience sample, which will largely limit the study's generalizability.

Before closing the diagnostic summary, I will briefly discuss the logistic regression models in Tables 12 and 17 on pages 47 and 53 (no graphical diagnostic summaries are available for them). Each of these two models consists of the above 12 independent variables and one binary dependent variable, "extra-organizational empowerment" or "patient network." As mentioned in the Methods (Chapter 3), the variable "extra-organizational empowerment" had been recoded as binary because the original continuous variable had a non-normal distribution. The linear regression model based on the original variable did not meet the assumption of constant variance, requiring some modification. Finally, the previous paragraph concerning the outliers, influential points, and sampling method applies to these two logistic regressions as well.