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Housing and Social Support Among Individuals with Mental Illness

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Graduate Program in Epidemiology and Biostatistics
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Abstract

Background: Housing and social support are related social determinants, but studies often focus on independent effects on health. Objectives: Evaluate social support measures and the relationship between housing and support in individuals with mental illness. Methods: Data was obtained from adults in Ontario who had a mental illness history. The Personal Resource Questionnaire, a perceived social support measure, was evaluated using factor analysis. Multiple linear regression and non-parametric tests assessed the relationship between housing and support. Results: Two factors emerged – Perceived General Support and Perceived Intimate Support. Compared to homeless individuals, significantly higher support scores were found for individuals in family’s home or group homes/ community care homes/ single rooms, but not own apartment or house, after controlling for demographic factors. Housing change type over time was not associated with support scores. Conclusion: Examining relationships between determinants is crucial to better understand and improve supports for individuals with mental illness.

Keywords

Mental illness, housing, type of residence, housing stability, perceived social support, general support, intimate support, factor analysis, social support measures

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Ultimately, may all glory go to God.

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List of Abbreviations

ACT	Assertive community treatment
CCHS	Canadian Community Health Survey
CHPS	Consumer Housing Preference Survey
CURA	Community-University Research Alliance: Poverty and Social Inclusion program
DALY	Disability-adjusted life year
FA	Factor analysis
MS	Multiple sclerosis
MSPSS	Multidimensional Scale of Perceived Social Support
NPHS	National Population Health Survey
PRQ	Personal Resource Questionnaire
PRQ2000	Personal Resource Questionnaire 2000 version
PRQ85	Personal Resource Questionnaire 85 version
SMI	Severe mental illness
UDHR	Universal Declaration of Human Rights
YLD	Year lived with disability

Chapter 1

1 Introduction

1.1 Introduction

Mental illnesses are prevalent in Canada and around the world (Kessler et al., 2009; Pearson, Janz, & Ali, 2013). Not only does mental illness affect an individual's well-being and quality of life (Government of Canada, 2006), it also impacts caregivers such as family members and friends (Government of Canada, 2006). Furthermore, mental illnesses affect society overall through significant productivity losses and massive health care costs (Government of Canada, 2006). Accordingly, improving the mental health of individuals with mental illness is beneficial for their quality of life, and advantageous to society as a whole.

Improvements to social determinants of health positively affect the health of individuals. However, for those with mental illness, there are barriers to some of these determinants, such as housing (Mikkonen & Raphael, 2010). Since the deinstitutionalization of individuals with mental illness, housing for this population has transitioned to more independent housing models, where supports are situated in the community (Parkinson, Nelson, & Horgan, 1999). However, a lack of affordable housing coupled with no subsequent increase in community supports has led to various barriers to obtaining adequate housing (Gaetz, 2010; Sealy & Whitehead, 2004).

Another important social determinant of health is social support from people such as family and friends (Wilkinson & Marmot, 2003). However, individuals with mental illness have smaller social networks than the general population (C. I. Cohen & Sokolovsky, 1978; Macdonald, Hayes, & Baglioni Jr., 2000; Segal, Silverman, & Temkin, 1997). While social networks and social support are not the same, as social network refers to all social ties regardless of whether or not support is provided, smaller social networks may limit the number of available sources of support (Umberson & Montez, 2010). Furthermore, an individual's mental illnesses may affect how they perceive social support from others (Henderson, 1984; Henderson & Moran, 1983).

While many studies have examined the effects of both housing and social support on overall health independently (e.g. S. Cohen, 2004; Frankish, Hwang, & Quantz, 2005; Uchino, 2009), less research has been conducted on the relationship between these two determinants. Many studies have explored the relationship between housing and social networks, rather than social support specifically. Other studies focus on formal supports, such as the aforementioned community supports. Finally, while the relationship between housing and social support is bi-directional, a majority of the research has concentrated on the possible effect of social support on housing rather than the effect of housing on social support.

Considering the substantial amount of research demonstrating the positive effects of housing and social support on health, it would be beneficial to explore how these social determinants are related to each other because improvements in one determinant may improve the other, ultimately contributing to better health outcomes. Moreover, understanding the relationship between housing and social support in those with mental illness specifically is important as it may differ from the general population. Studying this relationship will further our understanding of the needs of this population and improve policies to better provide for them.

There are two main purposes for the present thesis. The first purpose is to understand how the Personal Resource Questionnaire (PRQ) (Brandt & Weinert, 1981), a social support instrument, performs in a sample of individuals with mental illness and whether it differs from other populations. The second purpose is to explore the relationship between housing, including type of residence, preferred residence, and housing stability, and perceived social support.

This thesis is written in the integrated manuscript style. Chapter 2 is a literature review of the current research on mental illness, housing, and social support. Chapter 3 outlines the detailed objectives for this thesis. Chapter 4 is the first study of this thesis, which applies factor analysis to the PRQ, using a sample of individuals with mental illness. The second study is presented in Chapter 5, which contains the main analyses, where the relationship between housing and perceived social support is explored. Finally, Chapter 6 concludes

the thesis with an overall discussion of findings. Please note that some duplication among chapters will be inevitable, given the style of this thesis.

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Chapter 2

2 Literature Review

Housing and social support are both social determinants of health (Mikkonen & Raphael, 2010; Wilkinson & Marmot, 2003). While each is an individually important contributor to both physical health and mental health, these two determinants are also related to one another. For individuals with mental illness, housing and social support are among the key factors for improving mental health (Government of Canada, 2006). This chapter will review the current literature on mental illness, housing, social support, and the relationship between housing and social support.

2.1 Mental Illness

The prevalence of mental illness in Canada is approximately 20% in any given year (Mental Health Commission of Canada, 2013). Based on the results of the 2012 Canadian Community Health Survey (CCHS), 10% of Canadians had at least one of six common mental illnesses (major depressive episode, bipolar disorder, and generalized anxiety disorder) or substance use disorders (alcohol, cannabis, and other drugs) in 2012 (Pearson, Janz, & Ali, 2013). However, the actual prevalence of mental and substance use disorders may be higher because the CCHS collected data on only six disorders and only for Canadians aged 15 years and older (Pearson et al., 2013). In fact, it was estimated that 21.2% of all years lived with disability (YLDs) and 7.1% of all disability-adjusted life years (DALYs) from diseases and injuries are attributable to mental and substance use disorders worldwide (Vos et al., 2015). Others have commented that even these proportions may be underestimating the true burden of mental illness (Vigo, Thornicroft, & Atun, 2016).

There are various types of mental illnesses, and within each type, there are different levels of severity (Government of Canada, 2006; Public Health Agency of Canada (Surveillance and Epidemiology Division), CCDSS Mental Illness Working Group, CCDSS Science Committee, & CCDSS Technical Working Group, 2015). Some of the common mental illnesses include mood disorders of which depression is most prevalent

(Pearson et al., 2013), schizophrenia, anxiety disorders, personality disorders, and substance use disorders of which alcohol abuse or dependence is the most prevalent (Pearson et al., 2013). While mental illnesses may affect anyone, there are differences in prevalence among groups of people (Government of Canada, 2006). Generally, the majority of mental illnesses and substance use disorders are most prevalent in individuals within the 15-24 year old age group and least prevalent in the oldest age group (Pearson et al., 2013). Depression and anxiety are more prevalent in females, while substance use disorders are more common among males (Pearson et al., 2013). Finally, there appear to be associations between mental illness and both poverty and unemployment (Dewa & McDaid, 2011; Government of Canada, 2006).

Individuals who have a substance use disorder are more likely to have other mental illnesses as well, and vice versa (Rush et al., 2008). Additionally, physical health comorbidities are commonly observed in individuals with mental illness (Government of Canada, 2006). The prevalence of comorbidities in individuals with mental illnesses is more common with certain mental illnesses, such as depression or anxiety (Pattern et al., 2005; Public Health Agency of Canada (Surveillance and Epidemiology Division) et al., 2015).

Mental illness affects many aspects of an individual's life (Government of Canada, 2006). In addition to accessing health care services to manage their mental health, individuals with mental illness may require supports to meet financial, social, and housing needs. They may face multiple barriers which prevent them from seeking treatment and obtaining these supports.

In addition to the major impact of mental illness on their lives, it also has a significant effect on others such as family members, and on society overall. For family members, many costs may be involved, including treatment costs and time costs to support the individual (Government of Canada, 2006). Additionally, caregivers may themselves incur costs for health care services necessitated as a result of caregiving (Mental Health Commission of Canada, 2013). Furthermore, for society, productivity losses and health care costs severely impact the economy (Government of Canada, 2006). Overall, the cost

of mental illness worldwide was estimated to be approximately \$2.5 trillion (USD) in 2010, and is expected to grow to \$6.0 trillion (USD) by 2030 (Bloom et al., 2011).

Over recent years, positive media coverage related to mental illness in Canada has increased and messages relating mental illness to violence and stigmatization have decreased (Whitley & Wang, 2017a, 2017b). Additionally, there have been more open discussions about mental illness, promoted by initiatives such as the Bell Canada Let's Talk campaign (Bell Let's Talk, 2015). However, to the extent that some stigma and discrimination towards individuals with mental illness persists, it will continue to affect the willingness of individuals to seek supports (Government of Canada, 2006).

2.2 Housing

2.2.1 History of Housing for Individuals with Mental Illness in Canada

Following the policy of deinstitutionalization of individuals with mental illness from psychiatric hospitals to community living in Canada during the 1960s and 1970s, there have been three main approaches to housing these individuals: custodial housing, supportive housing, and supported housing (Nelson, Hall, & Forchuk, 2003; Parkinson, Nelson, & Horgan, 1999). Essentially, housing for these individuals has transitioned from dependence on staff to more independence, choice and control over housing, smaller group living arrangements, and treating individuals as tenants instead of as patients (Parkinson et al., 1999). Overall, the focus has been on integrating individuals back into the community. However, Canada soon faced a lack of affordable housing (Gaetz, 2010). In addition, as more individuals with mental illness moved out of hospitals and into the community, there was no subsequent increase in support services within the community for these individuals, which intensified the struggle to properly provide for them (Sealy & Whitehead, 2004).

Recently, there has been another shift in the approach to provide housing for individuals with mental illness. In 2008, the At Home/ Chez Soi project was initiated in Canada, which focused on Housing First, where the priority was to provide housing for individuals before focusing on other aspects of their lives (Gaetz, DeJ, Richter, &

Redman, 2016; Goering et al., 2014; Tsemberis & Eisenberg, 2000). Previously, individuals were required to show a certain level of improvement in their psychiatric conditions in order to obtain housing. Housing First was innovative because this precondition was eliminated, while remaining similar to supported housing in that individuals live within the community and access supports that are not linked to their housing (Gaetz et al., 2016). Results from the At Home/ Chez Soi project are promising, as the Housing First model has been found to help individuals overcome homelessness and remain stably housed (Aubry, Nelson, & Tsemberis, 2015). Specifically in Calgary, one of the key learnings from the project was that social supports were lacking in homeless youth, so the support services that accompanied the Housing First strategy were beneficial for youth to gain independence through developing skills and learning where to access supports (Gaetz, Scott, & Gulliver, 2013). Overall, housing outcomes from the At Home/ Chez Soi project are consistent with previous findings from Housing First programs in the United States, where a greater proportion of individuals in such programs remain housed and out of homelessness compared to individuals in treatment-focused programs (Tsemberis & Eisenberg, 2000; Tsemberis, Moran, Shinn, Asmussen, & Shern, 2003).

2.2.2 Housing and Housing Stability

Housing is a basic need and human right, as recognized in Article 25 of the Universal Declaration of Human Rights (UDHR) (United Nations, 1948). It is also one of the key factors contributing to good health for individuals with mental illness, providing them the stability to focus on other areas of life (Trainor, Pomeroy, & Pape, 1999). Individuals residing in stable housing report better well-being than those who are homeless (Johnstone, Parsell, Jetten, Dingle, & Walter, 2016). Meanwhile, a lack of housing is associated with poor outcomes in multiple aspects of life, including obtaining education and employment, and accessing health services. Unfortunately, approximately 235,000 Canadians experience homelessness each year (Gaetz et al., 2016). Moreover, homeless individuals are more likely to have a mental illness than not (Koegel, Burnam, & Baumohl, 1996). In a study of individuals who were either homeless for the first time or have had previous episodes of homelessness, 67% had a mental illness diagnosis in the

past (Goering, Tolomiczenko, Sheldon, Boydell, & Wasylenki, 2002). Furthermore, mental health can continue deteriorating as individuals remain homeless (Frankish, Hwang, & Quantz, 2005). Conversely, more individuals with severe mental illnesses are homeless compared to the general population (Levine, 1984). However, Spicer, Smith, Conroy, Flatau, and Burns (2015) found that in their study of homeless men, there was no difference in the prevalence of mental illness in those who remained homeless and those who became housed at 12-month follow-up.

Besides securing housing, it is important for individuals to maintain their housing and have housing stability. Simply becoming housed does not solve other related problems, such as lack of supports (Tsai, Mares, & Rosenheck, 2011). The availability of other supports is important for individuals with mental illness to maintain the housing that they have (Forchuk, Ward-Griffin, Csiernik, & Turner, 2006). Peace and Kell (2001) suggested a “sustainability framework” which identified four needs for housing stability: a supportive regulatory environment, material resources, service resources, and social resources.

In the research literature, housing stability has been conceptualized and measured in many different ways (Frederick, Chwalek, Hughes, Karabanow, & Kidd, 2014). There are various limitations to some of these methods, such as simply comparing individuals who are housed to those who are homeless (Frederick et al., 2014).

2.2.3 Types of Residences

There are various types of residences where individuals with mental illness live, ranging from group homes to living independently in a house or an apartment. These different types of residences would ideally match the support needs of each individual, which in turn would reflect multiple considerations such as the severity of mental illness; however, there may be barriers that prevent individuals from obtaining a good match, such as financial capacity (Forchuk, Nelson, & Hall, 2006; Nelson et al., 2003). Furthermore, the type of residence an individual prefers may conflict with where their care providers believe they should live (Piat et al., 2008).

2.2.4 Housing Preferences

Many studies have reported that the majority of individuals with mental illness prefer to live in their own house or apartment (e.g., Nelson, Hall, & Forchuk, 2003). Furthermore, regardless of current living arrangements, individuals with mental illness preferred to live alone (Nelson et al., 2003). Individuals living in shelters have much lower satisfaction with their housing than those living in other types of residences (Nelson et al., 2003). Additionally, individuals who were living in their preferred residence had higher satisfaction in their housing than those who were not (Nelson et al., 2003). However, although individuals prefer to live alone, they also prefer to have staff support available when they need it (Forchuk, Nelson, et al., 2006).

2.2.5 Barriers to Housing

Individuals with mental illness may face several barriers to obtaining housing, maintaining housing stability, and living where they would prefer to live. For example, individuals who need to be temporarily hospitalized for their mental illness often lose their current residence in the process and have no housing to return to following discharge (Forchuk, Ward-Griffin, et al., 2006). Some other barriers may include experiencing stigma and discrimination from landlords, having to choose between access to necessary supports and independent living, facing a lack of affordable housing, and experiencing problems with accessing services (Forchuk, Nelson, et al., 2006). All of these issues are important to consider because in addition to housing stability, the quality of housing affects individuals with mental illness. In fact, improvements in mental health are more closely related to housing quality than to housing stability alone (Aubry, Duhoux, Klodawsky, Ecker, & Hay, 2016).

2.3 Social Support

The subject area of social support has been widely researched. Many studies have shown the positive relationship between social support and both physical and mental health outcomes (Berkman, 1995; Sheldon Cohen, 2004; Sheldon Cohen & Wills, 1985; Cruwys et al., 2013; Taylor, 2007; Toro, Tulloch, & Ouellette, 2008; Uchino, 2009). Specifically in the area of mental health, social support has been found to be associated with

decreased psychiatric symptoms and increased coping abilities (Miller, Ingham, & Davidson, 1976; Smart & Walsh, 1993; Unger et al., 1998). Many attempts have been made to both conceptualize and operationalize social support (Thoits, 1982). Due to the multidimensionality of social support, it is understandable that there is an array of definitions, as well as accompanying issues (Thoits, 1982). Many different aspects of social support have been identified, such as support functions, support structure, sources of support, and perceived vs. received support (Gottlieb & Bergen, 2010; Thoits, 1982). The focus of this review will be on sources of support and perceived support, with summaries of the other aspects of support. We will exclude reviewing the various social support theories relating to health such as the buffering hypothesis and main effects hypothesis, which have been thoroughly examined and explained elsewhere (refer to Lakey & Cohen, 2000 for a detailed review).

Overall, some general findings relating demographic characteristics and social support have been found in the literature. Women tend to experience more support than men, married more than unmarried, and those of higher social status more than those of lower social status (Turner & Marino, 1994). Meanwhile, studies exploring differences in social support in relation to age have yielded less consistent findings (Turner & Marino, 1994).

2.3.1 Support Functions

Researchers have defined the different functions of social support. There are a few classifications or groupings that have been commonly used. One of the most popular classifications involves four functions of social support: emotional, instrumental, appraisal, and informational support (House, 1981). Emotional support refers to the provision of caring and sympathy, instrumental support refers to the provision of fulfilling tangible needs, appraisal support refers to the provision of assistance in making decisions, and informational support refers to the provision of information to meet specific needs (Berkman & Krishna, 2014; Heaney & Israel, 2008). Later, this classification was reduced to three functions: emotional, informational, and instrumental support (House & Kahn, 1985). Prior to this classification, Weiss (1969, 1974) identified another classification involving six functions of social support: attachment, social

integration, reassurance of worth, reliable alliance, guidance, and opportunity for nurturance.

2.3.2 Support Structure

Support structure often relates to an individual's social network, rather than social support specifically. Support structure refers to quantitative measures of support such as the size and density of one's social network, as well as the contact frequency with members within one's social network (Thoits, 1982). Social networks include all social ties that an individual may have (Gottlieb & Bergen, 2010). It is important to note that not all social relationships provide support. In fact, some relationships may provide little to no support (Abbey, Abramis, & Caplan, 1985; Walen & Lachman, 2000).

Although social networks are not the same as social support, social networks provide potential opportunities for social support (Umberson & Montez, 2010). In a study of individuals with mental illness residing in group homes, supportive apartments, and board-and-care homes, social networks were found to be sources of support (Hall, Nelson, Squire, & Walsh, 1992). Furthermore, various support structure aspects, such as network size and density, correlate with perceived social support (C. I. Cohen, Ramirez, Teresi, Gallagher, & Sokolovsky, 1997). However, individuals with mental illness have smaller social networks than the general population (C. I. Cohen & Sokolovsky, 1978; Froland, Brodsky, Olson, & Stewart, 2000; Holmes-Eber & Riger, 1990; Macdonald, Hayes, & Baglioni Jr., 2000; Segal, Silverman, & Temkin, 1997), which may suggest fewer opportunities for social support.

2.3.3 Sources of Support

Researchers have also found differences in the amount and effects of social support, based on the provider of that support. Examples of sources of support include significant others, family members, friends, co-workers, and members of community or religious groups (Thoits, 2011). In a study of social support and social conflict in undergraduate students, three sources of support were identified: overall support from everyone in an individual's life, support from some one person, and support from the person closest to the individual. More social support was reported to be received from the person closest to

the individual than the other two sources of support (Abbey et al., 1985). Hall et al. (1992) found more support was provided to individuals with mental illness from their friends compared to family members and professional sources of support. Support from those who are more intimately related to an individual, such as a spouse, also has a greater effect on decreasing distress and depressive symptoms (Lin, Ye, & Ensel, 1999; Yang, 2006). For example, in older adults with depression, support from spouses was found to have the greatest effect on depressive symptoms, followed by support from friends, and then adult children (Dean, Kolody, & Wood, 1990).

Different sources of support also provide different types of support, or different support functions. Thoits (2011) identified two main groups of support: primary group members such as family and friends, and secondary group members such as people from work or religious organizations. She found that primary group members who did not have a similar past experience sympathized with the individual and provided instrumental support, while secondary group members who did have a similar past experience empathized with the individual and provided informational support. For the population of individuals with mental illness, peer support workers are an example of secondary group members who have lived experience of mental illness and can closely relate to other individuals with mental illness (Mead, Hilton, & Curtis, 2001). Various researchers have found that closer ties often provide emotional support, whereas more distal ties provide informational or instrumental support (Granovetter, 1973; Wuthnow, 2002). For example, in a study of individuals with mental illness who lived independently, Townley, Miller, and Kloos (2013) found that distal sources of support from community members mainly provided instrumental support. However, in general, the more intimate the relationship, the more an individual perceives all support functions from that source of support (Gottlieb & Bergen, 2010).

2.3.4 Perceived vs. Received Support

A distinction has been clearly made between perceived and received support, also referred to as qualitative and quantitative dimensions of support (Thoits, 1982). Perceived support refers to the support that an individual believes to be available, while received support refers to actual support that an individual has experienced (Gottlieb & Bergen,

2010). For example, if an individual had previously lived on a friend's couch, he/ she may perceive that if he/ she became homeless again, he/ she may be able to stay at that friend's place. However, this differs from the individual becoming homeless again, and that friend actually inviting him/ her to stay. It is possible that individuals do not perceive acts of social support as such, even though they were meant to be supportive (Wortman & Lehman, 1985). Perceived support has been found to have a greater effect on health, such as fewer depressive symptoms, than received support (Bolger & Amarel, 2007; Cohen & Wills, 1985; House, 1981).

2.3.5 Measurement of Social Support

Because of the many conceptual definitions of social support, multiple measures have been created to analyze the different aspects of social support. There are measures that target the various support functions and others that collect data on social support from various sources (Gottlieb & Bergen, 2010). Some measures are designed to assess social support in specific demographic groups, such as particular age groups or individuals who share a common physical or mental illness (Beels, Gutwirth, Berkeley, & Struening, 1984; Gottlieb & Bergen, 2010).

There are many more instruments designed to measure perceived support than received support. One of the reasons for this imbalance is that received support is dependent on specific interactions and may reflect the individual's particular needs; therefore, received support measures may be more difficult to design and use (Gottlieb & Bergen, 2010). An example of an instrument designed to measure perceived support is the Personal Resource Questionnaire (PRQ) (Brandt & Weinert, 1981). The second part of the PRQ85 version of the instrument (Weinert, 1987) asks respondents to rank statements using 7-point Likert-type responses ranging from "strongly agree" to "strongly disagree". The total score of this scale measures overall perceived support, while the subscales were designed to measure five functions of support, based on the classifications by Weiss (1969, 1974).

As previously mentioned, both the social network structure and social support of individuals with mental illness differs from that of the general population in multiple

ways, from the way support is perceived to the sources of support. Accordingly, social support measures designed for the general population may not properly represent the experience of social support of individuals with mental illness (Beels et al., 1984).

2.4 Housing and Social Support

Both housing and social support have significant positive effects on health. However, not only are housing and social support beneficial for health, they also affect each other bi-directionally. Housing may affect social support, as living in certain types of residences may allow for easier access to social support and housing stability may allow for more stability in social support. On the other hand, social support may affect housing, as sources of social support may provide information on possible housing opportunities, or friends and family may be able to provide a temporary place to stay if needed. In a study of single homeless individuals staying at a shelter, Aubry, Duhoux, Klodawsky, Ecker, and Hay (2016) found an association between having a large social network and becoming housed, suggesting that within a larger social network, there may be more support resources available. In fact, Johnstone et al. (2016) found that while living in stable housing was related to better well-being, the level of perceived social support had an additional positive effect on well-being when controlling for housing. If either one of housing or social support can be improved, there may be improvements in the other social determinant of health as well.

2.4.1 Effects of Social Support on Housing

The positive effect of social support on housing and housing stability has been shown in various studies. Social support has been mentioned as being part of the process of gaining stability, including housing stability (Forchuk, Ward-Griffin, et al., 2006). In this process, relationships with family and friends were found to be important and contributed to the health of individuals (Forchuk, Ward-Griffin, et al., 2006). Using structural equation modelling, Calsyn & Winter (2002) found that in a population of homeless individuals with severe mental illness, social support had a causal effect on housing stability. In youth, social support from family members led to stable housing (Nebbitt, House, Thompson, & Pollio, 2007; Wenzel et al., 2012). Specifically, social support affects

duration of homelessness, becoming housed, and maintaining housing. Caton et al. (2005) found that individuals with greater support from family experienced shorter durations of homelessness. On the other hand, some social networks are associated with increased risky sexual behaviour, substance abuse, or other activities that could prolong homelessness (Mayock, Corr, & O'Sullivan, 2011; Mayock, O'Sullivan, & Corr, 2011). Zlotnick, Tam, and Robertson (2003) found that support from family and friends was linked to becoming housed. Perceived social support has been found to be a strong predictor of remaining housed two years later for homeless women (C. I. Cohen et al., 1997), and being housed following homelessness (MacKnee & Mervyn, 2002).

2.4.2 Effects of Housing on Social Support

Individuals who are homeless have smaller social networks than those who are housed (Leticq, Anderson, & Koblinsky, 1998; Passero, Zax, & Zozus, 1991). In fact, while some studies report no difference in network size, others report that individuals who both have a mental illness and are homeless have even smaller networks (Solarz & Bogat, 1990). As previously mentioned, smaller networks may affect the opportunities for social support to be perceived or experienced.

Some studies have shown differences in social support among individuals with mental illness living in different types of residences. Those living in group homes or supportive apartments receive and provide more social support compared to those living in board-and-care homes (Hall et al., 1992). In a study from Israel comparing individuals with mental illness who were living in group homes and those in supportive community housing (similar to supported housing in Canada), those living in group homes had greater perceived social support (Weiner et al., 2010). Furthermore, housing stability may affect social support as housing stability allows individuals to use their homes as a place to host guests and develop social relationships over time, which allow for support to be provided (Browne & Courtney, 2005).

However, while housing stability may seem important for social support, the transition from homelessness to housing may affect current social networks (Solarz & Bogat, 1990), such as strong relationships with other homeless individuals (Carton, Young, &

Kelly, 2010; Pollio, 1999). Housing policies may also play a role in breaking apart existing social networks, which may ultimately lead to poor health (Berkman & Krishna, 2014).

2.5 Knowledge Gaps

The current literature review suggests areas in need of additional research. First, comparatively more studies seem to contrast the social networks of individuals in different types of residences, rather than social support specifically. While measuring social networks may provide insight into all the social ties an individual has, it may be beneficial to further investigate the relationship between housing and social support. Another observation is that while the term “social support” often refers to informal supports from sources such as family members and friends, much of the research relating housing and support is focused on formal sources of support, such as support services and professional support from health care providers and social workers. While it is understandable why these formal supports are important to study in relation to housing, research suggests that access to various supports, including both formal and informal supports, is important for both obtaining and maintaining housing (Forchuk, Nelson, et al., 2006; Forchuk, Ward-Griffin, et al., 2006). Finally, many studies have focused on the effect of social support on housing. While these studies have shown the benefits of social support on obtaining and maintaining stable housing, fewer studies have looked at how housing and housing stability may, in turn, affect the perceived social support of individuals with mental illness.

The overall purpose of this thesis is to address the gaps highlighted above by examining the concept of perceived informal social support in individuals with mental illness and exploring the relationship between housing, specifically type of residence, preferred residence, and housing stability, and perceived social support. The detailed purpose and objectives of this thesis are outlined in Chapter 3.

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Chapter 3

3 Objectives

The following chapter will outline the objectives of this thesis which address knowledge gaps mentioned in Chapter 2. Because there are two overall purposes for the current thesis, the objectives have been split into two parts accordingly.

3.1 Objectives for the Evaluation of the Personal Resource Questionnaire (PRQ)

The first purpose of this thesis is to describe the factor structure of the Personal Resource Questionnaire (PRQ) (Brandt & Weinert, 1981), a perceived social support measure, in a sample of individuals with mental illness. Two versions of the PRQ, the PRQ85 (Weinert, 1987) and the PRQ2000 (Weinert, 2003), will be evaluated. The specific objectives are to:

- 1) Apply and examine the five-factor structure of the PRQ85 in a sample of individuals with mental illness.
- 2) Compare the factor solution of the PRQ2000 using the sample of individuals with mental illness to that reported from the samples that were used by the developer of the PRQ2000.

These objectives will be fulfilled in Chapter 4.

3.2 Objectives for Exploring the Relationship between Housing and Social Support

The second purpose of this thesis is to explore the relationship between housing and perceived social support in individuals with mental illness. The specific objectives are to compare the perceived general and intimate support of those:

- 1) Living in different types of residences.
- 2) Who are and are not living in their preferred residence.
- 3) Who have and do not have stable housing.

These objectives will be realized in Chapter 5.

3.3 Development of Objectives

Prior to addressing the objectives for the second purpose of this thesis in Chapter 5, factor analysis on the PRQ2000 was conducted in Chapter 4 to fulfill one of the objectives for the first purpose of this thesis. After determining the factor solution of the PRQ2000 in the sample of individuals with mental illness, the factors were applied to the main analyses relating housing and perceived social support in Chapter 5.

3.4 References

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Chapter 4 ¹

4 Factor Analysis on the Personal Resource Questionnaire (PRQ) Using a Psychiatric Sample

Whenever a scale is used in a new population or setting, it is important to examine its validity and reliability (DeVellis, 2006; Fullerton, 1993). One of the instruments used to measure perceived social support, the Personal Resource Questionnaire (PRQ) (Brandt & Weinert, 1981), has been used and evaluated in various samples of the general population and in individuals with specific diseases or conditions. However, to our knowledge, the PRQ has not been evaluated in individuals with mental illness. Thus, we will evaluate the psychometric properties of the PRQ in a sample of individuals with mental illness.

4.1 Introduction

The relevant literature employs numerous conceptual definitions of social support that often lack precision and specificity (Barrera, 1986; Thoits, 1982). Such conceptual definitions lead to the poor operationalization of social support when developing measures, affecting the validity and reliability of these measures (Thoits, 1982).

4.1.1 Measurement of Social Support

Many scales have been developed to measure social support, reflecting the vast array of conceptual definitions for this term (Barrera, 1986; Thoits, 1982). Recently, Berkman and Krishna (2014) provided a list of measures of social relationships, including 24 social support measures. Multiple reviews have been conducted regarding some of these social support measures, comparing their usage and psychometric properties (Gottlieb & Bergen, 2010; Heitzmann & Kaplan, 1988; House & Kahn, 1985; Streeter & Franklin, 1992; Tardy, 1985).

While the large selection of measures allows for studies to be conducted on many different social support concepts, the large number of approaches is also problematic. In

¹ A version of this paper will be submitted to the Western Journal of Nursing Research.

fact, one of the three main criticisms in the area of social support identified by Barrera (1986) was the diversity in social support measurement. Different social support measures have been developed to target various aspects of social support, such as social ties and networks, perceived support, and received support (Barrera, 1986; Gottlieb & Bergen, 2010; Thoits, 1982). However, these measures are often only weakly correlated with one another, and thus it is important to specify what social support concept is being studied and find a measure that reflects that specific concept (Barrera, 1986).

4.1.2 The Personal Resource Questionnaire (PRQ)

The Community-University Research Alliance: Poverty and Social Inclusion program (CURA), which focused on poverty and social inclusion among individuals with mental illness, used the Personal Resource Questionnaire (PRQ) as a measure of perceived social support (for more detailed background information on the program, see Doherty, Wright, Forchuk, & Edwards, 2014). The PRQ was originally created by Brandt and Weinert (1981) and minor revisions were made, resulting in the PRQ85 (Weinert, 1987). The PRQ85 has two parts, the second of which is a scale that measures perceived social support. It contains 25 items to be rated using 7-point Likert-type responses, with responses ranging from “strongly agree” to “strongly disagree”. Total scores range from 25 to 175, with higher scores indicating higher levels of perceived social support (Weinert, 1987).

The 25 items were intended to represent five categories of social support based on research by Weiss (1969, 1974): assistance, intimacy, social integration, worth, and nurturance. However, subsequent factor analyses in multiple samples all resulted in three-factor solutions that did not support the five intended dimensions (Weinert, 1987, 1988, 2003). In response, another version of the instrument, the PRQ2000 (Weinert, 2003), was developed. Items that had weak loadings, were redundant, or were judged to not clearly reflect an intended type of social support were removed. This resulted in a reduction from 25 to 15 items, with total scores ranging from 15 to 105 (Weinert, 2003). Factor analysis conducted on the PRQ2000 in two sub-samples of couples with multiple sclerosis confirmed the three-factor solution. Because each factor contained a mixture of items from two or three of the social support categories identified by Weiss (1969, 1974), these

factors were not labeled and the developer of the instrument noted that future studies with appropriate sample sizes were needed to verify the three-factor solution (Weinert, 2003). Weinert (2003) acknowledged that the concept of social support is multi-dimensional in nature; however, she concluded that the total PRQ score should be used (Weinert, 2003).

While validity and reliability have been evaluated for the PRQ in multiple samples from the general population and couples with multiple sclerosis (Weinert, 1987, 2003), it is important to evaluate the validity and reliability of a measure whenever it is used in a new population, as the measure may function differently (DeVellis, 2006; Fullerton, 1993; Weinert, 2003). For example, items may be interpreted differently by different samples (Fullerton, 1993).

As social support is a multi-dimensional concept (Gottlieb & Bergen, 2010; Thoits, 1982), using an overall score might affect or complicate the interpretability of the results. Therefore, prior to using the PRQ as a measure of perceived social support to explore the relationship between housing and social support for the main analysis of this thesis, we decided to investigate the factor structure of the PRQ in the CURA sample.

Accordingly, the purpose of this study is to examine how the PRQ functions in a sample of individuals with mental illness by closely following the original researchers' factor analysis methods for both the PRQ85 and PRQ2000. Specifically, the objectives were to: 1) examine the five-factor structure of the PRQ85 in our sample; and 2) compare the factor solution of the PRQ2000 derived from our sample to that reported from the samples that the developer of the PRQ used.

4.2 Methods

4.2.1 Data Sources

Data was obtained from the CURA program, which was funded by the Social Sciences and Humanities Research Council of Canada from 2011 to 2016. This program used a mixed methods approach and employed the principles of participatory action research. Individual interviews were conducted annually for four years beginning in 2011. Ethics

approval, which includes permission for future secondary analyses, was obtained from Western University's Research Ethics Board (see Appendix C).

4.2.2 Study Sample

Individuals who were between 18 and 75 years old with at least a one-year history of any mental illness were recruited in London, Ontario and the surrounding area. Only individuals who could communicate in English sufficient to the level required for interviews, and provide informed consent were recruited. Recruitment was conducted using public advertisements, along with help from various community agencies. The sample was stratified by sex, employment status, and housing situation. Approximately a quarter of individuals who participated in the program lived in group homes, approximately a quarter were housed and employed, approximately a quarter were housed and unemployed, and the remaining participants were homeless; those in the latter situation were a slightly oversampled group to account for a higher chance of loss to follow-up. Within each of these four groups, half of the participants were male and half of them were female. The sample at Visit 1 was used for the present analyses.

4.2.3 Measures

As part of the individual interviews, sixteen quantitative instruments and one qualitative instrument were used to collect data regarding demographics, health, housing, employment, service use, community integration, social support, and stigma.

To measure perceived social support, the full original 25-item Part 2 of the PRQ85 instrument was administered. For the present analyses, both the PRQ85 and the PRQ2000 15-item subset versions of the instrument were used. Responses for both versions were scored consistently; the 7-point Likert-type items were scored from 7 points for "strongly agree" down to 1 point for "strongly disagree". For the PRQ85, five items were negatively worded, while the remaining items were positively worded. Therefore, prior to analyses these five items were reverse-coded so that 7 points were given to "strongly disagree" responses down to 1 point given to "strongly agree" responses. All five negatively worded items were excluded from the PRQ2000. The complete lists of items in the PRQ85 and PRQ2000 can be found in Appendix A.

4.2.4 Statistical Analyses

All statistical analyses were conducted using IBM SPSS v. 24 (IBM Corp., 2016). We attempted to conduct the present analyses using the same methods as Weinert (1987, 2003). We first performed factor analysis on the PRQ85 using the CURA sample. Using the maximum likelihood method of extraction and oblique rotation by the direct oblimin method, five factors were extracted.

Subsequently, we performed factor analysis on the PRQ2000 to examine the factor structure in the CURA sample. Because Weinert (2003) did not have a specific underlying theory for the three-factor PRQ2000 solution from their sample, we first extracted factors based on eigenvalues that were greater than one using the maximum likelihood method of extraction. Then, based on an examination of the eigenvalues, scree plot, and parallel analysis (O'Connor, 2000), a set number of factors were extracted for analysis and oblique rotation by the direct oblimin method was employed.

4.3 Results

Of the 380 participants at Visit 1, ten individuals for the PRQ85 and five individuals for the PRQ2000 were excluded for missing a response to any of the items, resulting in 370 participants and 375 participants for the analyses of the PRQ85 and PRQ2000 respectively.

4.3.1 Factor Analysis of PRQ85

Table 4.1 contains the means, standard deviations, and factor loadings of each of the items in the PRQ85. The five-factor structure explained 39.7% of the total variance. Based on the pattern matrix, three items loaded at a magnitude of greater than 0.30 on two factors. The items were included in the factor with the higher loading. As a result, Factor 1 contained ten items, Factor 2 contained three items, Factor 3 contained seven items, Factor 4 contained four items, and Factor 5 contained only one item.

Table 4.1. Means, standard deviations, and factor loadings of PRQ85 items (n=370).

Item	Mean (SD)	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
h. Others let me know that they enjoy working with me (job, committees, projects).	5.0 (1.6)	.75				
r. I know that others appreciate me as a person.	5.1 (1.5)	.59				
k. Among my group of friends we do favors for each other.	5.0 (1.7)	.59				
l. I have the opportunity to encourage others to develop their interests and skills.	4.9 (1.7)	.56				
q. I enjoy doing little “extra” things that make another person’s life more pleasant.	5.6 (1.3)	.46				
c. People let me know that I do well at my work (job, homemaking).	4.9 (1.7)	.46				
f. I spend time with others who have the same interests that I do.	4.9 (1.7)	.45				
t. I have people to share social events and fun activities with.	5.0 (1.7)	.43				
v. If I need advice there is someone who would assist me to work out a plan for dealing with the situation.	5.2 (1.6)	.40				
i. There are people who are available if I needed help over an extended period of time.	5.2 (1.7)	.33				
d. I can’t count on my relatives and friends to help me with problems.	4.0 (2.1)		.71			
m. My family lets me know that I am important for keeping the family running.	3.8 (2.1)		.49			
n. I have relatives or friends that will help me out even if I can’t pay them back.	4.4 (2.0)		.48			
a. There is someone I feel close to who makes me feel secure.	5.2 (1.8)				-.77	

Item	Mean (SD)	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
e. I have enough contact with the person who makes me feel special.	4.8 (2.0)			-.72		
s. There is someone who loves and cares about me.	5.8 (1.6)			-.62		
o. When I am upset there is someone I can be with who lets me be myself.	5.0 (1.8)			-.59		
w. I have a sense of being needed by another person.	5.0 (1.9)			-.41		.36
b. I belong to a group in which I feel important.	4.3 (2.0)	.33		-.34		
y. If I got sick, there is someone to give me advice about caring for myself.	5.3 (1.7)			-.31		
g. There is little opportunity in my life to be giving and caring to another person.	4.5 (2.0)				.56	.36
j. There is no one to talk about how I am feeling.	4.8 (1.9)				.45	
p. I feel no one has the same problem as I.	4.7 (2.1)				.43	
x. People think that I'm not as good a friend as I should be.	4.7 (1.8)				.36	
u. I am responsible for helping provide for another person's needs.	4.3 (2.2)					.49

Only included factor loadings $\geq .30$.

Permission to use the PRQ85 instrument (Weinert, 1987) was obtained through personal correspondence for the CURA program and may also be accessed from Fain (2017).

Means, standard deviations, and measures of reliability for the total PRQ85 score and the five factors are presented in Table 4.2. The Cronbach alpha for the total PRQ85 score was .88. The alphas for Factors 1 and 3 were both above .80, while the alphas for Factors 2 and 4 were .56 and .53 respectively.

Table 4.2. Means, standard deviations, and internal consistency using Cronbach's alpha for Total PRQ85 Score and factors (n=370).

Scales	Mean (SD)	Cronbach's alpha
Total PRQ85 Score (ranges from 25 to 175)	121.2 (22.9)	.88
Factor 1 (ranges from 10 to 70)	50.8 (10.3)	.83
Factor 2 (ranges from 3 to 21)	12.2 (4.6)	.56
Factor 3 (ranges from 7 to 49)	35.3 (8.9)	.82
Factor 4 (ranges from 4 to 28)	18.7 (5.0)	.53
Factor 5 (ranges from 1 to 7)	4.3 (2.2)	-*

*Only one item loaded onto Factor 5.

The pairwise correlations between each of the factors is presented in Table 4.3. The factor correlations ranged from magnitudes of .02 to .58. Inter-item correlations ranged from .12 to .49 for Factor 1, .30 to .35 for Factor 2, .26 to .54 for Factor 3, and .17 to .34 for Factor 4. Item-total correlations ranged from .16 to .62 for the total PRQ85 score, .36 to .64 for Factor 1, .38 to .41 for Factor 2, .43 to .62 for Factor 3, and .28 to .35 for Factor 4.

Table 4.3. Factor correlation matrix for PRQ85 (n=370).

Factor	1	2	3	4	5
1	1.00				
2	.32	1.00			
3	-.58	-.40	1.00		
4	.15	.14	-.20	1.00	
5	.06	-.05	-.11	.02	1.00

4.3.2 Factor Analysis of PRQ2000

Table 4.4 contains the means, standard deviations, and factor loadings of each of the items in the PRQ2000. Based on the eigenvalues, scree plot, and parallel analysis, a two-factor solution was chosen which explained 39.4% of the total variance. None of the items loaded at a magnitude of greater than 0.30 on both factors in the pattern matrix. Factor 1 contained ten items and Factor 2 contained the remaining five items.

Table 4.4. Means, standard deviations, and factor loadings of PRQ2000 items (n=375).

Item	Mean (SD)	Factor 1	Factor 2
6. Others let me know that they enjoy working with me (job, committees, projects).	5.0 (1.6)	.82	
8. Among my group of friends we do favors for each other.	5.0 (1.7)	.66	
12. I know that others appreciate me as a person.	5.1 (1.5)	.62	
5. I spend time with others who have the same interests that I do.	4.8 (1.8)	.57	
3. People let me know that I do well at my work (job, homemaking).	4.9 (1.7)	.56	
14. I have people to share social events and fun activities with.	5.0 (1.7)	.50	
9. I have the opportunity to encourage others to develop their interests and skills.	4.9 (1.7)	.50	
7. There are people who are available if I needed help over an extended period of time.	5.2 (1.7)	.39	
2. I belong to a group in which I feel important.	4.3 (2.0)	.38	
10. I have relatives or friends that will help me out even if I can't pay them back.	4.4 (2.0)	.33	
1. There is someone I feel close to who makes me feel secure.	5.2 (1.8)		-.76
13. There is someone who loves and cares about me.	5.8 (1.6)		-.70
4. I have enough contact with the person who makes me feel special.	4.8 (2.0)		-.68
11. When I am upset there is someone I can be with who lets me be myself.	5.0 (1.8)		-.52
15. I have a sense of being needed by another person.	5.0 (1.9)		-.43

Only included factor loadings $\geq .30$.

The PRQ2000 instrument was accessed from Weinert (2003).

Means, standard deviations, and measures of reliability for the total PRQ2000 score and the two factors are presented in Table 4.5. The Cronbach alphas for the total score and two factors ranged from .81 to .88. The correlation between the two factors was $r = -.61$. Inter-item correlations ranged from .18 to .47 for Factor 1 and .40 to .54 for Factor 2. Item-total correlations ranged from .21 to .45 for the total PRQ2000 score, .38 to .60 for Factor 1, and .54 to .63 for Factor 2.

Table 4.5. Means, standard deviations, and internal consistency using Cronbach's alpha for Total PRQ2000 Score and factors (n=375).

Scales	Mean (SD)	Cronbach's alpha
Total PRQ2000 Score (ranges from 15 to 105)	74.3 (16.1)	.88
Factor 1 (ranges from 10 to 70)	48.6 (11.0)	.83
Factor 2 (ranges from 5 to 35)	25.8 (6.8)	.81

4.4 Discussion

Factor analysis of the PRQ85 in the CURA sample did not correspond with the original five intended categories of social support. Factor analysis of the PRQ2000, the subset version of the PRQ85, in the CURA sample resulted in two distinct factors, which differed from the three-factor structure found by Weinert (2003) in a sample of couples with multiple sclerosis.

The extraction of five factors from the PRQ85 in the CURA sample did not correspond with the five intended categories of social support identified by Weiss (1969, 1974). Rather than five items sorting into each of the five factors, the items sorted quite unevenly, with only one item sorting into Factor 5. Costello and Osborne (2005) caution that any factor with less than three items is not stable, while factors with greater than five items loading at .50 or greater is favourable. However, for most of the factors, over half of the items loaded below a factor loading of .50. Nonetheless, in this factor solution, Factor 1 appears to mainly reflect general support from "others", "groups", or "people". The items in Factor 2 all refer to support from "family" and "friends". Factor 3 mainly

includes support from “someone” or a “person”. All the items in Factor 4 are negatively-worded and indicated low support before being reverse coded for the analyses. Finally, Factor 5 contained only one item: “I am responsible for helping provide for another person’s needs” (Weinert, 2003). Each factor appears to include a mixture of items from the five intended categories of social support.

Furthermore, while the total PRQ85 score and some of the factors had alpha values above .80, suggesting good internal consistency, the alphas for Factors 2 and 4 of .56 and .53 respectively suggest poor internal consistency. The inter-correlations among the five factors were generally low, suggesting that the factors are distinct. The items within each factor had low to moderate correlations, which is expected. In addition, item-total correlations for some items in the total PRQ85 scores were quite low, suggesting that these items might be measuring something distinct from the other items in the scale. Item-total correlations for the factors were generally moderate. Overall, similar to previous findings by Weinert (1987, 2003), the five-factor solution is not suitable for the PRQ85 in the CURA sample.

The PRQ2000, which resulted from an attempt to remove items from the PRQ85 that were uncorrelated with other items, redundant, or not conceptually justified, had a more interpretable factor structure. From the factor analysis for the PRQ2000 in the CURA sample, the two-factor structure was determined to be the best solution with ten items loading on Factor 1 and five items loading on Factor 2. These two factors explained 39.4% of the total variance. In the two sub-samples of couples with multiple sclerosis (hereafter referred to as, “two MS sub-samples”) used by Weinert (2003), a three-factor solution was found, explaining 54.1% and 49.0% of the total variance for sub-sample 1 and sub-sample 2 respectively, which were higher percentages than that of the two-factor solution in the CURA sample. For sub-sample 1, in reference to the five categories identified by Weiss (1969, 1974) that the items were intended to represent, Factor 1 included three Intimacy items, one Social Integration item, and one Worth item (Weinert, 2003). Factor 2 included one Nurturance item, one Social Integration item, and three Worth items (Weinert, 2003). Finally, Factor 3 included three Social Integration items and two Assistance items (Weinert, 2003). A similar solution was found for sub-sample

2, except one of the items belonging in Factor 3 for sub-sample 1 loaded more heavily on Factor 2 in sub-sample 2 (Weinert, 2003). Interestingly, the five items that loaded on Factor 2 in the CURA sample were the same five items that loaded on Factor 1 in both MS sub-samples (Weinert, 2003).

The mean and standard deviation of the total PRQ2000 score for the CURA sample of 74.3 (16.1) was approximately ten points lower and more variable than that of the two MS sub-samples, which were 82.4 (14.4) and 84.7 (13.7), suggesting lower overall perceived support and with more dispersion in the CURA sample (Weinert, 2003). The alphas for the total score in the CURA sample of .88 was similar to that of the two MS sub-samples, which were .91 and .90 (Weinert, 2003). The alphas of the two factors from the CURA sample and the three factors from the two MS sub-samples were also comparable within the range of .79 to .86 (Weinert, 2003). Specifically, the alpha value of Factor 2 in the CURA sample was .81, similar to the alpha values of Factor 1, the factor with the same five items, in the two MS sub-samples of .83 and .82 (Weinert, 2003). All of these alpha values indicate good internal consistency for the total score and each of the factors within both groups.

For the CURA sample, the inter-correlation between the two factors of $-.61$ suggests a moderate positive association between these two factors, as the negative loadings of Factor 2 combined with a negative inter-correlation value signifies a positive correlation. In the data derived from the MS sub-samples (Weinert, 2003), inter-correlations among the three factors were between .60 and .70 for sub-sample 1 and between .56 and .69 for sub-sample 2, similar to our CURA sample. These moderate inter-correlation values indicate that the factors in both the CURA sample and two MS sub-samples are related to one another and show overlap in their representation of social support. The range of inter-item correlations for Factor 1 in the CURA sample was broader than for the factors in the two MS sub-samples, but the range of .40 to .54 for Factor 2 in the CURA sample was similar to the ranges of .39 to .56 and .35 to .63 for Factor 1 in the two MS sub-samples (Weinert, 2003). This similarity may be expected as the same five items are included in Factor 2 for the CURA sample and Factor 1 in the two MS sub-samples. However, the broad range of inter-item correlations for Factor 1 in the CURA sample suggests that

some items within this factor are weakly correlated even though they have been grouped into the same factor. Item-total correlations were quite low for most items compared to the total PRQ2000 score. However, the item-total correlations for both factors were moderate, suggesting that the items were measuring a similar concept while not being redundant. Item-total correlations for the two MS sub-samples were not reported.

While Weinert (2003) did not name the three factors that arose in the two MS sub-samples, we observed a distinction in the source of support between the two factors from the PRQ2000 in the CURA sample. Factor 1 included ten items measuring support from “others”, “groups”, “people”, “relatives”, and “friends” (e.g. “I belong to a group in which I feel important”). Factor 2 included five items measuring support from “someone” or a “person” (e.g. “There is someone I feel close to who makes me feel secure”).

Previously, distinctions have been made among social support received from people in general in an individual’s life, as distinguished from that received from more intimate or close relationships (Abbey, Abramis, & Caplan, 1985). Moreover, support from people intimately related to an individual has a greater effect in reducing distress and depressive symptoms (Lin, Ye, & Ensel, 1999; Yang, 2006). Another instrument used to measure perceived social support, the Multidimensional Scale of Perceived Social Support (MSPSS) (Zimet, Dahlem, Zimet, & Farley, 1988), which has three subscales representing social support from family, friends, and a significant other has also been used in samples of individuals with mental illness and these three subscales have been verified (Clara, Cox, Enns, Murray, & Torgrudc, 2003; Vaingankar, Abidin, & Chong, 2012). The subscale of support from a significant other is similar to Factor 2 of the PRQ2000 in the CURA sample. Therefore, it seems reasonable for this distinction to arise in the CURA sample. Subsequently, Factor 1 was named Perceived General Support and Factor 2 was named Perceived Intimate Support.

Factor 2, Perceived Intimate Support, from the CURA sample and Factor 1 from the two MS sub-samples contained the same five items. This consistency suggests that perceived intimate support may be a concept that is present and distinct from the other items across the sample of individuals with mental illness and multiple sclerosis samples. As

previously mentioned, intimate support such as support from a significant other has been documented in the literature as an important source of support (Abbey et al., 1985; Thoits, 1986; Zimet et al., 1988). On the other hand, there are two possible reasons for the difference in the pattern of inter-relationships between the remaining ten items, resulting in different factors extracted using the PRQ2000 in the CURA sample compared to the two multiple sclerosis samples. The first reason is that there may be differences in the level of variation in responses among the samples. The second reason is that even if the variation in responses is similar for both the CURA sample and the two MS sub-samples, the items co-varied differently. It is possible that in the CURA sample, the ten remaining items co-varied similarly whereas there was a difference in co-variation for the two MS sub-samples, resulting in two separate factors. However, the relevant data was not provided for a detailed comparison (Weinert, 2003).

These two main reasons for differences may be affected by differences in the populations of individuals with multiple sclerosis compared to mental illness. It is expected that social support is related to mental health (Weinert, 2003). As a result, it is possible that the psychiatric conditions of individuals in our sample may affect their understanding of, response to, and the applicability of these social support measures. Individuals with mental illness may interpret the items in the PRQ2000 differently from those with multiple sclerosis. For example, it has been found that individuals who are depressed may not perceive actions intended to function as social support to be supportive, or at least not as supportive as intended (Henderson, 1984; Henderson & Moran, 1983). Also, some items may not apply to most community-dwelling individuals who have mental illness. For example, a few items in the PRQ2000 assume that the respondent has a job; however, at Visit 1 in the present CURA sample, only 25% of participants were employed either full-time or part-time (Hall et al., 2015). Furthermore, as mentioned previously, the social networks of individuals with mental illness are smaller on average than that of the general population (Cohen & Sokolovsky, 1978; Froland, Brodsky, Olson, & Stewart, 2000; Holmes-Eber & Riger, 1990; Macdonald, Hayes, & Baglioni Jr., 2000; Segal, Silverman, & Temkin, 1997). Smaller social networks may limit the opportunities for individuals with mental illness to perceive or experience support.

The current study comparing the factor structure of the PRQ2000 in a sample of individuals with mental illness and samples of those with multiple sclerosis provides insight into how the PRQ2000 functions differently in these two populations. While it is important to evaluate a measure whenever it is used in a new population, the current study has a few limitations. The main limitation is that a detailed comparison of the PRQ85 and PRQ2000 used in the CURA sample and the samples used by the developers of the instrument could not be performed because there was no explicit indication of which items were intended to fall under which of the five categories of social support outlined by Weiss (1969, 1974) when the instrument was first developed. As a result, we could neither confirm nor refute whether the appropriate items loaded onto the five factors of the PRQ85 as expected. We could only determine that the uneven distribution of number of items did not match their intended even distribution into the five intended categories of social support, and that the factors appear to include a mixture of items from the five intended categories that is difficult to interpret.

4.5 Conclusion

Through a careful examination of how a sample of individuals with mental illness may perceive social support, we have evaluated two versions of a well-used instrument on a different population. While the PRQ is not an instrument that was created to specifically measure social support in individuals with mental illness, using the PRQ2000 and conducting factor analysis with a sample of this population has allowed us to compare and contrast the composition of social support as perceived by those with lived experience of mental illness compared to multiple sclerosis. In the CURA sample, factor analysis on the PRQ85 revealed that the five types of social support were not represented as originally intended. When factor analysis was conducted on the PRQ2000, two sources of social support emerged: perceived general support and perceived intimate support. This finding was different from the three-factor solution found by the developer of the instrument in the two MS sub-samples.

While many tools have been developed to analyze social support, the multidimensionality of this construct obliges researchers to prudently define social support and find or create a suitable measure accordingly. Particularly, as observed in the above analyses, it is

important to remember that even if a measure has been validated for use, it does not imply that it will measure the same constructs for all populations. For individuals with mental illness, multiple factors may differentiate the way they perceive or experience social support, compared to other groups. The distinction between general and intimate support may be important for individuals with mental illness, and further studies using this distinction would contribute to understanding the underlying reasons for this division.

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Chapter 5 ¹

5 Associations between Housing and Sources of Social Support in Individuals with Mental Illness

The associations between various social factors and physical and mental health outcomes have been widely studied (Marmot, 2005; Marmot, Friel, Bell, Houweling, & Taylor, 2008). Because these potential social determinants are often closely related and work together to affect health (Mikkonen & Raphael, 2010; Raphael, 2009; World Health Organization, n.d.), they should be examined as related clusters rather than individually to better understand these linkages and improve health outcomes. Specifically for those with mental illness, two social determinants of health that affect the burden of managing their mental illness are housing and social support.

5.1 Introduction

Housing is an important determinant of health because where an individual lives influences his or her ability to address basic needs, the services available for support, interpersonal relationships, and overall control over his or her own life. In addition, housing is related to other social determinants of health such as income (Mikkonen & Raphael, 2010).

5.1.1 Housing

In Canada, it is estimated that at least 235,000 individuals experience homelessness each year (Gaetz, DeJ, Richter, & Redman, 2016). Furthermore, individuals with mental illness have a greater risk of being homeless compared to those in the general population (Breakey & Fischer, 1995; Levine, 1984). Securing and maintaining housing is important for obtaining a job, accessing support services, and managing overall health (Forchuk, Ward-Griffin, Csiernik, & Turner, 2006; Kyle & Dunn, 2008). Achieving housing stability is important because simply obtaining housing fails to address other problems

¹ A version of this paper will be submitted to the journal of Social Psychiatry and Psychiatric Epidemiology.

such as a lack of supports (Tsai, Mares, & Rosenheck, 2011). Moreover, housing is a human right (United Nations, 1948). Recognition of this has resulted in initiatives such as Housing First, which places individuals into homes without requiring them to earn the right to be housed through sobriety, for example (Gaetz, Scott, & Gulliver, 2013).

There are different types of housing for individuals with mental illness and ideally, there should be a match between the needs of each individual and housing options. Many researchers have explored the effectiveness of various housing types for individuals with mental illness (Nelson, Aubry, & Lafrance, 2007; Parkinson, Nelson, & Horgan, 1999). However, even with evidence to support the preferability of certain housing models, there are barriers to the provision of what seems best for these individuals and discrepancies between what they want and what they need (Forchuk, Nelson, & Hall, 2006).

5.1.2 Social Support

There have also been many studies on social support and its benefits for physical and mental health (Berkman, 1995; S. Cohen, 2004; Uchino, 2009). Women, married individuals, and those of higher socioeconomic status generally experience greater support than men, unmarried individuals, and those of lower socioeconomic status, respectively (Kessler, Kendler, Heath, Neale, & Eaves, 1992; Turner & Marino, 1994).

For individuals with mental illness, social support is an important coping resource to confront everyday difficulties (Taylor & Stanton, 2007). However, individuals with mental illness and those who are homeless have smaller social networks than the general population (C. I. Cohen & Sokolovsky, 1978; Froland, Brodsky, Olson, & Stewart, 2000; Holmes-Eber & Riger, 1990; Letiecq, Anderson, & Koblinsky, 1998; Macdonald, Hayes, & Baglioni Jr., 2000; Passero, Zax, & Zozus, 1991; Segal, Silverman, & Temkin, 1997). Moreover, not all relationships are sources of social support, as some relationships may provide no support or may even be sources of interpersonal conflict (Abbey, Abramis, & Caplan, 1985; Walen & Lachman, 2000). Social networks can, however, open opportunities for social support (Berkman & Krishna, 2014).

Social support and its measurement have been studied from many different theoretical perspectives that consider components such as the types, sources, and structure of support (Gottlieb & Bergen, 2010; Lakey & Cohen, 2000; Thoits, 1982). Additionally, a distinction is often made between perceived and received social support.

The source of social support may influence its effectiveness. Multiple researchers have found that support from a confidant such as a spouse has the greatest effect on depressive symptoms and distress compared to friends, children, and other relatives (Dean, Kolody, & Wood, 1990; Yang, 2006), and participating in a community group (Lin, Ye, & Ensel, 1999). Abbey et al. (1985) studied three different sources of support in a sample of university students: people in general, some one person, and the person closest to the individual. More support was reported to be received from the person closest to the individual than people in general or any one person; however, only support from people in general was significantly related to less anxiety and depression (Abbey et al., 1985). While there have been different findings regarding the support received from different sources, it is clear that the distinction between intimate sources of support such as a significant other and non-intimate sources of support such as family, friends, or people in general is present in the literature.

More studies have been conducted on perceived support than received support due to the ease of data collection (Lakey & Cohen, 2000). Moreover, perceived support has been found to have a different and sometimes greater benefit than received support (Henderson, 1981; Lakey & Cohen, 2000). Cohen and Wills (1985) found that perceived support, rather than received support, is responsible for the indirect effect of social support on the ability to handle stress. For the current study, the focus will be on perceived sources of support; namely, perceived general and intimate support.

5.1.3 Housing and Social Support

Housing and social support are related bi-directionally. Housing affects social support, as living in certain types of residences may provide easier access to social support than others (Browne & Courtney, 2005; Pickett-Schenk, Cook, Grey, & Butler, 2007; Wood, Hurlburt, Hough, & Hofstetter, 1998). On the other hand, social support also affects

where an individual lives because with more sources of social support, individuals may receive information and help to obtain housing, or even live with friends or relatives who are able to provide support for them (Berkman & Krishna, 2014; Calsyn & Winter, 2002).

The aim of the current study was to explore the relationship between housing and perceived social support in individuals with mental illness. Specifically, the three main objectives were to: 1) compare the perceived general and intimate support of those living in different types of residences; 2) compare the perceived general and intimate support of those who are and are not living in their preferred residence; and 3) compare the perceived general and intimate support of those who have and do not have stable housing.

5.2 Methods

5.2.1 Data Sources

Data from the Community-University Research Alliance: Poverty and Social Inclusion program (CURA) were used. This program was funded by the Social Sciences and Humanities Research Council of Canada from 2011 to 2016. The main purpose of this program was to explore the poverty and social inclusion of individuals with mental illness. This program used a mixed-method participatory action research approach. Beginning in 2011, individual interviews were conducted annually for four years. Each interview was arranged at a location and time that was convenient for the participant and lasted approximately 90 to 120 minutes. Participants were given the freedom to reschedule meetings if necessary and stop the interview at any time. At the end of each interview, participants were given a small monetary token to thank them for their participation. To minimize loss to follow-up, contact information of family and friends of participants were collected, and lanyards with a phone number to contact research staff were provided. Ethics approval, which includes permission for future secondary analyses, was obtained from Western University's Research Ethics Board (see Appendix C).

5.2.2 Study Sample

For this program, 380 individuals between 18 and 75 years old with at least a one-year history of mental illness were recruited from London, Ontario and the surrounding area. Participants had to be able to communicate in English and provide informed consent. Recruitment was achieved through public advertisements and with assistance from community agencies. The sample was stratified by sex, employment status, and housing situation. Specifically, approximately a quarter of the sample lived in group homes, approximately a quarter was housed and employed, approximately a quarter was housed and unemployed, and the final stratum consisted of those who were homeless. The homeless stratum was oversampled to account for the expected higher likelihood of loss to follow-up in the homeless group. By design, within each of these groups, 50% of participants were male and 50% were female. Because this population moves around and over a fourth of the sample was homeless, there was loss to follow-up in spite of the retention steps outlined above. Of those interviewed at Visit 1, only 261 individuals were interviewed at Visit 3, resulting in a loss to follow-up of 31.3% of the original sample (see Appendix B). However, descriptive statistics showed that the longitudinal sample was similar to those lost to follow-up at Visit 1, with the exception of the proportion of homeless individuals. As expected, there was a large proportion of homeless individuals in the lost to follow-up group (see Appendix B). Although data was available for Visits 1-4, the instrument used to measure social support was administered only in Visits 1-3, so the present analyses are based on the first three years of the program.

5.2.3 Measures

Sixteen quantitative instruments were used during the individual interviews to collect data regarding demographics, health, housing, employment, service use, community integration, social support, and stigma. In addition, qualitative information was collected using open-ended questions. For the present study, four of the quantitative instruments were used.

Current and preferred type of residence were measured using the Consumer Housing Preference Survey (CHPS) (Tanzman, 1990). For current residence, eleven response

options were provided to the question: “Where are you living right now?” For preferred type of residence, participants were asked, “Ideally, what kind of place would you like to live in?”, and given twelve response options similar to those provided in the question for current type of residence (see Appendix A for exact question wording). For analysis, similar residential types were grouped to overcome low cell counts. The resulting four groupings for both questions were: i) group home/ community care home/ single room without a kitchen (hereafter referred to as “group/ community/ single”); ii) own apartment or house; iii) family’s home/ foster family’s home (hereafter referred to as “family’s home”); and iv) shelter/ on the streets/ temporarily with a friend, relative, citizen advocate/ hospital/ jail (hereafter referred to as “homeless”).

The Personal Resource Questionnaire (PRQ) (Brandt & Weinert, 1981) was used as a measure of perceived social support. Part 2 of the PRQ85 version of the instrument (Weinert, 1987) contains 25 items rated using 7-point Likert-type responses, with higher total scores indicating higher perceived social support. Although the PRQ85 was administered in the CURA program, a condensed 15-item PRQ2000 version (Weinert, 2003) was used for the present analyses. A factor analysis of the PRQ2000 by the creator of the scale produced three factors (Weinert, 2003). However, only two factors were derived from a factor analysis conducted on the CURA sample (please see Chapter 4 for more details). Discussion by the thesis advisory committee concluded that the clearest interpretation of the two factors was to label them as ‘perceived general support’ and ‘perceived intimate support’. An example of a perceived general support item is: “Others let me know that they enjoy working with me (job, committees, projects).” (Weinert, 2003). An example of a perceived intimate support item is: “There is someone I feel close to who makes me feel secure.” (Weinert, 2003). Possible values of the perceived general support subscale ranged from 10-70 and for the perceived intimate support subscale ranged from 5-35.

Basic demographic data included sex, age, and marital status. For marital status, the response options were: “Single/ Never Married”, “Separated/ Divorced”, “Widowed”, “Married/ Common Law”, and “Other”. A binary variable, separating “Married/ Common Law” responses from all other responses, was created to differentiate

individuals who were married or in common law relationships (hereafter referred to as “married”) from those who were not (hereafter referred to as “not married” or “unmarried”). Personal income in the past 12 months was assessed using a question from a modified version of the National Population Health Survey (NPHS) (Statistics Canada, 1994): “Can you estimate in which of the following groups your personal income falls?”, which was a follow-up question to an open-ended question: “What is your best estimate of your total personal income, before taxes and deductions, from all sources in the past 12 months?” Multiple ranges of income were provided as response options. Again, a binary variable was created by combining all responses to the range of “Between \$5,000 and \$10,000” and below, and all responses to the range of “Between \$10,000 and \$15,000” and above. This binary variable was used as a proxy for poverty status, where individuals who earned less than \$10,000 were considered to be in poverty. This cut-off point had been chosen as a consistent proxy for poverty status used in the CURA program.

5.2.4 Statistical Analyses

All statistical analyses were conducted using IBM SPSS v.24 (IBM Corp., 2016). First, multiple linear regression was performed to explore the relationship between current type of residence at Visit 1 (independent variable) and perceived general and intimate support at Visit 1 (dependent variables), adjusting for sex, age, marital status, and personal income. We chose to control for these four covariates because based on these factors, individuals have been reported to have different perceptions of social support in the literature. Interaction terms were tested for significance. Bootstrapping was used to obtain robust results, accounting for the violated assumptions of constant variance and normality of residuals. Taking many bootstrap samples with replacement from the original sample allows for more reliable estimates of variance.

We initially wanted to explore the effects of whether participants’ current housing type matched their preferred housing type. A cross-tabulation of current and preferred type of residence revealed a very large group of individuals who preferred living in an apartment or house, resulting in insufficient variability and limited cell sizes for this analysis to proceed further. Specifically, comparing those who currently did and did not live in their

preferred residence would be reduced to individuals who currently did or did not live in their own apartment or house.

To test the effect of changes in housing type, the current type of residence reported at Visits 1 and 3 were used to create a three-level categorical variable reflecting the type of housing change participants experienced: none/ neutral change (individuals reported either any type of residence other than being homeless at both visits or reported being homeless at both visits); positive change (change from being homeless at Visit 1 to any of the other types of residences at Visit 3); and negative change (change from any of the other types of residences at Visit 1 to being homeless at Visit 3). These categories of type of housing change were chosen because although each type of residence has advantages and disadvantages, a lack of housing is the least desirable situation. Kruskal-Wallis non-parametric tests were used to determine if there was a difference in the perceived general and intimate support scores at Visit 3 among the three housing change groups. Support scores at Visit 3, rather than the change in support scores between Visits 1 and 3, were chosen to be compared to type of housing change to account for temporality. To account for missing data, listwise deletion was employed for each statistical procedure. Individuals who were missing data for a specific variable were excluded from analyses that included that variable.

5.3 Results

5.3.1 Sample Characteristics

Descriptive statistics for the sample at Visit 1 are provided in Table 5.1 (see Appendix B for additional descriptive statistics). The proportion of participants in each of the categories for sex and current type of residence reflect the sampling strategy and may not be representative of the overall population of individuals with mental illness. Within this sample, the types of residences were relatively evenly split among the group/ community/ single category (28.2%), own apartment or house (38.4%), and homeless (30.0%). The remaining 3.4% of individuals lived in their family's home. However, the preferred residence for an overwhelming majority of participants was an apartment or a house

(85.6%). Overall, the mean (SD) of perceived general and intimate support scores were 48.6 (11.0) and 25.8 (6.8) respectively.

Table 5.1. Description of CURA sample (full sample: n=380).

	Frequency (%)	Mean (SD)
Sex		
Male	190 (50.0)	
Female	190 (50.0)	
Age		40.7 (14.0)
18-24 years old	77 (20.3)	
25-34 years old	56 (14.7)	
35-44 years old	70 (18.4)	
45-54 years old	106 (27.9)	
55-64 years old	60 (15.8)	
65-74 years old	11 (2.9)	
Marital Status		
Married	49 (12.9)	
Not married	331 (87.1)	
Personal Income in Past 12 Months (n=346)		
Less than \$10,000	165 (47.7)	
Greater than \$10,000	181 (52.3)	
Current Type of Residence		
Group/ Community/ Single	107 (28.2)	
Own apartment or house	146 (38.4)	
Family's home	13 (3.4)	
Homeless	114 (30.0)	
Preferred Type of Residence (n=376)		
Group/ Community/ Single	39 (10.4)	
Apartment or house	322 (85.6)	
Family's home	8 (2.1)	
Homeless	1 (0.3)	
Other	6 (1.6)	
PRQ General Support Score (n=375)		48.6 (11.0)
PRQ Intimate Support Score (n=379)		25.8 (6.8)

5.3.2 Type of Residence and Perceived General Social Support

On average, individuals living in their family's home had the highest perceived general support score, followed by those in the group/ community/ single category, then those in their own apartment or house, and finally, those who were homeless, after controlling for

sex, age, marital status, and personal income (Table 5.2). The scores for those living in the group/ community/ single category and those living in their family's home were significantly higher based on an alpha level of 5% than for those who were homeless ($p=.003$ and $p=.001$, respectively). However, the score for those living in their own apartment or house was not significantly different from the score for those who were homeless ($p=.20$). There was no statistically significant difference in the perceived general support score between males and females ($p=.96$), nor married and unmarried individuals ($p=.35$) after controlling for the other four covariates. There was no clear trend in the effect of age either. Those who had a personal income of greater than \$10,000 in the past 12 months had a significantly higher perceived general support score than those who earned below \$10,000 ($p=.005$). Interaction terms were tested, but none were statistically significant. The results of sequential models are available in Appendix B.

Table 5.2. General Support Score model (n=342).

Covariates	B	95% CI	p-value
Intercept	39.62	32.88, 46.66	0.001
Type of Residence [Reference: Homeless]			
Group/ Community/ Single	4.39	1.47, 7.47	0.003
Own apartment or house	1.91	-1.26, 4.92	0.200
Family's home	9.96	5.46, 15.11	0.001
Sex			
Male vs. Female	-0.07	-2.36, 2.45	0.962
Age (Years) [Reference: 65-74]			
18-24	6.76	1.35, 12.19	0.180
25-34	7.72	2.35, 12.83	
35-44	4.28	-1.08, 9.54	
45-54	5.52	0.14, 10.59	
55-64	7.57	2.65, 12.41	
Marital Status			
Married vs. Not married	1.81	-1.68, 5.82	0.347
Personal Income in Past 12 Months			
Greater than vs. Less than \$10,000	3.79	1.55, 5.80	0.005

5.3.3 Type of Residence and Perceived Intimate Social Support

The same pattern for highest to lowest support score based on type of residence was found for perceived intimate support (Table 5.3). Again, the mean scores for those in the group/ community/ single category and family's home were significantly higher based on an alpha level of 5% than that of those who were homeless ($p=.02$ and $p=.001$, respectively), while there was no significant difference in scores for those living in their own apartment or house and those who were homeless ($p=0.17$) when controlling for the covariates. Females reported significantly greater intimate support than males ($p=.009$). The overall age effect was not significant ($p=.32$) and there was no clear trend. Individuals who were married had significantly greater intimate support compared to those who were not married ($p=.001$). There was no significant difference in perceived intimate support between those who earned greater than \$10,000 and those who earned less than \$10,000 in the past 12 months ($p=.07$). Interaction terms were tested, but were not significant, and therefore excluded. Sequential models are available in Appendix B.

Table 5.3. Intimate Support Score model (n=345).

Covariates	B	95% CI	p-value
Intercept	27.87	23.58, 32.35	0.001
Type of Residence [Reference: Homeless]			
Group/ Community/ Single	2.40	0.48, 4.43	0.019
Own apartment or house	1.21	-0.67, 3.10	0.169
Family's home	5.88	3.22, 8.46	0.001
Sex			
Male vs. Female	-1.78	-3.09, -0.45	0.009
Age (Years) [Reference: 65-74]			
18-24	2.04	-1.56, 5.77	0.315
25-34	2.98	-0.52, 6.39	
35-44	0.56	-3.11, 4.01	
45-54	1.25	-2.15, 4.43	
55-64	0.33	-2.89, 3.59	
Marital Status			
Married vs. Not married	5.35	3.76, 6.85	0.001
Personal Income in Past 12 Months			
Greater than vs. Less than \$10,000	1.29	-0.14, 2.47	0.067

5.3.4 Preferred Type of Residence

Within each current residence grouping, the majority of individuals (85.6%) would prefer to live in an apartment or house (Table 5.4). Of all the individuals who chose the group/ community/ single category as their preferred residence, almost all currently live in this type of residence. As previously mentioned, further analysis of the relationship between preferred residence and perceived general and intimate support could not be conducted.

Table 5.4, Cross tabulation of current residence and preferred residence [Frequency (Row %)] (n=376).

		Preferred Residence					Total
		Group/ Community/ Single	Apartment/ House	Family's home	Homeless	Other place	
Current Residence	Group/ Community/ Single	38 (36.2%)	60 (57.1%)	6 (5.7%)	0 (0.0%)	1 (1.0%)	105 (100.0%)
	Apartment or house	0 (0.0%)	142 (97.9%)	1 (0.7%)	0 (0.0%)	2 (1.4%)	145 (100.0%)
	Family's home	0 (0.0%)	12 (92.3%)	1 (7.7%)	0 (0.0%)	0 (0.0%)	13 (100.0%)
	Homeless	1 (0.9%)	108 (95.6%)	0 (0.0%)	1 (0.9%)	3 (2.7%)	113 (100.0%)
Total	39 (10.4%)	322 (85.6%)	8 (2.1%)	1 (0.3%)	6 (1.6%)	376 (100.0%)	

5.3.5 Housing Change and Perceived Social Support

The majority of individuals experienced none/ neutral change in their type of residence from Visit 1 to 3 (83.1%). Of those who did experience a change, most had a positive change (14.2%), while the rest had a negative change (2.7%). For the perceived general support score at Visit 3, individuals who experienced none/ neutral change had the highest average score, followed by those who experienced positive change, and then those who experienced negative change (Table 5.5). For the perceived intimate support score at Visit 3, individuals who experienced none/ neutral change or positive change had similarly high average scores compared to those who experienced negative change. However, when comparing these three groups using non-parametric tests, no significant difference based on an alpha level of 5% was found for the mean general support scores ($p=.11$) nor the mean intimate support scores ($p=.14$).

Table 5.5. Tests for type of housing change and General and Intimate Support Scores (n=260).

	None/ Neutral change (n=216)	Positive change (n=37)	Negative change (n=7)	p-value
General Support Score (n=250)				0.11
Mean (SD)	50.1 (10.9)	47.7 (14.0)	42.8 (7.6)	
Median (IQR)	51.0 (14)	47.0 (20)	40.5 (15)	
Intimate Support Score (n=256)				0.14
Mean (SD)	26.2 (6.6)	26.9 (7.5)	22.3 (4.0)	
Median (IQR)	28.0 (9)	28.0 (11)	21.0 (8)	

5.4 Discussion

For both perceived general and intimate support, individuals living in their family's home and those living in the group/ community/ single category had significantly higher support scores than those who were homeless, while those who lived in their own apartment or house did not have significantly higher scores than those who were homeless, after controlling for sex, age, marital status, and personal income. No significant difference in support scores was found among the three types of housing change groups for either perceived general or intimate support.

The relationship between type of residence and perceived support was the same for both general and intimate support scores when controlling for sex, age, marital status, and personal income. The significantly higher perceived support scores for individuals living in their family's home or in the group/ community/ single category compared to those who were homeless may be attributable to their living environment. Though not all contact with other individuals provides social support, the presence of others in the living environment provides a greater opportunity for social support to be accessed. While it was expected for homeless individuals to have the lowest levels of support, it is interesting to note that there was no statistically significant difference in support between those living in an apartment or house and being homeless. A possible explanation for this finding may be related to where individuals prefer to live. Forchuk, Nelson, et al. (2006) found that individuals with mental illness often had to choose between their desired housing, which was often independent living, and social support because where independent housing was available, the desired supports were not and vice versa. This trade-off of independent living may explain why individuals living in an apartment or house perceive low levels of support.

Furthermore, while the effect of living in one's preferred residence on perceived social support could not be tested, the trend of types of residences that provide highest to lowest support in this sample suggests that individuals currently living in their family's home or in the group/ community/ single category who would prefer to live in an apartment or house might actually perceive lower levels of support if they were able to live in their preferred residence. The finding that most individuals who chose group/ community/ single as their preferred residence currently lived there suggests that they may have a greater appreciation for the support that they enjoy from group living. Conversely, individuals who did not currently live there or have never experienced group living may not be aware of its benefits and would choose to live independently instead.

On the other hand, there may be advantages to living independently that outweigh the lower levels of perceived social support. It is possible that some individuals do not need or prefer very high levels of support. Furthermore, while it was not explored in the present study, not all social ties are sources of support – some may be sources of social

conflict or neither support nor conflict (Abbey et al., 1985; Walen & Lachman, 2000). For example, as evidenced in the expressed emotion literature, family members can be sources of criticism, hostility, and emotional over-involvement, which has been found to predict relapse in schizophrenia and other mental illnesses (Butzlaff & Hooley, 1998). In addition, some other factors individuals with mental illness mentioned when describing where they would prefer to live included safety and security and a place where pets are allowed (Forchuk, Nelson, et al., 2006). These factors may be more important for individuals when they choose where they would be able to live. Therefore, understanding the reason for the desire of most individuals to live independently and whether it is useful to inform individuals of the potential disadvantages of living alone requires further study.

In the multiple linear regression models, both sex and marital status were significant for intimate support, but not for general support when controlling for the other covariates. While these differences were expected and are supported by the literature (Turner & Marino, 1994), they also support the validity of the distinction between general and intimate social support. On the other hand, personal income in the past 12 months was significant for perceived general support but not for perceived intimate support when controlling for the remaining covariates. A possible explanation for this difference is that individuals who have sufficient financial resources to support themselves have more opportunities to interact with others rather than having to focus on providing for themselves. However, intimate support suggests a closer and stronger relationship that would not be hindered by the availability of financial resources. Finally, there was no clear trend in the effect of age. Because of the small size of the 65-74 year-old group, it may not be a reliable reference group. In addition, as noted by Turner and Marino (1994), findings on the level of perceived social support in relation to age have been inconsistent. The effect of age on perceived general and intimate support warrants further study.

Although the negative change group had the lowest support scores for both perceived general and intimate support, scores were not significantly different across the three type of housing change groups. The size of the three type of housing change groups was unbalanced. In particular, the very small size of the negative change group presents statistical challenges. There is also a potential for dropout bias because it is more difficult

to locate individuals who are part of the negative change group as they have become homeless. It is possible that the individuals in the negative change group who were not lost to follow-up are different from those who would be in this group had they not been lost from the sample. Supplementing cohort studies with case-control studies may be helpful to identify a larger population of homeless individuals and inquire about their housing history. In addition, data on length of time at the current residence and changes in residence between the interviews at Visits 1 and 3 could be useful to classify individuals into the three housing change groups more precisely. There is insufficient evidence to conclude that housing stability is related to greater perceived social support in the present study. In future studies, it might be beneficial to compare the change in perceived social support scores over time, allowing for a time lag between housing change over time and the measurement of change in support scores over a subsequent time period. Because only data for three visits could be used in the present study, it was not possible to allow for a time lag and measure change over time in social support scores as a result of housing change.

Overall, the current study allowed for both cross-sectional and longitudinal data analyses, leading to a more comprehensive investigation of housing and social support. In addition, the distinction made between perceived general and intimate support allowed for a more meaningful study of the similarities and differences in trends between the two types of support. Moreover, given the broad inclusion criteria, the sample included individuals with a variety of mental illnesses and potentially different levels of severity, which may support the generalization of these research findings to the larger population of individuals with mental illness. Although the present sample was stratified by sex, housing type, and employment status, the distribution of other demographic characteristics in this sample was similar to what has been found in other studies. In Canada, mental illness and substance use disorders are most common in the 15-24 year old age group and least common in the older population (Pearson, Janz, & Ali, 2013). In the CURA sample, 18-24 year olds was the second largest age group making up 20.3% of the sample and the group with the narrowest range, as other age groups consisted of 10-year intervals. The smallest age group was the 65-74 year olds, comprising only 2.9% of the total sample. Further, about half of the sample had an annual income of below

\$10,000, which is consistent with the literature that suggests an association between mental illness and poverty (Dewa & McDaid, 2011; Government of Canada, 2006).

However, there are a few limitations that need to be addressed as well. First, the current study may not be a representative sample of the population of individuals with mental illness because of sample stratification by sex, housing type, and employment status. Post-stratification weights could resolve this issue; however, these weights necessitate accurate estimates of the number of individuals within each stratum in the population, which are difficult to determine in groups such as those who are homeless. Although sample stratification has placed a limitation on generalizability, it was employed to ensure adequate sizes of each stratum for analysis to enhance internal validity. In addition, bias may have been introduced because the individuals in the sample may have more contacts with support services who informed them about the program and they may be different from those who were not recruited. However, given the challenges faced by this population, including unstable housing, this may be the best method to recruit individuals. Another concern is the significant loss to follow-up from visit to visit, but attrition analysis showed that the differences between the longitudinal sample and those lost to follow-up were not large. As well, while the cut-off point of \$10,000 was used to create a proxy for determining poverty status, this value is arbitrary. There are different ways to define poverty, and this value was chosen to remain consistent with the poverty definition of the overall CURA program. There is also the issue of residual confounding. Four covariates were chosen to be controlled for in the multiple linear regression models, but we did not control for other factors that may affect social support, such as ethnicity and severity of mental illness. While a broad inclusion criteria allowed for individuals with a history of any mental illness to participate in the program, the relationship between type of residence and level of social support may differ for individuals with common compared to severe mental illness. Finally, there were no data addressing the use of technology, such as social media or video conferencing, for social support. Taking into account recent technological advancements, it would be beneficial to consider the diminished need for physical proximity in order for people to perceive the availability of social support.

5.5 Conclusion

When examining the associations between type of residence and perceived general and intimate support, individuals living in their family's home or in the group/ community/ single category had significantly higher perceived social support scores than those who were homeless while there was no significant difference in scores between those who lived in their own apartment or house and those who were homeless. When comparing the perceived general and intimate support scores for individuals with different types of housing change experienced from Visit 1 to 3, no significant difference was found.

Exploring the inter-relations between various social determinants of health in individuals with mental illness is a key step in using a systemic approach to improve their conditions. In particular, housing and social support seem to be bi-directionally related; housing affects social support and social support affects housing. Having a deeper understanding of how the types of residences and the nature of housing stability affects various aspects of support will better inform any strategies or policies aimed at improving the health and quality of life of individuals with mental illness. Future research could explore the nature of these sources of general and intimate support and understand where these supports are coming from. In addition, we should aim to better understand whether or not individuals who report perceiving low levels of support actually desire or need more support, or if they are content with their current perceived levels of support. Finally, the inclusion of virtual forms of social support through technology should be investigated to obtain a more holistic view of all the possible avenues of social support.

5.6 References

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Chapter 6

6 Discussion and Conclusions

The two overall purposes of this thesis were to: 1) explore the factorial structure of two versions of the Personal Resource Questionnaire (PRQ) (Brandt & Weinert, 1981) as measures of perceived social support in individuals with mental illness; and 2) examine the relationship between housing and perceived social support in these individuals. Factor analysis conducted on the PRQ85 (Weinert, 1987) for the sample from the Community-University Research Alliance: Poverty and Social Inclusion program (CURA) (Forchuk et al., 2011-2016), which focused on exploring poverty and social inclusion in individuals with mental illness, did not result in the five support categories that the PRQ was designed to capture. Subsequent factor analysis conducted on the PRQ2000 (Weinert, 2003) revealed two main dimensions of perceived social support: general support and intimate support. While individuals living in their family's home and those in the group/community/ single category had significantly higher perceived support scores than those who were homeless, there was no significant difference in support scores for those living in their own apartment or house and those who were homeless. These results did not differ between perceived general and intimate support. Housing stability did not have a significant effect on perceived general or intimate social support. Overall, there is a distinction in the CURA sample between perceived general and intimate support, but this distinction did not result in differences in the relationship between housing and perceived social support.

6.1 Findings

6.1.1 Findings from Factor Analysis of the Personal Resource Questionnaire (PRQ)

We performed factor analysis on the PRQ85 using the CURA sample to evaluate the validity of the five subscales in individuals with mental illness. The results of our factor analysis showed that the items did not sort neatly into the five factors that represented the intended categories of social support theorized by Weiss (1969, 1974): assistance, intimacy, social integration, worth, and nurturance. Instead, when a five-factor solution

was specified in the analysis, items were distributed unevenly among them such that Factor 1 had ten items whereas Factor 5 only had one item. Furthermore, many items loaded relatively weakly on the factors. Accordingly, while the total score had good internal consistency, some of the subscales based on the factors had poor internal consistency. In summary, the five-factor structure is not the optimal factor solution for the PRQ85 in the CURA sample.

When we conducted factor analysis on the PRQ2000 for the CURA sample, a two-factor solution resulted with ten items loading on Factor 1 and five items loading on Factor 2. Previously when Weinert (2003) had performed factor analysis on two sub-samples of individuals with multiple sclerosis, she found a three-factor solution for both. Only 39.4% of the total variance was explained by the two factors in the CURA sample, compared to 54.1% and 49.0% of total variance explained by the three factors in the two MS sub-samples (Weinert, 2003). In the CURA sample, there was good internal consistency for the total score and the two factors.

The ten items in Factor 1 for the CURA sample indicated perceived social support from “others”, “groups”, “people”, “relatives”, and “friends”, whereas the five items in Factor 2 indicated perceived social support from “someone” or a “person”. In our interpretation, these factors suggest two overarching sources of perceived social support for the population of individuals with mental illness and were named Perceived General Support and Perceived Intimate Support. The finding of these two different sources of perceived social support in the CURA sample suggests that dimensions of social support differ depending on the population. Specifically, in this sample of individuals with mental illness, there is a basic distinction between general and intimate support, which was not found by Weinert (2003). However, similar distinctions between sources of support have been made in the past. For example, the Multidimensional Scale of Perceived Social Support (MSPSS) (Zimet, Dahlem, Zimet, & Farley, 1988), another perceived social support instrument that has been used and evaluated in samples of individuals with mental illness (Clara, Cox, Enns, Murray, & Torgrudc, 2003; Vaingankar, Abdin, & Chong, 2012), contains three subscales to measure social support from family, friends, and a significant other.

Although the factor solution for the CURA sample was different than for the two MS sub-samples, the five items that loaded on Factor 2, Perceived Intimate Support, in the CURA sample were the same five items that had loaded on Factor 1 in the two MS sub-samples (Weinert, 2003). This suggests that the concept of intimate support is present and distinct from other items in both the sample of individuals with mental illness and the sample of individuals with multiple sclerosis. On the other hand, there are two possible reasons for the remaining ten items to sort into one factor in the CURA sample compared to two factors in the two MS sub-samples. The first reason is that there may be differences in the amount of variation in responses among the samples. The second reason is that even if the amount of variation was similar in both the CURA sample and the two MS sub-samples, the remaining items co-varied similarly in the CURA sample, resulting in one factor for all ten items.

These reasons may be affected by some differences in the population of individuals with multiple sclerosis compared to those with mental illness. The two MS sub-samples originally used to evaluate the factor structure of the PRQ were composed of couples living with multiple sclerosis (Weinert, 2003), while the CURA program recruited individuals with at least a one-year history of mental illness. Additionally, the two MS sub-samples used by Weinert (2003) were larger and older on average. The first sub-sample included 449 individuals with a mean age of 48.4 years old and the second sub-sample included 450 individuals with a mean age of 48.0 years old (Weinert, 2003), while the CURA sample included 380 individuals with a mean age of 40.7 years old.

An individual's psychiatric condition may affect how they perceive support (Henderson, 1984; Henderson & Moran, 1983). Because the PRQ was not created specifically for individuals with mental illness, some of the items may be interpreted differently or may not be applicable to this population at all. As Beels, Gutwirth, Berkeley, and Struening (1984) noted with regards to schizophrenia, social support measures created for the general population are not well suited for use in individuals with schizophrenia. For example, one of the items in the PRQ2000 is: "There is someone I feel close to who makes me feel secure." (Weinert, 2003). The word "secure" could be interpreted in different ways by different individuals, such as physical security compared to emotional

security. In another example, two of the items in the PRQ2000 refer to a “job” (Weinert, 2003); however, only 25% of participants in the CURA sample at Visit 1 were employed (Hall et al., 2015). Conversely, the PRQ does not capture some sources of support that may be more important for individuals with mental illness, such as support from pets. While pets may not often be mentioned as a conventional form of support, they provide certain support functions to individuals with mental illness. In a study of homeless youth, pets were found to be important sources of emotional support, providing companionship and love (Rhoades, Winetrobe, & Rice, 2015). Furthermore, in a focus group of individuals with mental illness, participants reported that an important element of their preferred housing is a place that allows them to own pets (Forchuk, Nelson, & Hall, 2006).

Finally, the social networks of individuals with mental illness are smaller than those of the general population (Cohen & Sokolovsky, 1978; Froland, Brodsky, Olson, & Stewart, 2000; Holmes-Eber & Riger, 1990; Macdonald, Hayes, & Baglioni Jr., 2000; Segal, Silverman, & Temkin, 1997). Smaller social networks may affect how individuals perceive support. With smaller social networks, there may be fewer sources of support available, which could affect the support functions perceived by an individual. It is possible that more support functions are perceived from the same sources of support, or that some functions may not be perceived at all.

6.1.2 Findings from the Associations between Housing and Social Support

We then explored the association between housing and perceived general and intimate social support in individuals with mental illness. Three main aspects of housing were investigated: current type of residence, preferred residence, and housing stability. While type of residence and housing stability were examined in relation to both general and intimate support, the relationship between preferred type of residence and perceived social support could not be statistically analyzed because an overwhelming majority of individuals, over 80%, preferred to live in their own apartment or house – a finding consistent with the literature (Nelson, Hall, & Forchuk, 2003). Thus, only the findings

associating type of current residence and housing stability with perceived social support will be discussed.

Comparisons of perceived social support for individuals living in different types of residences, controlling for sex, age, marital status, and annual income, yielded similar results for both general and intimate support. Individuals living in their family's home reported the highest support scores, followed by those in the group/ community/ single category, then those living in their own apartment or house, and finally, those who were homeless. While those living in their family's home and those in the group/ community/ single category had significantly higher perceived support scores than those who were homeless, individuals living in their own apartment or house did not differ significantly in their level of perceived support from those who were homeless. A likely reason for the higher perceived support levels for individuals living with their families or in the group/ community/ single category is the presence of other people in their living environment. Although the presence of others does not guarantee social interaction, much less social support, there may be an effect on the support perceived by individuals.

Previous studies have used different categorizations for type of residence, making direct comparisons difficult. Nevertheless, some studies have presented results that are relevant to the present findings. For example, a study conducted in Israel compared individuals with mental illness residing in group homes to supportive community housing, which is similar to supported housing in Canada and most closely corresponds to living in one's own apartment or house in our study. The authors found that those living in group homes had higher levels of perceived social support, which is consistent with our findings (Weiner et al., 2010). On the contrary, another study in Israel of individuals with schizophrenia found that those who live in supported apartments have higher levels of perceived social support than those in group homes (Schwartz & Gronemann, 2009). It is possible that there are other underlying factors that might explain this difference in findings, such as variation in the precise definitions of the types of residences including how many people live in each unit of residence and how long they have been living there. More studies exploring the effect of type of residence on perceived social support are necessary to gain a better understanding of this relationship. Furthermore, more

uniformity in the description of different types of residences is needed to compare findings across studies.

The negative change group, which comprised individuals who were housed at Visit 1 and became homeless at Visit 3, had the lowest perceived support scores for both general and intimate support. However, no significant difference in perceived social support was found when comparing the type of housing change groups. In the literature, housing stability has generally been found to have a positive effect on social support. One of the reasons may be that stable housing allows individuals to invite guests to their homes to build relationships, which can be sources of support (Browne & Courtney, 2005). It is possible that no significant effect was found in the present study because of the heterogeneity of the “none/ neutral change” group, which included individuals who remained housed as well as individuals who remained homeless from Visit 1 to Visit 3. In addition, the three housing change groups were very different in size, as a large majority of individuals either remained housed or remained homeless from Visit 1 to Visit 3. Consequently, there is a lack of evidence that housing stability is positively associated with perceived social support from the present study.

6.1.3 Overall Findings

Interestingly, although two factors reflecting perceived general support and perceived intimate support were found from factor analysis, both types of support showed similar relationships to type of residence and type of housing change. One of the possible reasons is that the distinction between general and intimate support is not important at all. This is unlikely, however, as these two factors were distinguished using factor analysis, and some minor findings were different between these two sources of support. As mentioned previously, annual income was significant in the perceived general support model after controlling for type of residence, sex, age, and marital status. On the other hand, sex and marital status were both significant in the perceived intimate support model after controlling for the remaining covariates. Furthermore, as mentioned previously, other measures in the literature such as the MSPSS (Zimet et al., 1988) have identified similar distinctions in sources of perceived support.

A second possibility is that the distinction between the two sources of support may be important, but not specifically for the relationship between housing and perceived social support. While there were no major differences between general and intimate support when investigating the relationship between housing and perceived social support, the distinction may be important in relation to other factors. For example, when controlling for type of residence, sex, age, and marital status, individuals with an annual income of greater than \$10,000 reported significantly higher perceived general support than those who earned less than \$10,000 per year, but this difference was not found for intimate support. In the literature, individuals of higher socioeconomic status report greater social support (Turner & Marino, 1994), which is consistent with the present finding for general support. However, it is possible that the lack of finances might not hinder the intimate support that an individual perceives. On the other hand, sex and marital status had a significant effect on perceived intimate support but not perceived general support, when controlling for the remaining covariates. The findings for the perceived intimate support model supports other research in the literature, that females and individuals who are married have greater social support compared to males and those who are not married, respectively (Turner & Marino, 1994). In addition, it is not surprising that married individuals perceive significantly greater intimate support because their spouses are likely to be the source of such support for them. Therefore, overall perceived social support may be important in relation to housing, but the distinction between general and intimate support is not.

Finally, a third potential reason for the discrepancy is that the distinction between the two sources of support is important for the relationship between housing and perceived social support but this was not clearly shown using the methods of this thesis. For example, rather than just grouping individuals by their type of residence, incorporating data regarding who specifically they are living with and whether or not supports are provided within their residence could lead to a difference in the relationship between housing and perceived general support compared to perceived intimate support. Also, for housing stability, more specific categories may also influence the effect of housing stability on perceived general and intimate support.

6.2 Strengths and Limitations

6.2.1 Strengths

In the present thesis, we aimed to thoroughly explore the measurement of perceived social support in individuals with mental illness using the PRQ. One major strength of this thesis is that rather than directly using the social support instrument for the CURA sample to explore the relationship between housing and perceived social support, we first attempted to understand the social support scores from the PRQ2000. Using the same methodology as the researchers who developed the PRQ2000, we conducted factor analysis in our sample of individuals with mental illness. This additional step revealed the distinction between perceived general and intimate support. Although most of our findings were similar when relating type of residence and type of housing change to general and intimate support, finding these two sources allowed for a more refined analysis rather than just looking at an overall support score.

Another strength of this thesis was the use of both cross-sectional and longitudinal data. Because the CURA program involved four years of data collection, we had the opportunity to look at both cross-sectional data at each annual visit, as well as longitudinal data from Visits 1 to 3 for this thesis in particular.

A final strength of this thesis was the broad inclusion criteria for individuals with a history of mental illness. While other studies may focus on individuals with severe mental illness (SMI) or specific mental illnesses such as schizophrenia, the CURA program captured individuals with any mental illness which included different types of mental illness, comorbidities, and levels of severity to provide an overall view of this population.

6.2.2 Limitations

There are several limitations to this thesis. First, because secondary analyses were conducted, we did not have control over the study population or the instruments that were used. Some specific variables of potential interest were not measured by the instruments used in the CURA program. We had to make decisions on the best measures to use for the concepts we wished to explore. For example, the PRQ was not designed specifically for

individuals with mental illness, and therefore may not be optimally applicable to this population, as previously mentioned. Furthermore, because the measure simply produces scores from the items using 7-point Likert-type responses, the absolute values of the total scores themselves may not be meaningful unless they are compared to the total scores of other studies that have also used the PRQ.

Second, in the measurement of perceived social support, there is the possibility of social desirability bias, as individuals may report better support than they actually perceive (Gottlieb & Bergen, 2010). However, the PRQ was tested for social desirability bias when it was developed, which should minimize concerns of significant social desirability bias when using the instrument (Weinert & Brandt, 1987).

Third, the sampling methodology used to recruit participants into the CURA program may have introduced bias as individuals who are closely connected to community support services may have a higher chance of seeing posters for the program or hearing about the program from support staff, and therefore more likely to be involved in the program. Additionally, the stratified sampling strategy was used to maximize the sample sizes of important subgroups for analyses to achieve good internal validity at the expense of generalizability to the population. Unweighted analyses were conducted because we lacked decent estimates of stratum population sizes to create analysis weights. On balance for this population, this method of sampling may be the best option.

Fourth, although the CURA program collected data annually to allow for longitudinal analyses, there was considerable expected loss to follow-up from visit to visit. Loss to follow-up may be particularly concerning in analyses centred around type of residence because individuals who were homeless at Visit 1 could be more likely to be lost. However, homeless individuals were oversampled compared to individuals in the other strata to account for this disproportionate loss, and attrition analyses showed that differences between the longitudinal sample and those lost to follow-up were not large (see Appendix B).

Finally, temporality could not be verified in these analyses. As previously mentioned, the relationship between housing and social support may be bi-directional; however, this

thesis is focused on the association between housing and social support, treating type of residence and type of housing change as independent variables and perceived social support scores as dependent variables. As a result, when comparing the average perceived social support scores for individuals living in different types of residences, causality could not be determined, as some sources of social support may affect an individual's housing situation (Mayock, Corr, & O'Sullivan, 2011; Mayock, O'Sullivan, & Corr, 2011). Furthermore, it is also possible that both housing and social support are affected by additional unmeasured factors.

6.3 Implications

A theoretical implication from the present thesis is that the best way to measure social support may differ among populations. Due to the multi-dimensionality of social support, certain aspects of support may be more important than others for certain populations. For example, because individuals with mental illness are known to have smaller social networks than the general population (Cohen & Sokolovsky, 1978; Froland et al., 2000; Holmes-Eber & Riger, 1990; Macdonald et al., 2000; Segal et al., 1997), there may be implications for how social support should be measured. Therefore, it is important to have social support instruments designed specifically for populations of those with mental illness, as different populations may interpret questions in different ways and some items may not be applicable to certain populations, as mentioned previously. This observation has also been noted in the literature (Beels et al., 1984).

There are also practical implications that should be considered. From the present analyses, we found that regardless of the source of perceived support, whether general or intimate support, the homeless group perceived the lowest level of social support on average. Therefore, it appears that implementing Housing First strategies may be beneficial for overall perceived social support. However, it is also important that housing policies do not break existing social ties that may provide individuals with crucial supports. In particular, because social networks of individuals with mental illness are smaller than that of the general population (Cohen & Sokolovsky, 1978; Froland et al., 2000; Holmes-Eber & Riger, 1990; Macdonald et al., 2000; Segal et al., 1997), barriers to accessing existing support sources may be quite detrimental. Housing policy can destroy

social networks, which can lead to worse health outcomes (Berkman & Krishna, 2014). In the At Home/ Chez Soi project, individuals who returned to homelessness one year after the Housing First implementation were found to have strong ties to their social network when they were homeless (Aubry, Nelson, & Tsemberis, 2015). Therefore, while Housing First strategies may be beneficial, it is important to ensure a smooth transition from homelessness to housing that will allow social supports to be maintained. Overall, further research into Housing First strategies may be valuable for increased perceived social support as well.

6.4 Future Research and Conclusions

Future research should be conducted using the PRQ to test the distinction between perceived general and intimate support in other samples of individuals with mental illness to see if this same distinction exists. The PRQ should also be compared to other instruments that measure perceived social support in samples of individuals with mental illness to determine the effectiveness of using the PRQ in this population. This research may provide additional insight into whether the distinction between perceived general and intimate support is meaningful for the overall population of individuals with mental illness. Furthermore, specific sources of general and intimate support should be explored to refine instruments used to measure perceived social support in individuals with mental illness, such as including items regarding pets. It may also be beneficial to consider the role of technology and how it has changed the perception of the availability of social support. With recent advancements, measures of social support should include the perceived availability of supports through video conferencing or social media applications, as more individuals may perceive support to be available virtually, rather than through in-person contact only.

Future studies should also involve larger samples with longer follow-up periods. Samples can then be sorted into the specific types of mental illness to compare and contrast the relationship between housing and social support among them. This additional analysis may provide a better understanding of the similarities and differences among the types of mental illnesses, in addition to understanding how housing and social support are related in individuals with mental illness overall. Longer follow-up periods may allow for a more

robust analysis of the effect of longer periods of housing stability on perceived social support. In addition, the level of perceived social support should be measured first at baseline, to be compared to the level of perceived support at subsequent follow-up visits. While longitudinal data was collected for the CURA program, it was determined a priori that if there was no difference in support scores when comparing housing change type, we would not conduct more detailed analyses. Moreover, additional study designs or methodologies may be employed to better establish temporality and more clearly distinguish the effect of housing on social support from the effect of social support on housing, to avoid mixing the effects.

Finally, future studies could explore whether social support is a consideration when individuals choose living in their own apartment or house as their preferred residence. Although it has been reported in the literature that there is a struggle to choose between a desire to live alone and the availability of supports, many of the supports mentioned referred to more formal sources of supports, rather than social support from individuals such as family and friends. It would be worthwhile to explore whether individuals are satisfied with the lower level of social support they might perceive from living alone, as demonstrated from the present analyses, and the factors that may determine this satisfaction.

In conclusion, the present thesis has used a comprehensive approach to understand the dimensions of perceived social support in individuals with mental illness when using the PRQ. Similar to previously evaluated samples, the five intended dimensions of social support were not realized when factor analysis was conducted using the PRQ85 in the CURA sample. Subsequently, when conducting factor analysis on the PRQ2000, two factors emerged, contrary to the three-factor solution obtained by the developer of the PRQ. The two factors from the CURA sample were interpreted as perceived general support and perceived intimate support.

Furthermore, the association between housing and perceived social support was explored to increase our understanding of the interrelations between these two key social determinants of health. Individuals with mental illness living in their family's home or in the group/ community/ single category had significantly higher perceived general and

intimate support scores than those who were homeless. However, there was no significant difference between those living in their own apartment or house and those who were homeless. Additionally, there was no significant difference among different types of housing change groups in either perceived general or intimate support. Future research is necessary to continue building on knowledge in these areas, as mental illness continues to have a major effect on Canadians and others around the world.

6.5 References

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Appendix A: Instruments and Detailed Question Wording

Consumer Housing Preference Survey (CHPS) (Tanzman, 1990)

- 4) Where are you living right now?
- a. In a hospital
 - b. In a group home run by a community mental health center
 - c. In a community care home
 - d. In a single room without a kitchen (for example, hotel, YMCA)
 - e. In my own apartment or house
 - f. In my family's home
 - g. In my foster family's home
 - h. In a shelter
 - i. On the streets, no where
 - j. Temporarily with a friend, relative, citizen advocate
 - k. Other place (specify)

- 12) Ideally, what kind of place would you like to live in?

- a. In a mental hospital/ inpatient unit
- b. In a group home run by a community mental health center
- c. In a community care home
- d. In a single room without a kitchen (like a hotel or YMCA)
- e. In an apartment
- f. In a house
- g. In my family's home
- h. In a foster family home
- i. In a shelter
- j. On the streets
- k. Temporarily with a friend, relative, citizen advocate
- l. Other (specify)

Versions of the Personal Resource Questionnaire (PRQ)

PRQ85 (Weinert, 1987)

- a. There is someone I feel close to who makes me feel secure.
- b. I belong to a group in which I feel important.
- c. People let me know that I do well at my work (job, homemaking).
- d. I can't count on my relatives and friends to help me with problems.
- e. I have enough contact with the person who makes me feel special.
- f. I spend time with others who have the same interests that I do.
- g. There is little opportunity in my life to be giving and caring to another person.
- h. Others let me know that they enjoy working with me (job, committees, projects).
- i. There are people who are available if I needed help over an extended period of time.
- j. There is no one to talk to about how I am feeling.
- k. Among my group of friends we do favors for each other.
- l. I have the opportunity to encourage others to develop their interests and skills.
- m. My family lets me know that I am important for keeping the family running.
- n. I have relatives or friends that will help me out even if I can't pay them back.
- o. When I am upset there is someone I can be with who lets me be myself.
- p. I feel no one has the same problem as I.
- q. I enjoy doing little "extra" things that make another person's life more pleasant.
- r. I know that others appreciate me as a person.
- s. There is someone who loves and cares about me.
- t. I have people to share social events and fun activities with.
- u. I am responsible for helping provide for another person's needs.
- v. If I need advice there is someone who would assist me to work out a plan for dealing with the situation.
- w. I have a sense of being needed by another person.
- x. People think that I'm not as good a friend as I should be.
- y. If I got sick, there is someone to give me advice about caring for myself.

PRQ2000 (Weinert, 2003)

1. There is someone I feel close to who makes me feel secure.
2. I belong to a group in which I feel important.
3. People let me know that I do well at my work (job, homemaking).
4. I have enough contact with the person who makes me feel special.
5. I spend time with others who have the same interests that I do.
6. Others let me know that they enjoy working with me (job, committees, projects).
7. There are people who are available if I needed help over an extended period of time.
8. Among my group of friends we do favors for each other.
9. I have the opportunity to encourage others to develop their interests and skills.
10. I have relatives or friends that will help me out even if I can't pay them back.
11. When I am upset there is someone I can be with who lets me be myself.
12. I know that others appreciate me as a person.
13. There is someone who loves and cares about me.
14. I have people to share social events and fun activities with.
15. I have a sense of being needed by another person.

Appendix B: Supplemental Tables and Figures

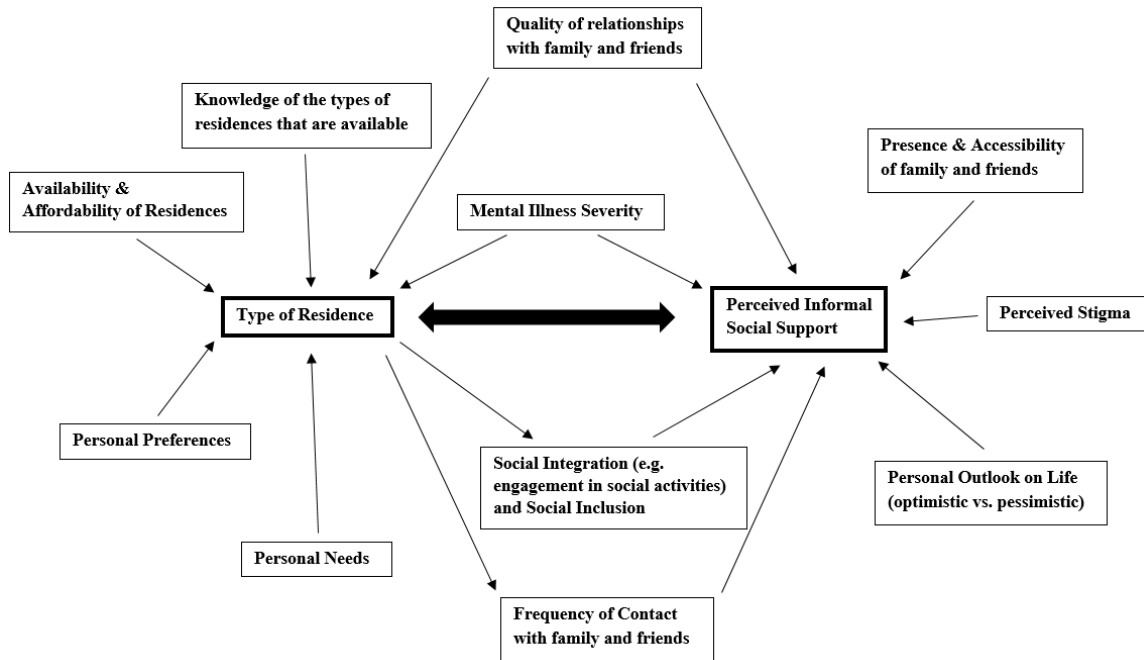


Figure B1. Initial overarching conceptual diagram for the relationship between type of residence and perceived social support.

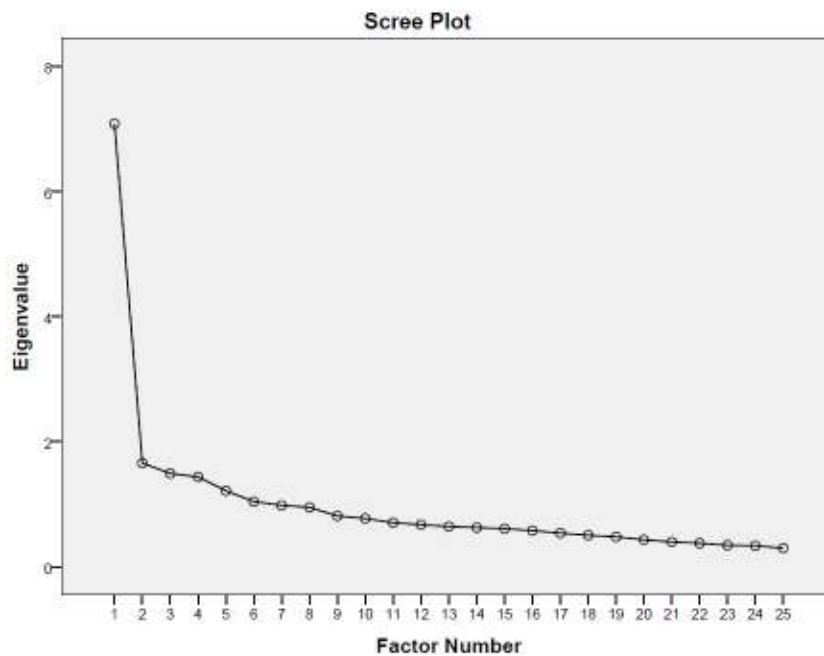


Figure B2. Scree plot for PRQ85 from SPSS output.

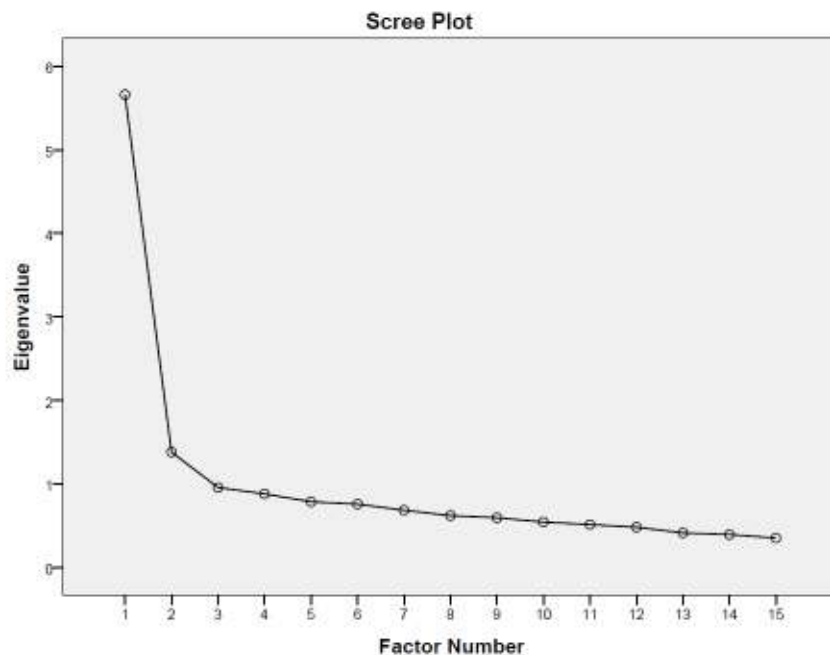


Figure B3. Scree plot for PRQ2000 from SPSS output.

Table B1. Longitudinal sample size and loss to follow-up of CURA sample.

	Visit 1	Visit 3
Sample Size at Visit 1	380	380
Missing	0	119
Remaining Sample Size	380	261
% Lost to follow-up	0%	31.3%

Table B2. Extended description of CURA sample at Visit 1 (full sample: n=380).

	Frequency (%)	Mean (SD)
Sex		
Male	190 (50.0)	
Female	190 (50.0)	
Age		40.7 (14.0)
Marital Status		
Married	49 (12.9)	
Not married	331 (87.1)	
Any Children (n=379)		
Yes	185 (48.8)	
No	194 (51.2)	
Current Contact with Family Members (n=373)		
Yes	315 (84.5)	
No	58 (15.5)	
Current Living Situation		
Lives alone	76 (20.0)	
Lives with other relative	17 (4.5)	
Lives with parent(s)	14 (3.7)	
Lives with spouse/ partner	48 (12.6)	
Lives with unrelated person	216 (56.8)	
Other (homeless, couch surfing)	9 (2.4)	
Current Type of Residence		
Group/ Community/ Single	107 (28.2)	
Own apartment or house	146 (38.4)	
Family's home	13 (3.4)	
Homeless	114 (30.0)	
Total Number of Different, Non-hospital Residences During the Past Year		2.0 (1.5)
Ever Been Homeless		
Yes	254 (66.8)	
No	126 (33.2)	
Age of First Homelessness (n=254)		26.0 (12.2)
Number of Times Homeless (n=241)		5.4 (9.7)
Highest Level of Education (n=378)		
Grade school	180 (47.6)	
High school	113 (29.9)	
Community college/ University	83 (22.0)	
Other	2 (0.5)	
Currently Employed		

Yes	94 (24.7)	
No	286 (75.3)	
<hr/>		
Psychiatric Diagnoses		
Development handicap	9 (2.4)	
Disorder of childhood/ adolescence	73 (19.2)	
Substance-related disorder	110 (28.9)	
Schizophrenia	88 (23.2)	
Mood disorder	247 (65.0)	
Anxiety disorder	144 (37.9)	
Organic disorder	2 (0.5)	
Personality disorder	23 (6.1)	
Other	35 (9.2)	
Unknown	5 (1.3)	
<hr/>		
Currently Taking Mental Health Medication		
Yes	247 (65.0)	
No	133 (35.0)	
<hr/>		
Ever Had a Psychiatric Hospitalization		
Yes	227 (59.7)	
No	153 (40.3)	
<hr/>		
Number of Psychiatric Admissions in Last Year (n=223)		0.4 (1.0)
<hr/>		
Current Addictions		
Alcohol	79 (20.8)	
Tobacco	253 (66.6)	
Caffeine	117 (30.8)	
Marijuana	108 (28.4)	
Cocaine/ Crack	43 (11.3)	
Hallucinogens	12 (3.2)	
Heroin	7 (1.8)	
Prescription Drugs	55 (14.5)	
Other	20 (5.3)	
<hr/>		
Any Chronic Physical Illness		
Yes	236 (62.1)	
No	144 (37.9)	
<hr/>		
Ever Had a Head Injury		
Yes	185 (48.7)	
No	195 (51.3)	
<hr/>		
Age of First Head Injury (n=179)		17.3 (13.2)
<hr/>		
Number of Head Injuries (n=178)		6.5 (17.8)
<hr/>		

Table B3. Sequential models for the relationship between type of residence and General Support Score at Visit 1.

Covariates	Model 1	Model 2	Model 3	Model 4	Model 5
	(n=375)	(n=375)	(n=375)	(n=375)	(n=342)
	B (95% CI)	B (95% CI)	B (95% CI)	B (95% CI)	B (95% CI)
Intercept	45.5 (43.4, 47.4)**	45.4 (42.9, 47.9)**	40.6 (34.4, 46.6)**	42.8 (35.6, 50.1)**	39.6 (32.9, 46.7)**
Type of Residence [Reference: Homeless]					
Group/ Community/ Single	4.7 (1.9, 7.8)**	4.7 (1.9, 7.4)**	4.6 (1.6, 7.7)**	4.7 (1.8, 7.6)**	4.4 (1.5, 7.5)**
Own apartment or house	3.6 (0.7, 7.1)*	3.6 (0.7, 6.4)*	3.6 (0.7, 7.0)*	3.3 (0.8, 5.8)*	1.9 (-1.3, 4.9)
Family's home	10.4 (5.4, 15.6)**	10.3 (6.1, 14.5)**	9.9 (5.0, 15.1)**	9.8 (5.3, 14.4)**	10.0 (5.5, 15.1)**
Sex					
Male vs. Female		0.1 (-2.0, 2.2)	0.1 (-2.4, 2.6)	0.1 (-2.1, 2.2)	-0.1 (-2.4, 2.4)
Age (Years) [Reference: 65-74]					
18-24			4.7 (-1.4, 10.6)	4.6 (-1.1, 10.2)	6.8 (1.4, 12.2)*
25-34			6.5 (0.5, 12.5)*	6.1 (0.6, 11.8)*	7.7 (2.4, 12.8)**
35-44			3.5 (-2.0, 9.1)	3.3 (-2.3, 9.0)	4.3 (-1.1, 9.5)
45-54			4.4 (-1.2, 10.3)	4.2 (-1.0, 9.6)	5.5 (0.1, 10.6)*
55-64			6.8 (1.0, 12.4)*	6.7 (1.3, 11.8)*	7.6 (2.7, 12.4)**
Marital Status					
Married vs. Not married				2.2 (-1.5, 5.8)	1.8 (-1.7, 5.8)
Personal Income in Past 12 Months					
Greater than vs. Less than \$10,000					3.8 (1.5, 5.8)**

*p<.05, **p<.01, ***p<.001

Table B4. Sequential models for the relationship between type of residence and Intimate Support Score at Visit 1.

Covariates	Model 1	Model 2	Model 3	Model 4	Model 5
	(n=379)	(n=379)	(n=379)	(n=379)	(n=345)
	B (95% CI)	B (95% CI)	B (95% CI)	B (95% CI)	B (95% CI)
Intercept	24.1 (22.7, 25.5)**	25.0 (23.5, 26.4)**	23.2 (19.7, 27.0)**	28.5 (24.5, 31.9)**	27.9 (23.6, 32.4)**
Type of Residence [Reference: Homeless]					
Group/ Community/ Single	2.2 (0.3, 3.9)*	2.2 (0.4, 4.0)*	2.7 (0.8, 4.6)**	2.9 (1.1, 4.6)**	2.4 (0.5, 4.4)*
Own apartment or house	2.5 (0.8, 4.1)**	2.4 (0.6, 4.2)**	2.4 (0.7, 4.2)*	1.7 (-0.0, 3.4)*	1.2 (-0.7, 3.1)
Family's home	6.2 (3.6, 9.0)**	6.4 (3.7, 9.0)**	6.0 (3.4, 8.5)**	5.6 (3.2, 7.9)**	5.9 (3.2, 8.5)**
Sex					
Male vs. Female		-1.8 (-3.3, -0.4)*	-1.8 (-3.2, -0.4)*	-1.7 (-3.1, -0.4)*	-1.8 (-3.1, -0.4)**
Age (Years) [Reference: 65-74]					
18-24			1.8 (-2.1, 5.6)	1.5 (-2.2, 5.6)	2.0 (-1.6, 5.8)
25-34			3.5 (-0.2, 7.1)*	2.6 (-1.2, 6.4)	3.0 (-0.5, 6.4)
35-44			0.8 (-2.9, 4.6)	0.4 (-3.4, 4.3)	0.6 (-3.1, 4.0)
45-54			1.6 (-1.9, 5.2)	1.1 (-2.4, 4.8)	1.2 (-2.1, 4.4)
55-64			0.9 (-2.6, 4.1)	0.6 (-2.8, 4.2)	0.3 (-2.9, 3.6)
Marital Status					
Married vs. Not married				5.3 (3.3, 7.0)**	5.4 (3.8, 6.9)**
Personal Income in Past 12 Months					
Greater than vs. Less than \$10,000					1.3 (-0.1, 2.5)

*p<.05, **p<.01, ***p<.001

Table B5. Cross tabulation of residence (homeless vs. other) at Visit 1 and Visit 3
 [Frequency (Row %)] (n=260).

		Visit 3		
		Homeless	Other	Total
Visit 1	Homeless	26 (41.3%)	37 (58.7%)	63 (100.0%)
	Other	7 (3.6%)	190 (96.4%)	197 (100.0%)
Total		33 (12.7%)	227 (87.3%)	260 (100.0%)

Table B6. Description of CURA sample (longitudinal vs. loss to follow-up) at Visit 1.

	Longitudinal (n=261)	Loss to Follow-Up (n=119)
	Frequency (%)	Frequency (%)
Sex		
Male	129 (49.4%)	61 (51.3%)
Female	132 (50.6%)	58 (48.7%)
Age [Mean (SD)]	41.9 (13.8)	37.9 (14.2)
18-24 years old	48 (18.4%)	29 (24.4%)
25-34 years old	32 (12.3%)	24 (20.2%)
35-44 years old	46 (17.6%)	24 (20.2%)
45-54 years old	84 (32.2%)	22 (18.5%)
55-64 years old	43 (16.5%)	17 (14.3%)
65-74 years old	8 (3.1%)	3 (2.5%)
Marital Status		
Married	39 (14.9%)	10 (8.4%)
Not married	222 (85.1%)	109 (91.6%)
Personal Income in Past 12 Months*		
Less than \$10,000	111 (47.4%)	54 (48.2%)
Greater than \$10,000	123 (52.6%)	58 (51.8%)
Current Type of Residence		
Group/ Community/ Single Own apartment or house	80 (30.7%)	27 (22.7%)
Family's home	110 (42.1%)	36 (30.3%)
Homeless	7 (2.7%)	6 (5.0%)
	64 (24.5%)	50 (42.0%)
Preferred Type of Residence*		
Group/ Community/ Single	30 (11.6%)	9 (7.6%)
Apartment or house	219 (84.9%)	103 (87.3%)
Family's home	6 (2.3%)	2 (1.7%)
Homeless	0 (0.0%)	1 (0.8%)
Other	3 (1.2%)	3 (2.5%)
PRQ General Support Score [Mean (SD)]*	49.3 (10.8)	46.9 (11.2)
PRQ Intimate Support Score [Mean (SD)]*	25.9 (6.8)	25.8 (6.9)

*Some responses were missing for these variables.

Table B7. General Support Score model (longitudinal vs. loss to follow-up) at Visit 1.

Covariates	Longitudinal (n=232)			Loss to Follow-Up (n=110)		
	B	95% CI	p-value	B	95% CI	p-value
Intercept	43.01	36.16, 49.90	0.001	34.13	19.19, 46.46	0.001
Type of Residence [Reference: Homeless]						
Group/ Community/ Single	4.70	1.13, 8.50	0.011	2.35	-2.19, 7.13	0.341
Own apartment or house	1.01	-2.85, 4.96	0.589	3.57	-1.82, 8.85	0.186
Family's home	9.91	-1.00, 21.17	0.038	10.71	5.27, 16.01	0.001
Sex						
Male vs. Female	-1.30	-4.16, 1.44	0.350	2.63	-1.36, 6.76	0.197
Age (Years) [Reference: 65-74]						
18-24	6.19	-0.44, 12.98	0.271	7.99	-1.45, 16.97	0.062
25-34	3.31	-3.67, 9.96		15.06	7.48, 22.30	
35-44	1.20	-5.61, 7.40		9.45	2.14, 17.54	
45-54	2.65	-3.74, 8.22		8.91	-0.05, 17.26	
55-64	4.77	-1.29, 10.29		12.83	6.06, 19.77	
Marital Status						
Married vs. Not married	1.35	-3.36, 5.85	0.578	2.89	-8.00, 10.03	0.509
Personal Income in Past 12 Months						
Greater than vs. Less than \$10,000	4.72	1.68, 7.70	0.005	2.16	-2.20, 6.26	0.316

Table B8. Intimate Support Score model (longitudinal vs. loss to follow-up) at Visit 1.

Covariates	Longitudinal (n=233)			Loss to Follow-Up (n=112)		
	B	95% CI	p-value	B	95% CI	p-value
Intercept	27.57	22.59, 32.14	0.001	29.68	21.07, 37.63	0.001
Type of Residence [Reference: Homeless]						
Group/ Community/ Single	2.36	-0.00, 4.68	0.061	2.36	-1.45, 5.83	0.166
Own apartment or house	0.87	-1.42, 3.18	0.447	2.04	-1.09, 5.84	0.192
Family's home	4.78	-0.09, 9.61	0.028	6.61	2.74, 10.54	0.004
Sex						
Male vs. Female	-1.92	-3.59, -0.37	0.033	-1.79	-4.20, 0.58	0.147
Age (Years) [Reference: 65-74]			0.487			0.308
18-24	2.94	-1.29, 7.46		-0.18	-7.51, 8.27	
25-34	2.57	-1.58, 7.37		2.78	-4.67, 11.49	
35-44	0.18	-3.81, 4.72		1.01	-6.80, 10.05	
45-54	1.62	-2.49, 6.23		0.20	-7.74, 8.98	
55-64	1.58	-2.52, 5.77		-2.66	-10.03, 5.45	
Marital Status						
Married vs. Not married	5.42	3.22, 7.36	0.001	5.52	1.86, 8.74	0.003
Personal Income in Past 12 Months						
Greater than vs. Less than \$10,000	1.55	-0.36, 3.44	0.097	0.19	-2.24, 2.29	0.881

Appendix C: Ethics Approval



Use of Human Participants - Ethics Approval Notice

Principal Investigator: Dr. Cheryl Furchuk
 Review Number: 17815
 Review Level: Full Board
 Approved Local Adult Participants: 700
 Approved Local Minor Participants: 0
 Protocol Title: Poverty & Social Inclusion
 Department & Institution: Nursing, University of Western Ontario
 Sponsor: Social Sciences and Humanities Research Council

Ethics Approval Date: April 21, 2011

Expiry Date: May 31, 2016

Documents Reviewed & Approved & Documents Received for Information:

Document Name	Comments	Version Date
UWO Protocol		
Letter of Information & Consent	Psychiatric Survivor Interview Version 2	2011/03/29
Letter of Information & Consent	Staff Version 2	2011/03/29
Letter of Information & Consent	Psychiatric Survivor Focus group Version 2	2011/03/29
Letter of Information & Consent	Family - Version 2	2011/03/29
Advertisement	Version 2	2011/03/29
Advertisement	Version 1	2010/05/31
Advertisement	Version 1	2010/03/30
Other	Information for Lanyard and Key chains Version 1	2010/05/31

This is to notify you that the University of Western Ontario Health Sciences Research Ethics Board (HSREB) which is organized and operates according to the Tri-Council Policy Statement: Ethical Conduct of Research Involving Humans and the Health Canada/ICH Good Clinical Practice Practices: Consolidated Guidelines; and the applicable laws and regulations of Ontario has reviewed and granted approval to the above referenced study on the approval date noted above. The membership of this HSREB also complies with the membership requirements for REB's as defined in Division 5 of the Food and Drug Regulations.

The ethics approval for this study shall remain valid until the expiry date noted above assuming timely and acceptable responses to the HSREB's periodic requests for surveillance and monitoring information. If you require an updated approval notice prior to that time you must request it using the UWO Updated Approval Request form.

Member of the HSREB that are named as investigators in research studies, or declare a conflict of interest, do not participate in discussions related to, nor vote on, such studies when they are presented to the HSREB.

The Chair of the HSREB is Dr. Joseph Gilbert. The UWO HSREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000940.

 Signature

Ethics Officer to Contact for Further Information

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