

**Predictors of Depression among People with Disabilities in South Korea:
A Test of Social Model**

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LIST OF ABBREVIATIONS

ANOVA	Analysis of Variance
BADL	Basic Activities of Daily Living
CESD	Center for Epidemiologic Studies Depression Scale
IADL	Instrumental Activities of Daily Living
IL	Independent Living
IRB	Institutional Review Board
KDA	Koreans with Disabilities Anti-Discrimination Act
KOWEPS	Korean Welfare Panel Study
LGBTs	Lesbian, Gay, Bisexual and Transgender persons
MHW	Ministry of Health and Welfare
MSPSS	Multidimensional Scale of Perceived Social Support
NEHCA	National Evidence-based Healthcare Collaborating Agency
OECD	Organization for Economic Cooperation and Development
PE	Population Estimate
RSES	Rosenberg Self Esteem Scale
VIF	Variance Inflation Factors
WHO	World Health Organization

SUMMARY

In South Korea, the intersection of disabilities and depression has been rarely explored. The intent of this study is to evaluate the viability of a Disability Studies framework in re-interpreting the Stress-Coping model of depression among individuals with disabilities, and secondarily to provide some basic demographics on the prevalence and demographic distribution of depression among people with disabilities.

Secondary analyses of data were conducted utilizing a nationally representative data sample, Korean Welfare Panel Study (KOWEPS). The sample includes a total of 5,735 households (14,696 people). A total of 653 adults with disabilities (those 18+ years old) who answered all the questions are included in this study. Descriptive statistics, t-test, and an analysis of variance were employed to evaluate basic demographics features of depression, and hierarchical multiple regression analyses were conducted to test the disability studies model.

Descriptive results on socio-demographic characters revealed substantial social disadvantages experienced by people with disabilities. People with disabilities experienced higher levels of depression across most socio-demographic subgroups compared to people without disabilities. Results from hierarchical multiple regression analyses suggest that the social model was a better fit to the data for the disability population than a medical model which posited greater an impact for impairment on depression.

Mental health experts, social workers in welfare centers, and peer counselors in independent living centers, policy makers, disability rights activists, and people with disabilities may benefit from the findings of this research by understanding the process of depression and thus tailor effective strategies for improving mental health.

I. INTRODUCTION

A. Background

As recognition of people with disabilities has increased, there has been growing interest among clinicians and researchers in exploring the mental health and the well-being of people with disabilities (Livneh & Martz, 2007). For more than 30 years researchers have identified depression in people with disabilities as a serious, pervasive, and growing problem, affecting both mental and physical health, and quality of life (Aneshensel, Frerichs, & Huba, 1984; Bruce, Seeman, Merrill, & Blazer, 1994; Howell, Fullerton, Harvey, & Klein, 1981; Kemp, 2006; Livneh & Martz, 2007; MacDonald, Nielson, & Cameron, 1987; Turner & McLean, 1989; Turner & Noh, 1988; Vahle, Andresen, & Hagglund, 2000).

A series of United States-based studies on the prevalence of people with disabilities and depression indicated that people with disabilities were more likely to have depression than people without disabilities (Massachusetts Department of Health, 2001; New Mexico Department of Health, 2002; North Carolina Division of Public Health, 2001; Rhode Island Department of Health, 2000). These studies were conducted by the health departments of several states using the Behavioral Risk Factor Surveillance System (BRFSS), a collaborative survey of the Centers for Disease Control and Prevention (CDC) and U.S. states and territories, since 1984. The data were collected through random telephone surveys for measuring behavioral risk factors in the adult population 18 years of age or older living in households. Findings from several states consistently found that the rate of depression among people with disabilities was higher than among people without disabilities. These studies focused on frequent depression, which was defined as being depressed for 15 or more days of the month. Frequent depression was reported by 30% of the disability sample in Massachusetts, 32.4% in New Mexico, and 34.6% in North Carolina. According to a comparison of depression across severity of disability in a Rhode Island sample, those with severe disabilities (29.8%) experienced from frequent depression compared to

only 14.6% of those with moderate disabilities and 4.2% of the sample without disabilities.

Results show that compared to people without disabilities, people with severe disabilities were seven times more likely to report frequent depression.

Higher rates of depression among people with disabilities were also reported in studies of various disability subgroups: 50% among people with a stroke (Robinson, 2003), 42% among people with a spinal cord injury (Krause, Kemp, & Coker, 2001), 59.4% among women with spinal cord injury (Hughes, Swedlund, Petersen, & Nosek, 2001), and 39% among people with rheumatoid arthritis (Dickens, Jackson, Tomenson, Hay, & Creed, 2003). Although the estimates of the prevalence of depression among people with disabilities vary across types of disabilities, the evidence has consistently shown that symptoms of depression are more common in people with disabilities.

Studies of depression and disability were not limited to estimating the higher prevalence rate of depression among people with disabilities. In a recent study of 22,570 respondents in 11 western European countries, the association between physical health and depressive symptoms was consistent across the nations of Western Europe (Braam et al., 2005). In a study of 42,249 people in 17 countries including the Americas, Asia, Africa, Middle East, and Europe as part of the World Mental Health Surveys initiative coordinated by World Health Organization (WHO), a strong relationship between mental health (depression and anxiety) and physical condition was found (Scott et al., 2007). People with disabilities are more likely to be depressed than people without disabilities and there is a strong relationship between physical health condition and depression.

B. Depression among People with Disabilities: South Korean Context

In South Korea, the prevalence of depression in the general population was reported to be 4.0% in 2001, and increased to 5.6% in 2006, and 6.7% in 2011 according to *The Epidemiological Survey of Psychiatric Illnesses in Korea*, a report published by Ministry of

Health and Welfare every 5 years since 2001. The aim of the survey was to estimate the prevalence and correlates of mental disorders in a nationwide sample of 6,022 Korean adults aged between 18-74 years old. The 2011 survey found that the lifetime rate of occurrence of mental disorders was 27.6% and only 15.3% of the respondents had been treated by specialists at the time of survey interview. A study of depression and suicide of South Koreans was summarized in the report, *Disease Burden of Depression in South Korea*, published by National Evidence-Based Healthcare Collaborating Agency (NEHCA) in 2011. Data were drawn from the *Epidemiological Survey of Psychiatric Illnesses in Korea* and billing data of National Health Insurance Review and Assessment Service. The analysis found that only around 10% of those reporting clinical depression were served by psychiatric clinics or mental health care centers. The reports attributed increasing rates of suicide, medical expenses and deteriorating quality of life to socioeconomic conditions. The NEHCA (2011) report also linked depression to suicide, alcohol-dependency, physical impairments and diseases, relationship difficulties, unemployment, and living alone. However, because the focus of the NEHCA analysis was on the screening of depression and treatment of those diagnosed, the reason why specific demographic groups reported higher depression levels than general populations was not systematically explored.

It is difficult to estimate the prevalence of depression in the disability population of South Korea prior to 2006 because surveys used in the national statistics did not jointly consider disability and depression until the Korean Welfare Panel Study (KOWEPS) was developed in 2006. KOWEPS is a nationally representative panel data survey, with data collected longitudinally on an annual basis. The KOWEPS was designed to estimate social welfare needs of specific demographic groups by the Korean Institute of Social and Health Affairs in conjunction with the Social Welfare Research Institute of Seoul National University in 2006. Using KOWEPS, Lee and Kahng (2009) reported the prevalence of depression in the disability population of South Korea for the first time based on data collected in 2008. Depression was

measured using the Center for Epidemiologic Studies Depression Scale (CESD), one of the most common screening tests for depression. A CESD score of 16 or higher identifies subjects with clinically meaningful depression and a score of 25 or higher identifies subjects with severe depression (Lee & Kahng, 2009; Radloff, 1977). In the Lee and Kahng (2009) study, approximately 38% of people with disabilities reported clinically meaningful depression. Seventeen percent of the sample with disabilities reported severe depression, more than double the 8% rate that was estimated for people without disabilities. Thus depression among those with disabilities was more than two times that of people without disabilities. To date, the Lee and Kahng (2009) study is the only report comparing depression between people with disabilities and without disabilities in South Korea. Apart from this report, there is little evidence that social service professionals and policy makers, as well as researchers, have directed attention to the problem of people with disabilities and depression in South Korea. Cultural norms such as an emphasis on viewing disability as a personal tragedy and a general lack of knowledge about disability may be a contributing factor to the lack of interest in disabilities and depression. These themes are explored in greater detail in the following section.

An important implication of depression is the potential link to suicide. Statistics Korea - the governmental body that periodically collects national statistics - reported the rate of suicide increased from 13.6 per 100,000 persons in 2000 to 31.2 per 100,000 persons in 2010 (Statistics Korea, 2010). In an Organization for Economic Cooperation and Development (OECD) fact book, the South Korean suicide rate was identified as the highest among the OECD members (OECD, 2010). The potential health policy implications are obvious given the NEHCA (2011) study that found that 80% of people who killed themselves were reported as having mental health problems such as depression and alcoholism.

The Korean government recently recognized the importance of the issue of depression and mental health for Korean society and enacted the Suicide Prevention Act in March 2011. The

Act authorizes the establishment of suicide and depression prevention centers in communities around the nation beginning in 2013. The Act also authorizes the government to annually survey depression in the Korean population at ages 3, 7, 18, 30, 45, and 60. Awareness of depression as a social issue is increasing though the treatment of depression is expected to be medically based and dependent on clinical professionals and social workers.

There is no consideration of people with disabilities in the Suicide Prevention Act or in the planning of suicide and depression prevention centers, even though people with disabilities appear to be more vulnerable. The issue of people with disabilities and depression continues to be an unseen, yet serious issue despite these new initiatives. Given the new Korean social commitment to addressing issues of depression and the possibility of higher risk among people with disabilities, the intersection of disabilities and depression and the factors that influence the relationship should be explored.

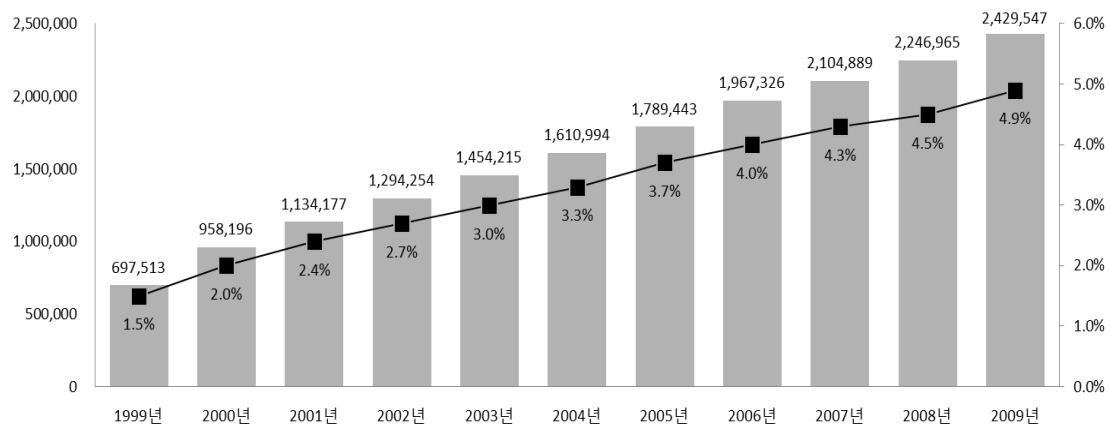
Therefore, this study seeks to further explore the phenomenon of depression among people with disabilities in South Korea. The importance of better understanding depression is discussed below in terms of its relationship to demographic changes, social circumstances, the social status of people with disabilities, and its relevance to disability rights movements.

1. **Demographic changes**

The issue of disabilities and depression is of particular concern in South Korea. As a result of the rapid aging of the population, the proportion of persons and absolute number of South Koreans with disabilities is increasing rapidly due to acquired disability through industrial accidents, car accidents, and chronic conditions associated with aging (Ministry of Health and Welfare, 2009).

The Ministry of Health and Welfare reported that the prevalence rate of disabilities (the registered number of people with disabilities as a proportion of the total population in South Korea) increased rapidly from 1.5% (697,513) in 1999 to 4.9% (2,429,547) in 2009 (MHW,

2009). The growth of the disability population is due in part to the expansion of the categories of impairments that could be registered as official disabilities in 2003 (from 5 to 15 types of impairments). The total number of Koreans with disabilities is projected to reach 3.23 million by 2015 (Korean Society for Rehabilitation and People with Disabilities, 2011). Figure 1 shows the growth in the registered population. Note that the actual size of the disability population is larger than officially reported because of the sizable unregistered population. Because of social stigma, people with disabilities often choose being unregistered (Korea Institute for Health and Social Affairs, 2001).



Source: Ministry of Health and Welfare, www.index.go.kr

Figure 1. The growth of the population with disabilities in South Korea

The proportion of the disability population with severe impairments was estimated to be 34.2% or 831.1 thousand persons in 2008 (MHW, 2009). A large number of studies consistently

report that disability is associated with increased vulnerability to clinical depression (Desrosiers, Noreau, Rochette, Bravo, & Boutin, 2002; Kemp, 2006; Livneh & Martz, 2007; Turner & Beiser, 1990; Turner & Noh, 1988). Note also that severity of the impairment is associated with a higher risk of depression than those with a mild disability or no disability (Rhode Island Department of Health, 2000). With the sizable numbers of people with severe cognitive and/or physical impairments in South Korea, there is a possibility that the total number of people with disabilities experiencing depression will increase as well.

2. **Disability discrimination in South Korea**

People with disabilities face many unique challenges in the form of barriers to social opportunities, mobility, access, and employment, which in turn create a greater risk for depression (Thompson, 2002). As a society, South Korea is particularly discriminatory towards people with disabilities. According to a study conducted in 2011 by the Ministry of Health and Welfare on the status of people with disabilities, it was reported that 76.3% of people with disabilities experience discrimination. The vast majority of persons with disabilities (70.8%) have never heard of the Koreans with Disabilities Anti-Discrimination Act (KDA); most people with disabilities are not even aware of their rights. A number of reasons may account for this state of affairs.

First, the people of South Korea are mainly composed of a single ethnic group and have been a very homogeneous population for much of its history. Foreign residents in South Korea are a relatively new phenomenon and currently are estimated to be only 2.8% of the entire population (Ministry of Public Administration and Security, 2012). Perhaps for this reason, Koreans tend to be very prejudiced towards those who have a different appearance (Kim, 2011). As a postmodern society, Korea is attempting to include more diversity than before, but persons who are different will still experience political, economic, cultural, and social exclusion (Kim, 2011).

Second, during the period of rapid economic development and growth in the 1970s and 80s, Korean society regarded ability and efficiency in the labor market as basic social values. People with disabilities have been excluded from the main labor market, regarded as a social burden as slow workers who have little or no productivity value. This is reflected in part in the employment rate of people with disabilities in South Korea (35.5%), which is nearly half of that of people without disabilities (60.3%). Similarly, their income level is 53.4% of that of people without disabilities (MHW, 2011).

Third, normalcy and beauty of body and face are crucial factors in getting a job or finding a marriage partner in Korean culture. An indicator of the cultural emphasis on beauty is the fact that Korea has the highest rate of plastic surgery per 1000 persons in the general population in the world according to a report of International Society of Aesthetic Plastic Surgery in 2010 (ISAPS, 2012). Burn injuries on the face, for example, have been reported as a major barrier to social participation in Korean culture (Yang & Park, 2011).

Fourth, religion may influence the negative attitude toward disabilities in South Korea. Korea is a multi-religious nation, with the top three religions reported to be Buddhism (23%), Protestantism (18%), and Catholicism (11%) according to the census conducted by Statistics Korea in 2005. Though most religious Koreans are Christian, the nation is culturally influenced by Buddhism and Confucianism. In these traditions, disabilities are mainly believed to result from parents' or ancestors' sins or faults from the previous life. According to Disability Studies scholars, religious perspectives on disability generally foster negative attitudes, having been used as a tool of dominant groups for teaching subordination of others and for maintaining dominant power and value structures (Charlton, 1998). South Korean perspectives toward disabilities are influenced by these different threads of religions and the general attitude toward disability is consistent with religious views of people with disabilities as inferior and dependent beings, to be treated as an object of mercy or love and needing care and protection.

Fifth, recent social and economic changes have affected marginalization of people with disabilities. The rapid industrialization, urbanization, rapid economic growth, economic crisis, and increased individualism impact marginalization of those with disabilities in South Korea (Yu, 2009). People with disabilities are more vulnerable in periods of economic crisis (Stienstra, 2002). As the most disadvantaged group in society, people with disabilities continue to be excluded and to lag behind when others gain benefits from political and economic growth in Korea, and they often remain dependent upon welfare.

Thus, there are a number of reasons why people with disabilities in South Korea are likely to be especially discriminated against and to be isolated. Korean society limits the social circumstances of those with disabilities, and the experience of social barriers and isolation, limited mobility, restricted accessibility, and unfamiliar employment circumstances only increase their devaluation (Jeon, 2011a). In these circumstances, it is not unexpected that people with disabilities are more at risk for depression than the general population.

3. **Social and economic status of people with disabilities**

The South Korean Ministry of Health and Welfare has published a report entitled “Research on the Actual Condition of People with Disabilities” every three years since 2005. The most recent report summarized the socio-economic status of people with disabilities in 2011. Nearly six percent (5.6%) of the South Korean population was officially categorized as having a disability, or approximately 2.68 million people. Among South Koreans with disabilities, 2.6 million live in the community and about 72 thousand live in institutions. Physical impairments represent the largest single subgroup within the disability population, accounting for 50.8% of the Korean disabled population.

In South Korea, people with disabilities are at higher risk for living in poverty. In 2005, 12.2% of the people with disabilities lived below the poverty line, compared with 4.1% of people in the general population; thus, people with disabilities are three times more likely to live in

poverty (MHW, 2006). In a more recent 2011 report, 17% of the people with disabilities were identified as living below the poverty line (MHW, 2012). Since the 2005 and 2011 data were based on the same data system collected by the Ministry of Health and Welfare, the difference across years suggests the disparity in economic status of people with disabilities has increased in recent years. The cause of poverty is closely connected to the low status of people with disabilities. According to the World Bank report entitled, *Poverty and Disability*, disability exacerbates poverty throughout the world by increasing isolation and economic strain, not just for the individual but often for the family as well (Elwan, 1999). Disability, poor education, and reduced employment opportunity are all inter-connected and related to greater risk for poverty. Among Koreans with disabilities in 2011 for example, 12.3% did not have an elementary school education, 45.3% had not completed a middle school education and 63.7% had not entered high school. Among working age South Koreans with disabilities, the employment rate was 35.5%, compared to an employment rate of 60.1% in the general population. For those people with disabilities who were employed, income status is low. The average income of people with disabilities who were working in 2011 was \$1,419 per month, compared to \$3,108 per month for those without a disability.

Low socio-economic status is an important risk factor for depression. Socio-demographic factors such as gender, poverty, class, ethnicity, occupation and other socio-economic status have been shown to be important predictors of depression (Barnes et. al., 2004; Flores et al., 2008; Gee, 2002; Horwitz, 1999; Kahng & Kwon, 2008; Kwon & Park, 2005; Schulz et al., 2006; Turner & Avison, 2003; Taylor & Turner, 2002).

C. **A Conceptual Framework for Studying Depression and Disability**

Depression is associated with certain life experiences, especially stressful life events (Bolber, DeLongis, Kessler, & Schilling, 1989; DeLongis, Folkman, & Lazarus, 1988; Kendler, Karkowski, & Prescott, 1999; Kessler, 1997). A significant literature has focused on the

relationship between mental health, including depression, and discrimination experiences in the context of race, ethnicity, gender, age, and sexual orientation (Araujo & Borrell, 2006; Paradies, 2006). Research conducted in the disciplines of social psychology and race studies have employed a Stress-Coping theory that focused on the perceptions of stressors and psychological strategies for coping with them (Araujo & Borrell, 2006; Paradies, 2006; Williams, Neighbors, & Jackson, 2003).

In the Stress-Coping theory of depression, stress has been identified as a main predictor of depression (Bolber et al., 1989; Delongis et al., 1988) and the discrimination experienced by social minorities was identified as a key stressor (Araujo & Borrell, 2006; Ajrouch, Reisine, Lim, Sohn, & Ismail, 2010; Flores et al., 2008; Landrine & Klonoff, 1996; Mays & Cochran, 2001; Moradi & Risco, 2006; Taylor & Turner, 2002). Social isolation has been considered an additional stressor for social minorities, especially the elderly (Freyne, Fahy, McAleer, Keogh, & Wrigley, 2005; Victor, Scrambler, Bond, & Bowling, 2000; Zaninotto, Falaschetti, & Sacker, 2009). In a study by Hughes et al. (2001), it was reported that the high prevalence of clinically significant depressive symptoms among women with spinal cord injury was primarily associated with perceived stress and isolation. The level of depression experienced by persons appears to vary depending on internal and external resources that are available for managing stressful experience (Ajrouch et al., 2010; Bowen-Reid & Harrell, 2002; Lazarus & Folkman, 1984; Mossakowski, 2003; Moradi & Risco, 2006; Noh & Kaspar, 2003; Vilhjalmsson, 1998). For example, self-esteem as an internal resource and social support as an external resource has been examined in previous research (Ajrouch et al., 2010; Noh & Kaspar, 2003; Vilhjalmsson, 1998; Yang, 2006).

However, depression among people with disabilities has rarely been studied from the perspective of social stressors such as disability discrimination and isolation. This may be a consequence of researchers assuming a medical model perspective in which depressive

symptoms are considered symptoms that are the natural consequence of impairment (Kemp, 2006). Thus, the mental health of people with disabilities is often framed as a secondary issue; studies about depression have focused on the direct effect of disability on depression (Boerner, 2004; Brown, 1990; Hughes et al., 2001; Kemp, 2006; Krause, Kemp, & Coker, 2001; Lee & Oh, 1999; Robinson, 2003; Scott et al., 2007; Song, Koo, & Lee, 1996).

A better understanding of the relationship of depression to disability is important since many professionals likely assume that depression is “normal” for people with disabilities. An alternative perspective is that depression is the consequence of discrimination or social isolation (Balcazar et al., 2012; Prilleltensky, 2003, 2008). From a Disability Studies perspective, the causes of depression may lie outside the person. Just as the depression research conducted in the disciplines of social psychology and race studies focused on the social stressors related to gender, age, ethnicity or sexual status, depression among people with disabilities may be better understood as a socially induced problem.

Therefore, this study attempts to extend the concept of risk for depression among people with disabilities to social factors beyond the fact of impairment. The Stress-Coping theory is reevaluated through a Disability Studies lens by employing a social model perspective. In this study, the Stress-Coping model would consider discriminatory experience and social isolation rather than disability status as the primary stressors predicting depression. Self-esteem, social support and social service usage would serve as moderators of the relationship between stress and depression.

The intent of this study is to evaluate the viability of a Disability Studies framework in re-interpreting the Stress-Coping model of depression among individuals with disabilities. The following relationships will be explored: (1) socio-demographic risk factors for depression, (2) disability discrimination experiences and social isolation, (3) self-esteem, social support and social service usage, and (4) how these variables predict depression. This study will attempt to

test the fit of a model in which the main predictors of depression are located in social stressors such as disability discrimination and social isolation rather than disability status, and that the relationship between stressors and depression are mitigated by internal and external resources such as self-esteem, social support and social service usage. By identifying the moderating role of these variables, this study would shift emphasis away from “cure” and “adjustment” of the individual by refocusing the problem on the social environment. A secondary purpose of this research is to provide some basic demographics on the prevalence and demographic distribution of depression among people with disabilities in South Korea.

In summary, the rapid growth of disabilities in South Korea, its discriminatory social context, and limited resources available to persons with disabilities, all suggest the growing importance of depression as an important social policy issue. However, the intersection of disabilities and depression has been rarely explored.

II. THEORETICAL BACKGROUND AND LITERATURE REVIEW

A. Theoretical Background

This section provides a review of the theoretical background of the relationship between social stressors and depression, which is largely represented by the Stress-Coping model. The review begins with literature on stress research and then moves on to discuss the application of the disability studies perspectives to the Stress-Coping model.

1. Stress-coping theory and depression

Stimulus and response models as an explanation for the stress process resulting in depression are prominent in the psychology literature (Romano, 1992). Holmes and Rahe (1967) developed instruments measuring the relationship between life events and physical health. Selye (1976) discussed the response model of stress that explains how the physiology of a person responded to positive or negative life events, focusing on physical response. Those stimulus and response models have made influential contributions to stress theory. In addition, various theories have been developed to explain the causes of depression: for example, pathology model, situational model, symbolic interaction theory, rank theory, stress-vulnerability model, social stress theory, cognitive theory, and attribution theory, among others (Wolman & Stricker, 1990). However, researchers have pointed out that these simple models using only one causal agent have considerable theoretical limitations; for example, previous research has focused on only stressors or the negative effect of stressors (Aneshensel, 1992).

Lazarus and Folkman (1984) suggested the Stress-Coping model, an interaction model of stress in response to criticism that prior stimulus and response models of stress defined stimulus as stressful only in terms of their stress response. Lazarus and Folkman (1984) defined stress as the relationship between an individual and the environment that is cognitively appraised by the individual as exceeding the individual's ability or resources. This model has been supported by many researchers (Groomes, 2000; Monroe & Peterman, 1988; Tetrick, 1992) and applied when

examining the relationship between stressful life events and their effects (Endler & Parker, 1990; Groomes, 2000; Lepore & Evans, 1996; Skodol, 1998; Zeitlin & Williamson, 1994).

In the Stress-Coping model, the cognitive appraisal process that leads to stress is composed of a two-phase process. The first phase occurs when an environmentally induced event that may disrupt a sense of well-being is evaluated for potential threats (Cox & Ferguson, 1991; Lazarus & Folkman, 1984). In other words, a stressful appraisal occurs when a person believes that harm, threat, or challenges to the individual's well-being will occur (Chaturvedi, 1983; Lazarus & Folkman, 1984; Paterson & Neufeld, 1989). The second phase is related to the evaluation of internal and external resources to adequately cope with the threats (Cronkite & Moos, 1995; Lazarus & Folkman, 1984). Higher perception of coping resources produces a lower perception of threats. Conversely, a lower perception of coping resources yields a higher perception of stress. Lazarus and Folkman (1984) emphasized that an individual's appraisal process depends on one's ability and resources to cope with a given situation. Few events or problems in life are intrinsically stressful. Rather, it is an individual's perception, which is typically associated with the experience of feeling psychologically overwhelmed by a stressful event, which creates or intensifies feelings of stress. In addition, prolonged exposure to stress can result in psychological effects. Individuals who experience pervasive stress will usually display an array of negative emotions and cognitive states such as anxiety, depression, irritability, anger, and similar symptoms (Bergdahl & Bergdahl, 2002).

Stress-Coping theory claims that the state of depression may improve or worsen depending on the individual's coping method. Coping is defined as a part of the appraisal process when an individual tries to use internal and external resources to help reduce the perception of stress (Amodeo, Griffin, Fassler, Clay, & Ellis, 2007; Brown, 1993; Folkman & Lazarus, 1991). Internal resources may include cognitive and emotional factors related to the person's motivation, self-esteem, and self-efficacy, while external resources may include social factors. Self-esteem as

an internal resource and social support as an external resource were often examined in the literature. Because the Stress-Coping method effectively explains mental health related complications such as depression, coping strategies are thought to be more important in mental health than the source of stress itself. Thus, the coping strategies of people with disabilities may be considered very important to psychological adaptation (Buckelew, Baumstark, Frank, & Hewett, 1990).

Since Stress-Coping theory has been applied to many previous research problems encompassing depression associated with life experiences (Ajrouch et al., 2010; Araujo & Borrell, 2006; Barnes et al., 2004; Bolber et al., 1989; DeLongis et al., 1988), the theory might be useful in explaining the relationship between stressors such as discrimination experience and social isolation and depression among people with disabilities.

2. **Reevaluation of stress-coping model from the perspective of disability studies**

The issue of depression among disabled people can be explored through the lens of Disability Studies. Previous research has treated people with disabilities as objects to be cured, adjusted, or “fixed.” Thus, mental health conditions are often viewed as natural consequences of the fact of disability.

Disability Studies began to flourish toward the end of the twentieth century as an emerging interdisciplinary academic field focusing on the relationship between disability and society in terms of culture, history, social policy, law, psychology, technology, architecture, and other disciplines. A social model of disability characterizes the approach of the field in understanding disability. The social model focuses on the environment and society rather than the characteristics of those people with disabilities.

The “social model” and the more traditional “medical model” can be considered the two most prominent perspectives on disability. The medical model reflects early sociological

approaches to disability, which assumed that disability is an abnormal condition from which there can be no return to normal roles. The medical model views disabled people as needing to be cured and rehabilitated, focusing on the disabled body, and has portrayed disability as the result of physical or cognitive impairments (Gilson & Depoy, 2000). In the mid-1970's, with the rapidly growing disability right movements in the United Kingdom and USA, the medical model started to be criticized by disability rights movement activists who framed their work in terms of the social model. The social model viewed disability as resulting from discriminative social environments for individuals who are labeled "disabled" (Hahn, 1985). Scholars differentiated disability from sickness and chronic illness and started to consider disabled people as a social minority. Based on the social model, Disability Studies scholars focused on the social, political, and economic disadvantages and inequalities of disability as other social minority studies did. In early disability research, the experiences of people with disabilities were investigated using either Parsons' notion of the sick role (Parsons, 1951) or Goffman's notion of social deviants (Goffman, 1963). Parsons' perspective suggested that disability is a permanent sickness that makes it impossible to play a normal role in society, while Goffman's notion suggested that the best role of a disabled person is pretending to be normal.

When analyzing perspectives towards disability, the medical model focuses on the individual and pursues the rehabilitation or adaptation of people with disabilities. On the other hand, the social model focuses on society and on changing society. The social model considers disability as a disadvantage or restriction created by a society that takes little account of accommodating people with impairments thereby excluding them from participation in the larger society. In other words, disability is created by attitudinal and environmental barriers rather than impairments or functional limitation (Finklestein, 1991). This "social model" perspective of disability has been introduced recently in South Korea. Although there are some criticisms of the social model by feminists and clinical professionals that the social model ignores the reality of

the body, pain or impairments, it provides the dominant alternative perspective on disability and has been important in challenging social value.

Despite the inclusion of the role of environmental or external factors in creating depression in the Stress-Coping model, the model still locates depression issues in the person; its main focus is on the perception of stressors and its internal response process. Clinical professionals and scholars refer to this resource as a reaction of “adjustment” or “coping” (Antonak & Livneh, 1995; Boerner, 2004; Friendland & McColl, 1992; Groomes, 2000; Livneh & Martz, 2007; Thompson, 2002). However, from the perspective of Disability Studies, depression might be the consequence of social disadvantages such as discrimination and social isolation (Balcazar et al., 2012; Prilleltensky, 2008). Therefore, in this study, the Stress-Coping model is modified to reflect a Disability Studies perspective in modeling the relationship between social disadvantages and depression among people with disabilities. In the following section, the relevant literature on depression is reviewed.

B. **Literature Review**

This chapter provides a review of previous research dealing with the various factors that influence depression of people with disabilities. The review begins with literature on disability and depression. Then the review moves to discuss other factors associated with depression such as discrimination experience, social isolation, self-esteem and social supports. Finally, demographic factors influencing depression are explored by highlight key empirical studies. Since a number of relevant studies of depression were conducted from the perspective of other social minorities such as Lesbian, Gay, Bisexual and Transgender persons (LGBTs) or ethnic minorities, these relevant literatures were also considered in the literature review on depression among disabled people.

1. **Disability and depression**

According to the National Institute of Mental Health (NIMH, 2011), depression is a state of low mood and aversion to activity. Major signs of depression include loss of interest in activities that were once interesting or enjoyable. Common symptoms include loss of appetite or overeating, feelings of hopelessness, continual sadness, or anxiety, a sense of emptiness, peculiar exhaustion, and physical problems such as long-lasting headaches, chronic illness, or indigestion, and thoughts of suicide.

As noted in introductory review, people with disabilities are more vulnerable to depression compared to people without disabilities. Friendland and McColl (1992) described the theoretical origins of the relationship between disability and depression using two broad categories of biological and psychological aspects. Biological aspects of depression among people with disabilities include those that are genetic issue or a part of an illness process and mutation in the central nervous system or in a neurochemical instability, and those that are caused by the use of medications. Psychological aspects were organized around four theoretical frameworks. First, from the psychodynamic approach, depression was viewed as a natural reaction towards a sense of loss. When people lose their physical or mental function or role due to disability, they experience depression as the process of mourning for the loss. Second, when interpreted from the perspective of learned helplessness, depression has been seen as a learned reaction to the physical environment that is structurally centered on people without disabilities and does not accommodate disability. Third, when examined from a cognitive framework, depression can be viewed as an indicator of one's negative appraisal of the world and future. Fourth, from a stress theory framework, the probability of depression is increased because of the higher stress that people with disabilities experience compared to people without disabilities. At the end of Friendland and McColl's review (1992), clinical interventions and the implications of each of the different frameworks were discussed in relation to facilitating adjustment and preventing depression.

Of the four theoretical perspectives outlined in Friendland and McColl, all explanations of the relationship between disability and depression, except for the psychoanalytical framework, focus on interaction with the environment. In these perspectives, depression is viewed as the socio-psychological reaction that the people with disabilities experience due to reduced social status, stereotypes and social inequalities. In other words, rather than loss, the depression of people with disabilities can be viewed as the result of interactions within the social environment.

Although Disability Studies scholars frame disability not as a medical issue but a social one, there is no empirical evidence that the cause of depression among people with disabilities is located in social structures or social attitudes towards disability (Jeon, 2009). Previous research on the mental health of people with disabilities largely frames depression as a phenomenon that is the result of the disability itself. The focus is placed on “disability as a loss.” Research has targeted depression in specific types of disability (Boerner, 2004; Brown, 1990; Scott et al., 2007; Song et al., 1996). Examples include evaluating the degree of depression in relationship to amount of hearing loss (Song et al., 1996). Boerner (2004) investigated the links between disability and mental health among adults who experience age-related vision loss. Their regression analysis revealed that functional disability and vision loss were significant predictors of mental health outcome (depression and social dysfunction). Brown (1990) investigated the relationship between pain experienced by patients with rheumatoid arthritis and depression, finding a strong predictive relationship using Structural Equation Modeling (SEM) modeling. Scott and colleagues (2007) examined the mental health of 42,249 people in 17 countries and showed a strong relationship between mental health (depression and anxiety) and the presence of a physical condition such as diabetes, obesity, asthma, hypertension, arthritis, ulcer, heart disease, back/neck problems, chronic headache, and multiple sources of pain. From the perspective of the medical model, these and similar studies reinforce the notion that there is a direct causal relationship linking disability to depression.

Some studies have considered a bi-directional causality between depression and disability. Bruce et al. (1994) for example, reviewed evidence from epidemiologic and clinical studies suggesting a reciprocal, potentially spiraling, relationship between depression and disability in older adults. In other words, disability is a risk factor for depression, and depression is also a risk factor for disability. Disability increases the risk for depression. In turn, depressive symptoms such as fatigue, sleep disturbance, and appetite disruption influence functional decline. However, both approaches reflect a medicalized perspective because they exclude social and psychological factors that can influence depression level.

Some research suggests that depression is not necessarily a direct consequence of disability. For example, Beedie and Kennedy (2002) documented the level of depression and suicide in the spinal cord injured population, where the majority of suicide attempts occur within 12 months of injury onset. A regression analysis suggested that absence of social support was linked to depression and suicidal intent while the level of injury was unrelated. Similarly, Krause, Kemp, and Coker (2001) concluded that depression was influenced by income and education rather than the degree of spinal cord injury. They indicated that the high rate of depression in people with disabilities was only indirectly related to disability.

Research on the functional limitations of people who have cerebral palsy and depression also indicates the possibility that depression is not located in the impairment itself but in functional limitations related to social activities. Lee and Oh (1999) studied the relationship between the ability of people with cerebral palsy to carry out everyday life chores and depression. Depression level tends to be associated with limitations in Instrumental Activities of Daily Living (IADL) in people with cerebral palsy rather than Basic Activities of Daily Living (BADL). Depression had a higher correlation with IADL which is related to participation related activities such as using the telephone and managing money. Depression was less affected by limitations with basic self-care such as bathing or climbing up stairs. This research suggests the importance of social activity.

2. **Discrimination experience, social isolation, and depression**

Although many studies have explored the relationship between discrimination experience, social isolation, and depression among other social minorities, the discrimination and isolation experiences among persons with disabilities and the effect on mental health has rarely been examined. Therefore, literature about other minority groups is reviewed, and possible applications to the study of depression among people with disabilities are discussed.

a. **Relationship between discrimination experience and depression among minority groups and its application to disability population**

Associations between health, including mental health, and the stress of social discrimination have been investigated and supported empirically in the context of race, ethnicity, gender, age, and sexual orientation (Ajrouch et al., 2010; Araujo & Borrell, 2006; Flores et al., 2008; Landrine & Klonoff, 1996; Mays & Cochran, 2001; Moradi & Risco, 2006; Paradies, 2006; Taylor & Turner, 2002). African-Americans, and to a lesser extent other ethnic minorities, immigrants, or sexual minorities have been the focus of the studies. Most research on perceptions of discrimination and mental health emphasized racial discrimination. Most studies reported that racial discrimination exerts negative effects on mental health.

Because a significant number of studies have accumulated over the years meta-analyses have been conducted, and confirm that the perception of discrimination has negative impacts on mental and physical health. Paradies (2006) conducted comparative analysis of 138 related studies, and 72% of the results show that mental health was statistically related to racial discrimination. Williams and his colleagues (2003) conducted meta-analysis on the research, and found that the discrimination experienced by African-Americans was related to emotional difficulty, depression, Obsessive-Compulsive Disorder, anger, stress and other mental health problems or caused behavioral problems such as smoking, alcohol abuse, and misuse of medications. Other investigators have found similar relationships (Barnes et al., 2004; Borrell,

Kiefe, Williams, Diez-Roux, Gordon-Larsen, 2006; Bowen-Reid & Harrell, 2002; Broman, Mavaddat, & Hsu, 2000; Kwate, Valdimarsdottir, Guevarra, & Bovbjerg, 2003; Landrine & Klonoff, 1996; Paradies, 2006; Schulz et al., 2000). Studies of other ethnic groups in the USA and Canada examined Mexican Americans (Araujo & Borrell, 2006; Finch, Kolody, & Vega, 2000; Flores et al., 2008), Latino Americans (Moradi & Risco, 2006; Todorova, Falcón, Lincoln, & Price, 2010), Chinese Americans (Gee, 2002), Filipino Americans (Mossakowski, 2003), Southeast Asian Refugees in Canada (Noh, Beiser, Kaspar, Hou, & Rummens, 1999), Korean immigrants in Toronto (Noh & Kaspar, 2003), and American Indians (Whitbeck, McMorris, Hoyt, Stubben, & LaFromboise, 2002).

A study that parallels some of the issues of depression among people with disabilities was conducted by Borrell and colleagues (2006) on the mental health of African-Americans. In their analysis, skin color and racial discrimination experiences were considered as separate factors associated with negative mental health. Racial discrimination was associated with self-reported physical and mental health, but skin color was not, either before or after controlling for socioeconomic position or perceived racial discrimination. These results were inconsistent with the findings of Barnes and colleagues (2004) who found skin color to be a predictor of depression. The role of personal features must be considered separate from discrimination experiences.

In research on the mental health of gay, lesbian, bisexual and transgender persons (LGBTs), studies have examined similar relationships between discrimination experiences and depression. Mays and Cochran (2001) for example, surveyed individuals self-identifying as homosexual or bisexual ($n = 73$) or heterosexual ($n = 2844$) about their lifetime and day-to-day experiences with discrimination and mental health indicators such as depression, anxiety, and substance dependence disorders. They reported that higher levels of discrimination may underlie recent observations of greater psychiatric morbidity risk among lesbian, gay, and bisexual individuals. Meyer (2003) reviewed evidence on the prevalence of mental disorders in lesbians,

gay men, and bisexuals. A meta-analysis revealed that LGBTs had a higher prevalence of mental disorders than heterosexuals. The greater risk was attributed to social minority stress such as stigma, prejudice, and discrimination.

In the related research literature from South Korea, four studies have examined the mental health of South Korean social minorities: senior citizens (Won, 2005), foreign workers in Korea (Lee, 2004), Asian foreign students studying in Korea (Seo, 2009), and disabled adults 18 years old and older (Lee and Kahng, 2009). All these studies used the CESD (Center for Epidemiologic Studies Depression) screening test to measure depression, and concluded that the experience or perception of discrimination increased risk for depression. Won's (2005) research employed a regression analysis to illustrate the predictive relationship of senior citizens' experience with discrimination and depression. Lee's (2004) study on foreign workers' experience of discrimination and depression also considered social relationships as a mediator of the relationship of discrimination and depression. Similarly, Seo's (2009) study explored sense of ethnic identity as a mediator among Asian foreign students in Korea. Taken together, these studies indicate a causal relationship between discrimination and depression among social minorities and suggest the importance of considering a mediating or moderating effect of other characteristics. While, Lee and Kahng (2009) have reported that people with disabilities are more likely to report depression than people without disabilities and that both discrimination experience and limitations in BADL affect the level of depression, they did not focus on modeling the relationship nor did they consider depression from the perspective of Disability Studies.

Although most of the studies indicate that perceptions of discrimination are strongly related to psychological distress, not all studies reached this conclusion. Taylor and Turner (2002) investigated the influence of life events, chronic stress, and racial discrimination on depression. The result of their regression analysis showed that racial discrimination (both day-to-day

discrimination and major discrimination occurrences) was not a significant predictor, while chronic stress and life events were significant predictors of depression. They concluded that perceptions of discrimination contribute almost nothing to an understanding of the origins of racial differences in depression. Similarly, a study by Burgess, Lee, Tran, and Ryn (2007) showed no causal relationship between discrimination experiences and mental health. Burgess examined the extent to which a recent experience of a major discriminatory event may contribute to poor mental health among LGBT persons, and concluded that LGBT individuals experienced more major discrimination and reported worse mental health than heterosexuals, but discrimination did not account for this disparity.

Regardless of the inconsistencies, the study of mental health in any social minority group must consider the examination of discrimination as a cause of mental health issues. Given the weight of the research evidence from other social minorities, there is a strong likelihood that discrimination against disability will show a negative relationship to mental health status of people with disabilities.

b. **Relationship between social isolation and depression and its application to people with disabilities**

Social isolation is defined as “disengagement from social ties, institutional connections or community participation” (Seeman, 1996, p. 442). Isolation is generally defined as the absence of contact with other people (Hall-Lande, 2011). The term social isolation has a meaning similar to loneliness or exclusion and can be considered the opposite of social capital, which involves social supports through social relationships. There are many studies that examine the relationship between these concepts and quality of life and health including mental and physical health (Victor, Scrambler, & Bond, 2009; Zaninotto et al., 2009). Generally, the effect of social isolation has been considered an important factor when investigating the influence of social environment on mental health (Hawton et al., 2011).

There is growing evidence of the negative effects of social isolation on health and well-being in older people (Freyne et. al., 2005; Victor et. al, 2000). Social support, social contacts, and social networking have been emphasized in the literature because of the finding that older people who are socially integrated may have substantial physical and mental health benefits (Netuveli & Blane, 2008; Netuveli, Wiggins, Hildon, Montgomery, & Blane, 2006; Zaninotto et al., 2009). Unlike the findings that discrimination was a key factor predicting mental health among ethnic minority groups, isolation has been consistently studied as a predictor of negative mental health among older people, who are more likely to be socially isolated than people of other ages due to retirement, health condition, loss of friends and family members (Victor et al., 2009).

Discrimination and isolation are different dynamics, although both are related to the experiences of what could be considered social minorities; discrimination exists in the interaction between people while isolation exists as the absence of interaction with other people. Ethnic minorities and LGBTs experience relatively more social discrimination, while older people experience relatively more isolation. When investigating mental health issues among people with disabilities, both discrimination and isolation concepts need to be considered. As a socially marginalized group, people with disabilities experience both.

However, to date, the relationship of isolation and depression among people with disabilities has been rarely studied with empirical data. Hughes et al. (2001) included isolation as a factor in depression among women with a spinal cord injury. They used the perceived stress scale developed by Cohen, Kamarck, and Mermelstein (1983) and among six predictor variables (employment, vitality, social support, abuse, isolation, and perceived stress), only perceived stress and social isolation remained in the final regression model, accounting for 71% of the total variation in the depression score. The finding suggests the importance of stress and social isolation to depression.

3. **Self-esteem, social support and depression**

Those researchers who have studied depression and social relationships examine different elements that might influence depression. Two of the most important examples are self-esteem as an internal resource and social support as an external resource (Ajrouch et al., 2010; Noh & Kaspar, 2003; Vilhjalmsson, 1998; Yang, 2006). The following section examines the literature regarding the effect of social support and self-esteem on depression.

a. **Social support and depression**

The role of social support as a mediator was explored by Cassel and Caplan in 1970's who identified the importance of interaction among individuals in coping with life crises or life transition (Hurdle, 2001). In recent years, the emphasis in the conceptualization of social support has shifted from an interaction between individuals to perceptions, the quantity and quality of support, and various characteristics of relationships (Hupcey, 1998). Currently, although there is little theoretical agreement on a specific definition of social support, a broad conceptualization of social support as, "resources provided by others" has been suggested by Vyavaharkar (2008).

Social support is a strong predictor of depression among people with disabilities. Mitra, Wilber, Allen, and Walker (2005) examined the associations among social support (access to care, contacts with friends), risk behavior factors (tobacco use, physical exercise), and depression in adults with disabilities, and established that social support and risk behaviors were significantly correlated to depression. Noh and Kaspar (2003) studied the intervening role of social support in the impact of ethnic discrimination on depression among Korean immigrants in Toronto. Their result showed that social support exerts a direct effect on well-being, but does not buffer the effects of perceived discrimination on well-being. Those studies indicated that social support serves as a direct indicator of depression.

Previous studies about the relationship between social support and depression among

people with disabilities indicated that social support reduced depression. Rintala, Young, Hart, Clearman, and Fuhrer (1992) showed a relationship between life satisfaction, depression, and social support in persons with spinal cord injury. Life satisfaction and physical well-being was influenced by the social support like networks between persons. Satisfaction with social support significantly decreased depressive symptoms and increased the level of life satisfaction. Previous research has consistently demonstrated that social support decreases depression among people with spinal cord injury (Beedie & Kennedy, 2002; Elliot, Herrick, Witty, Godshall, & Spruell, 1992).

Social support has been shown to be a modifying factor between stressors and mental health among other social minorities. Social support increased the ability of persons to control their environmental stressors (Shin & Choi, 2007) and has been identified as a factor reducing the impact of stressors on negative mental health outcomes (Moon, Jung, & Son, 2008; Noh & Kaspar, 2003; Uom, 2008; Yang, 2006).

Another perspective on social support is that it should be considered in context since supports can be situational (Rook, 1997). For example, Ajrouch et al. (2010) examined whether instrumental and emotional social support moderates the association between perceived everyday discrimination and psychological distress among African-American women with young children. Their results showed that emotional support was associated with less depression, while instrumental support was a significant buffering factor among those who perceived moderate levels of everyday discrimination. The buffering effect weakened for those perceiving excessive daily discrimination. Brondolo, Brady, Penncille, Beatty, and Contrada (2009) suggested that social support may be helpful at low levels of stress exposure, but exacerbates difficulties at high levels of exposure. Revenson, Schiaffino, Majerovitz, and Gibofsky (1991) investigated the relationship between social support and depression in rheumatoid arthritis patients and found that social support can have positive or negative relationships to depression. Receipt of positive or

helpful support from close friends and family was related to lower depression, but the receipt of problematic social support was related to increased depression. Therefore, it is necessary to examine the different effect of social supports on depression among disabled people across types of social support.

b. **Self-esteem and depression**

Self-esteem has been one of the most influential concepts in human psychology and has elicited a large body of theoretical work. James defined it as the ratio of successes in important life domains (Sowislo & Orth, 2013). In the mid-1960s, self-esteem was described by Rosenberg as a positive or negative orientation toward self, reflecting a personal worth or worthiness, which became the basis for the widely used Rosenberg Self-Esteem Scale (Rosenberg, 1965). At the end of the 1980s, the concept was modified again by Rosenberg and described as the feeling that one is good enough. Scholars discussed whether self-esteem was distinguishable from other self-concepts such as self-efficacy or self-knowledge (Leary & Baumeister, 2000). Recently however, self-esteem is exclusively defined as a judgment of oneself as well as an attitude toward the self, including beliefs toward oneself and emotions such as triumph, despair, pride, superiority, arrogance, and shame (Hewitt, 2009). To date, self-esteem has been an important research topic for social psychologists because it is related to various social psychological issues such as success and well-being (Harter, 1999; Swann, Chang-Schneider, & McClarty, 2007), life satisfaction (Chen, Cheung, Bond, & Leung, 2006), aggression and violence (Baumeister, Smart, & Boden, 1996), and mental health related issues such as suicide and depression (Orth, Robins, Trzesniewski, Maes, & Schmitt, 2009; Petrie & Brook, 1992; Sowislo & Orth, 2013).

Researchers have debated whether self-esteem and depression are the opposite ends of the same construct; that is, depression may be the same as low self-esteem. Watson, Suls, and Haig (2002) cautioned about the similarity of the constructs because there were very strong negative correlations. However, most recent researchers treat depression and self-esteem as

distinct constructs because self-esteem is associated with a wide range of other clinical conditions such as social phobia, Attention Deficit Disorder, and learning disorder (American Psychiatric Associations, 2000). Furthermore, the characteristics of people with low self-esteem are different from those of people with depression (Sowislo & Orth, 2013). People with low self-esteem tend to avoid risk, to be shy, to feel lonely and to protect their self-esteem; while people with depression tend to feel sadness, hopelessness, a lack of energy for any activities and experience changes in sleep and appetite.

Previous research examined the relationship between low self-esteem and psychological distress such as anxiety and depression. Sowislo and Orth (2013) conducted a meta-analysis of 77 studies on the relationship between self-esteem and depression and 18 studies on the relationship between self-esteem and anxiety. The body of literature indicated that low self-esteem is not a symptom of depression but exerted causal influence in the onset and maintenance of depression. Anxiety is not a causal factor in depression but rather a symptom of depression.

Self-esteem was identified as an important modifying factor in studies about the relationship between stressors and depression. Self-esteem functions in two ways: as a mediator or a moderator (Cassidy, O'Connor, Howe, & Warden, 2004; Choi & Lee, 2003; Fischer & Holz, 2007; Jex & Elacqua, 1999; Kim, 2007; Kim & Kim, 2007; Moradi & Risco, 2006; Vilhjalmsson, 1998; Wei, Ku, Russell, Mallinckrodt, & Liao, 2008; Yang, 2006). According to Baron and Kenny (1986), the role self-esteem plays will vary. As a mediator, self-esteem accounts, at least in part, for the relationship between stressors and depression. But when the relationship between stressors and depression changes, self-esteem can affect the direction or strength of the relationship, that is, serve as a moderator (Baron & Kenny, 1986).

Direct and indirect causal relationships have been studied. In most discrimination-distress link studies, self-esteem plays an internal coping role between stressors and depression (e.g., Choi & Lee, 2003; Fischer & Holz, 2007; Kim, 2007; Kim & Kim, 2007; Moradi & Risco, 2006; Vilhjalmsson, 1998; Yang, 2006). The mediating effect of self-esteem has consistently

explained the path from stressor to depression in that a stressor reduces self-esteem and low self-esteem can elevate depression. For example, in a study of persons with a disability, Vilhjalmsson (1998) examined the relationship between chronic physical illness and depression in Iceland and suggested that chronic physical conditions affect depression directly as well as indirectly by undermining self-esteem and mastery.

However, less research has considered self-esteem as a moderator of the effect of stress on depression (e.g., Corning, 2002; Fischer & Shaw, 1999; Jex & Elacqua, 1999; Wei et al., 2008). Even when incorporated into studies, its role as a moderator has not been established. For example, Cassidy and colleagues (2004) examined whether self-esteem moderated or mediated the relationship between perceived ethnic discrimination and psychological distress; their results showed no moderating effect of self-esteem but a partial mediating effect of self-esteem.

Furthermore, the role of self-esteem as a moderator has not been consistent across studies. Fischer and Shaw (1999) showed the moderating role of self-esteem between ethnic discrimination and depression; high self-esteem did not make individuals less vulnerable to discrimination and individuals with high self-esteem reported a high level of depression due to the perception of increased racial discrimination. Most other studies however, suggested that low self-esteem makes individuals more vulnerable to a discrimination experience and individuals with high self-esteem report lower levels of depression (e.g., Corning, 2002; Jex & Elacqua, 1999; Wei et al., 2008).

Individual reactions to stress vary across persons (Shontz, 1975) and a person's symptoms of depression can vary even in response to the same stressful situation. The likely reason is located in the interactions with self-esteem and social support. Yet, this moderating role for self-esteem and social support in the depression and discrimination relationship has rarely been considered when studying people with disabilities. The self-esteem of people with disabilities is theoretically an important issue because of the stigmatization of people with

disabilities (Aneshensel et al., 1984; Crocker & Major, 1989; Link, Struening, Neese-Todd, Asmussen, & Phelan, 2001). People with disabilities may internalize the negative social attitudes toward them. Therefore, self-esteem and its effect on depression among people with disabilities must be examined.

4. **Socio-demographic factors and depression**

Socio-demographic factors such as gender, poverty, class, ethnicity, occupation and other socio-economic status variables affect depression (Horwitz, 1999). Gender research has shown that women's risk for depression is higher than that of men (Hughes et al, 2001; Kahng & Kwon, 2008; Schieman, 2002). Schieman (2002) found that risk for depression among women with low education levels and with less autonomy was higher than that of men. Kahng and Kwon (2008) demonstrated that the effect of gender on depression differed depending on the period of life. Throughout life, women are more likely to have depression than men, and the difference in the degree of depression across gender increases with age. There is evidence that the gender difference exists for persons with disabilities. Hughes et al. (2001) showed a higher prevalence rate of depression among woman with spinal cord injury. Studies on the relationship between stressors and depression consider gender an important predictor of depression (Barnes et al., 2004; Boerner, 2004; Borrell et al., 2006; Flores et al., 2008; Gee, 2002; Mossakowski, 2003).

Research has identified a number of other differences in depression risk across groups defined by age (Kahng & Kwon, 2008; Kwon & Park, 2005; Krause, Kemp, & Coker, 2001; Boerner, 2004), income (Barnes et al., 2004; Broman, Mavaddat, & Hsu, 2000; Gee, 2002; Hughes et al., 2001; Kahng & Kwon, 2008; Kwon & Park, 2005; Schulz et al., 2006), education (Kahng & Kwon, 2008), and economic activity (Kwon & Park, 2005; Schieman, 2002; Yoo, 2001). Overall, low socio-economic status has a negative effect increasing prevalence rate of depression. For example, Kwon and Park (2005) studied women with disabilities and depression in South Korea. Depression level was significantly higher at older ages, when education and

incomes levels were lower, and when one is not employed. Other studies have shown similar results.

Other demographic characteristics such as family size, marital status, and religion influence depression. Seok (2003) reported that the level of depression in people with disabilities tends to decrease when they are religious. Similarly, Shin, Choi, and Kim (2001) found that research that targeted female breadwinners who are religious tended to manifest lower depression levels compared to similar non-religious women. Yoo (2001) conducted research on elements that affect depression in people with spinal cord injury, and found that type of occupation, satisfaction level towards marriage, and sexual activity with the spouse were significant predictors. Mossakowski (2003) also identified marital status as a predictor of depression. Kim, Jang, and Chae (1999) reported that people who live without close human relationships due to divorce or separation tended to experience higher levels of depression.

Since depression among people with disabilities is rarely studied, very little is known about these demographic factors associated with depression in the non-disability literature. Because of the medical model bias, emphasis is given to the severity of disability or age of disability onset as predictors. Depression has been found to be significantly higher the greater the severity of the impairment (Boerner, 2004; Brown, 1990; Kim, 1999; Lee & Kahng, 2009; Scott et al., 2007). The effect of age of disability onset is suggested by the observation that people born with a disability were less likely to report depression than people who acquired disabilities later during their lifetime (Kim, 1999).

The preceding chapter has reviewed research on the theoretical relationship between social stressors and depression, and explored the Disability Studies perspective in modeling depression among people with disabilities. The review included relevant studies of depression in social minorities such as LGBTs or ethnic minorities and discussed possible factors that could be associated with depression among persons with disabilities such as discrimination experience,

social isolation, self-esteem and social supports. A research model for this study based on the review is presented in the following chapter.

III. METHODS

This chapter begins with an overview of the research model and study design followed by the research questions and hypotheses. The appropriateness of using secondary data is discussed in terms of the content of data systems, data collection, sampling method and procedure. Finally, study variables and statistical analyses are presented.

The study is a cross-sectional (correlational) design based on secondary data obtained from KOWEPS. The cross-sectional data were used to assess the impact of socio-demographic characteristics, disability status, discrimination experience, social isolation, and resources such as self-esteem, social support, and social service usage on depression among people with disabilities.

A. **Research Model and Design**

The literature review summarized the case for exploring depression in relation to the Stress-Coping process from the perspective of Disability Studies and thus, this study includes stressors in the form of the experience of disability discrimination and social isolation. While previous research from the fields of social psychology and rehabilitation focused on the reactions of people with disabilities to the stresses caused by cognitive and/or physical impairments (Desrosiers et al., 2002; Turner & Beiser, 1990; Turner & Mclean, 1989; Turner & Noh, 1988), the present study models depression based on a Disability Studies focus on social and cultural context (Balcazar et al., 2012; Charlton, 1998; Keith, 1996; Shakespeare, 1996).

In addition, this study investigates the moderating roles of self-esteem, emotional social support, and instrumental social support. According to Cassidy and colleagues (2004), self-esteem can be conceptualized as a moderator: “a psychological characteristic of the individual that determines whether a negative event is appraised as stressful and consequently whether increased levels of psychological distress are experienced” (p. 330). When applied to people with disabilities, self-esteem can be manifested as an internal resource that helps modify stressful life experiences such as disability discrimination and social isolation. When disabled people

experience discrimination, the level of depression may tend to be high in the person with low self-esteem, while the opposite may be true of the person with high self-esteem.

Social support is considered as an external resource reducing depression level among people with disabilities. Two types of social support are included in the analysis of this study: emotional social support as measured by the Multidimensional Scale of Perceived Social Support (MSPSS; KOWEP, 2012) and instrumental social support (use of social services) measured by the frequency of meeting a social worker or use of a personal assistant during the previous month. The details of measurement are discussed in the next section. Based on the categorization of social supports by Heaney and Israel (2002), MSPSS focuses on the social interaction with family members and friends and is a close approximation to the concept of emotional social support, while the use of social service tends to focus on interaction with public services and seems to be close to the concept of instrumental social support. The current study focuses on these two types of support in order to examine differences in their effect of social supports on depression.

As discussed in the review, demographic characteristics influence depression. Therefore, the impact of socio-demographic factors such as gender, age, education level, income, economic activity status, family size, marital status, and religion on depression in people with disabilities are examined as control variables. In addition, the analysis examines the effect of features of impairment on depression such as duration, impairment types, and severity of the impairment. Figure 2 presents the research model in this study.

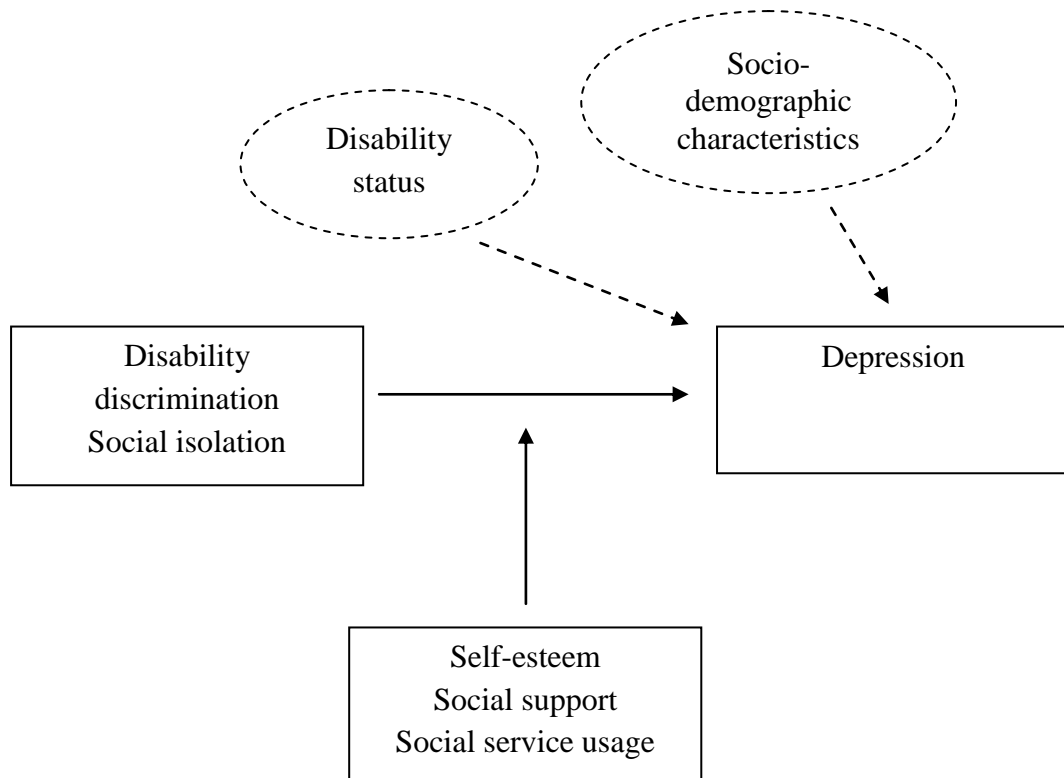


Figure 2. Research model

B. Research Questions and Hypotheses

The intent of this study is first to evaluate the viability of a Disability Studies framework in re-interpreting the Stress-Coping model of depression among individuals with disabilities, and secondly to provide some basic demographics on the prevalence and demographic distribution of depression among people with disabilities in South Korea. Based on the literature, the following research questions and hypotheses are proposed:

Question 1: Is the prevalence rate of depression higher in the disability population than the non-disabled population? Across socio demographic characteristics, are there any differences in rates of depression between the two groups?

Question 2: What socio-demographic characteristics of people with disabilities in South Korea are associated with reported depression, discrimination experience, social isolation, self-esteem, social support, and social service utilization?

Question 3: Is a revised Stress-Coping model for depression among people with disabilities in South Korea consistent with observed data drawn from the Korean Welfare Panel?

Hypothesis #1: Discrimination will increase risk for depression.

Hypothesis #2: Social isolation will increase risk for depression.

Hypothesis #3: Higher self-esteem will reduce risk for depression.

Hypothesis #4: Greater social support will reduce risk for depression.

Hypothesis #5: Access to social services will reduce risk for depression.

Hypothesis #6: Higher self-esteem will modify the effects of discrimination and social isolation.

Hypothesis #7: Greater social support will modify the effects of discrimination and social isolation.

Hypothesis #8: Access to social services will modify the effects of discrimination and social isolation.

Hypothesis #9: After taking into account discriminatory experiences, isolation and the moderating effect of self-esteem, social support and social services, disability status will not be related to the experience of depression.

C. **Study Data**

This study analyzes data from the Korean Welfare Panel Study. The Korean Welfare Panel Study (KOWEPS) was developed by the Korean Institute of Social and Health Affairs in conjunction with the Social Welfare Research Institute of Seoul National University in 2006. The KOWEPS is a panel survey, with data collected longitudinally on an annual basis. It is one of the largest panel data surveys in Korea and is designed to provide information on the social welfare

system; data are released to the public through the Korean Institute of Social and Health Affairs internet website in Statistical Package for Social Science (SPSS), Statistics and Data (STATA), and Statistical Analysis System (SAS) compatible formats (<http://www.koweps.re.kr>).

The KOWEPS questionnaire is composed of two parts: household questions and questions about individual household members. The household questionnaire component includes questions on the desire for welfare service, general matters concerning the household, the status of economic activity, social security subscription status, residence, living expenses, income, debt, asset, everyday life conditions and the use of welfare services. The household member questionnaire includes questions on the realities of everyday life, satisfaction, daily routines, mental health, family relationships and personal history. A summary of the major topics and some sample question types covered in the KOWEPS questionnaires is shown in Table I.

TABLE I**SUMMARY OF THE KOREA WELFARE PANEL STUDY QUESTIONNAIRES****Questionnaires for Households and Example Topics**

-
- General Facts about Household: the number of members, sex, age, education
 - Health and Medical: health condition, the medical center used mainly, health insurance
 - Economic Activities: working ability, participation in economic activity, industry type, occupational type
 - Social Insurance, Retirement Pension, and Personal Pension: public pension, worker's compensation/unemployment insurance, retirement pension
 - Housing: type
 - Living Expenses: food expenses, total living expenses, subjective minimum cost of living
 - Income: earned income, business income, property income, other income, income transfers
 - Debt and Interest: type of debts and interest payments
 - Household Properties: real estate, and other properties such as automobiles
 - Hardship: missing a meal due to economic reasons, not paying utility bills
 - National Basic Livelihood Security System
 - Use of Welfare Services: experience and satisfaction with welfare services
 - Use of Welfare Services for the elderly: experience and satisfaction with the elderly welfare program
 - Use of Welfare Services for Children: experience and satisfaction with children's welfare program
 - Use of Welfare Services for Disabilities: experience and satisfaction with the disabled people's welfare program
 - Family
-

Questionnaire for Household Members

-
- Social Insurance, Retirement Pension, and Personal Pension: public pension, worker's compensation/unemployment insurance, retirement pension
 - Labor: type of work, working period
 - Living Circumstances, Satisfaction, and Recognition: health, satisfaction with family income
 - Social Environment Recognition: association with parents
 - Habits, Family Relationship, and Mental Health: smoking, drinking, depression
 - Personal History: birthplace, job history
-

Source: KOWEPS guidebook (2012)

The KOWEPS has also conducted a triennial supplemental survey for people with disabilities that were identified among the panel household members. The first supplemental survey of KOWEPS was conducted in 2008 and a second additional survey was conducted in 2011. The following topics were included in the survey: discrimination experiences related to the disability identified by type of setting (education, employment, work life, marriage, etc.), everyday life and welfare service needs (ability to carry out everyday life chores, desire for the service that can help them in their activities, and realities of physical support and caretaking), and topics related to mental health status (depression, suicide, self-esteem, social support). A summary of the triennial supplemental survey is shown in Table II.

TABLE II

**TRIENNIAL SUPPLEMENTAL QUESTIONNAIRE FOR HOUSEHOLDS MEMBERS
WITH DISABILITIES**

-
- Cause of disability onset
 - The use of medical services
 - Status of disability
 - Discrimination experience against disabilities: entering school, school life, marriage, employment, communication, community life
 - Need for help with everyday life
 - BADL, IADL
 - Mental Health: Depression, Suicide
 - Social support
 - Self esteem
 - Welfare needs of children with disabilities
 - Welfare needs of adults with disabilities; for visiting nurse service, employment counseling, home helper service, institution, group home, visiting shower service
 - Welfare needs of senior citizen
-

Source: KOWEPS guidebook (2012)

The original KOWEPS sample of 7,072 households included 14,469 adults and 759 children in 2006. KOWEPS' respondents were drawn from the 2005 Korea Population Census through multi-stage cluster sampling. In the cluster approach, there was a 2 step sampling process. In the first sampling stage, regions were sampled with probabilities proportional to their size from the list of all administrative regions in South Korea. Five-hundred seventeen regions were randomly selected from among about 230,000 regions. From these sampled regions, 30,000 households were randomly selected. A smaller sample was actually drawn, 24,711 households, because of a natural disaster at the time of the survey. In the second sampling stage, 7,072 households were randomly sampled from among the 24,711 households stratified on the basis of income level. Because the aim of KOWEPS is to identify the welfare status and needs of South Koreans, income level was considered an important variable to stratify across. One-half of the households were selected from among households above 60% of the median national income and one half from households below 60% of median income. In addition, as shown in Table III below, there was some attrition in the sample across years.

TABLE III

DESCRIPTION OF SAMPLE REDUCTION AND ATTRITION IN KOWEPS						
Survey year	2006	2007	2008	2009	2010	2011
N* of Original Sample	7,072	6,511	6,128	5,935	5,675	5,335
% of case maintained	100%	92.07%	86.65	83.92	80.25	75.44
N of Newly added households		69	126	105	110	72
Cumulative N of newly added households		69	186	272	359	400
Total N of surveyed households	7,072	6,580	6,314	6,207	6,034	5,735

Source: KOWEPS guidebook (2012), N = number*

As a nationally representative data base, KOWEPS provides three population weights; one for the household, another for each person that is represented in longitudinal analyses, and the third associated with each person for use as a cross sectional estimate. Weights are a statistical correction factor for the samples that over- or under-represent various subgroups within a population and are used so that a sample can be considered representative of a reference population (Pfeffermann, 1993). In some samples, small subsets of the population, such as religious, ethnic, or racial minorities, may be oversampled or under sampled for a more cost-efficient survey design. The disproportionate numbers are then corrected by a sampling weight.

KOWEPS data collection is based on face to face interviews conducted by trained interviewers. Training is essential in order for interviewers to be familiar with the contents of the questionnaires, general guidelines, and survey procedures and because most South Korean people with disabilities have a cultural resistance to revealing private issues. A total of 52 interviewers visited respondents' houses and interviewed household members every year. Interviews took place at mutually acceptable locations which were mostly in the respondent's home. Only in the case of unavoidable circumstances were telephone interviews conducted. All participants had received a notice sheet before the visit and could arrange the interview date.

The data for this study were collected over 115 days from February 11 to June 16 in 2011. The sample includes a total of 5,735 households (14,696 people). A total of 653 adults with disabilities (those 18+ years old) who answered all the questions are included in the proposed analysis. The sample size appears to be a reasonable representation of disability in South Korea, accounting for 4.4% of all KOWEPS respondents (14,696). According to the Ministry of Health and Welfare (2009), 4.6% of the entire population has a disability in South Korea, a figure that includes children (children are not sampled in the KOWEPS).

A claim of exemption was submitted to the Institutional Review Board (IRB) as a study using existing data in the public domain. The IRB accepted the exemption of IRB which is attached in Appendix A.

D. **Study Variables**

In this study model, the dependent variable is depression and 3 classes of predictors are used in modeling the risk for depression. The three classes of predictors are: (1) hypothesized stress factors (disability discrimination experience and social isolation), (2) disability status variables (severity of disabilities, disability type, and disability duration), and (3) socio-demographic characteristics (education, age, gender, income, economic activity status, family size, marital status, and religion). In addition, the model includes three moderating variables: self-esteem, social support, and social service usage.

1. **Dependent variable: Depression**

Depression is measured by the Center for Epidemiologic Studies Depression Scale (CESD). CESD was developed for use in studies of the epidemiology of depressive symptoms. It was found to have very high internal consistency, adequate reliability, and good validity (Radloff, 1977). Although the original CESD contains 20 depressive symptom items, the KOWEPS used a shortened version of the scale known as the CESD-11. Depression is measured with 11 questions asking respondent to rate aspects of their life during the previous week: 1) I did not feel like eating; my appetite was poor; 2) I enjoyed life; 3) I felt depressed; 4) I had trouble keeping my mind on what I was doing; 5) My sleep was restless; 6) I felt lonely; 7) I was happy; 8) People were unfriendly; 9) I felt sad; 10) I felt that people disliked me; and 11) I could not get “going.” Each item was rated in terms of how often the item applied: less than one day in a week (coded as 0), two to three days in a week (coded as 1), four to five days in a week (coded as 2), and at least six days in a week (coded as 3). Totals for the 11 questions are summed (note that some questions are reversed scored), and multiplied by 20/11 to scale the CESD-11 to the

original 60 point scale. Higher scores represent more serious symptoms of depression. A score over 16 points is considered the cutoff for identification as having depression (Radloff, 1977) and is thought to indicate a clinically significant level of depressive symptoms (Noh & Posthuma, 1990). The reliability of the scale has been reported via Cronbach's alpha to be 0.858 which is a relatively high reliability (Rubin & Babbie, 1997). The language and cultural conversion in the use of the CESD scale were checked by back-translation, that is, a re-translation of the converted version back into the original language.

2. **Independent variable**

The primary independent variable tested in the model is disability discrimination experiences. Disability discrimination is measured as the percentage of disability related discrimination experiences identified during the past year from a list of 19 scenarios. As stated in the previous section, the supplemental survey asked respondents with disabilities to check whether they experienced disability discrimination across multiple domains of daily life: admission or transfer to school, in school, in marriage, seeking employment, at work, in the driving license system, in insurance systems, using medical institutions, using information communication, and at local public places. As shown in Table IV below, there are a maximum of 19 scenarios. A discrimination experience reported for each question is coded as a one, while "no" was counted as zero. If an item is not relevant to the person it is excluded from the computation of the percentage. While a higher number was presumed to represent a greater degree of discrimination, this is not meant to represent a true scaling of discrimination since it treats each event as equally important to the individual. In addition, the scale does not account for frequency and intensity of experiences during the year. The ratio of disability discrimination events, however, can be employed as a proxy for exposure to disability discrimination. The discrimination variable is treated as an interval level variable.

TABLE IV**DISABILITY DISCRIMINATION QUESTIONNAIRE IN KOWEPS SURVEY**

Category		Experience discrimination?			Category		Experience discrimination?		
		Yes	No	N/A			Yes	No	N/A
Admission or transfer to school	1) Kindergarten (day care center)				15) In the driving license system				
	2) Elementary school								
	3) Middle school								
	4) High school								
	5) College or University								
In school (including day care center)	6) By teacher				16) In insurance systems (when applying for insurance or getting compensation)				
	7) By peer								
	8) By parent of peer								
In marriage	9) Before marriage				17) Using medical institutions				
	10) After marriage								
11) Seeking employment					18) Using information and communication technology (including TV service)				
At work	12) Income				19) In public places (theater, restaurant, gym, library, etc.)				
	13) Relationship with peers								
	14) Promotion								

Source: KOWEPS Survey Questionnaire (2011),

Degree of social isolation is measured by the frequency of going out socially during the previous month. ‘Rarely going out’ is scored as 4; ‘less than 3 times for last one month’ is scored as 3; ‘1 or 2 times per week’ is coded as 2, ‘3 or 4 times per week’ is coded as 1, and ‘almost

going out every day' is coded as 0. Higher numbers are presumed to represent a greater degree of social isolation. This variable also is treated as an interval variable.

Severity of disability is included as a control variable for modeling purposes. Severity is represented by the disability "grade," a score given by the Ministry of Health and Welfare based on a physician's diagnosis. In South Korea, most social welfare benefits for persons with disabilities require participation in the Registration System. Only persons officially registered in this system can receive welfare benefits and other considerations. Currently, 15 categories of impairments are accepted as official disability conditions in the registration system: physical, visual, auditory, linguistic, intellectual disabilities, brain lesion (e.g., cerebral palsy, cerebral accident), developmental disabilities, mental disabilities, kidney, heart, respiratory, liver, face, ostomy, and epilepsy. For each category, there are medical standards for judging the severity or "disability grade," which ranges from 1 to 6. Disability grade 1 is equivalent to the most severe disability, while disability grade 6 represents the mildest degree of disability. An example of how a person with leg amputation would be evaluated is shown in Table V.

TABLE V

EXAMPLE OF DISABILITY GRADE JUDGEMENTS

Disability grade	Severity of disability for a leg amputation
Grade 1	Person who lost two legs (above knee)
Grade 2	Person who lost two legs (above ankle)
Grade 3	Person who lost one leg (above knee)
Grade 4	Person who lost one leg (above ankle) / Person who lost ten toes
Grade 5	Person who lost one leg (above Chopart's joint)
Grade 6	Person who lost one leg (above Lisfranc's joint)

Source: Jeong, I.K. & Kim, M.H. (2010)

According to the World Health Organization, disability is a comprehensive term that includes impairments, activity limitations, and participation restrictions. By comparison, impairment has a more limited meaning and is used to describe a problem of body function or structure and is the disability concept emphasized in the medical model. Thus, while this study refers to disability severity, the variable is actually a reflection of ‘impairment.’ Severity codes are reverse coded in the analysis so that higher numbers are interpreted as greater severity (ranging from 1 to 6).

Disability type and duration are included as control variables for modeling purposes. Duration represents the number of years the person has lived with a disability, calculated by subtracting the age of disability onset (when disability occurred or was diagnosed by doctor) from the age at the time of the survey. Although the relationship of depression and the duration of disability has not been extensively studied, time appears to play a significant role in a person’s psychological acceptance. Kim (1999) studied the effect of the age at disability onset on depression and found that positive acceptance of disability was higher among people born with a disability rather than people who acquired a disability after birth.

The 15 categories of disabilities under the Welfare Act for People with Disabilities in South Korea were reclassified into the major groupings used by the World Health Organization (WHO, 2011): physical disability (physical, brain lesion, and face disability), sensory disability (visual, auditory, and linguistic disability), cognitive disability (intellectual, developmental, and mental disability), and health related disability (kidney, heart, respiratory, liver, ostomy, and epilepsy disability).

3. **Moderating variables**

As described in the foregoing sections, a moderating variable changes the strength and/or direction of a relationship between an independent variable and a dependent variable (Baron & Kenny, 1986). Moderating variables can also affect how and when an

independent variable has an impact on a dependent variable; in statistical terms, this would represent an interaction between the independent variable and the moderating variable.

Moderating variables selected for this study are self-esteem, social support, and use of social services. Thus, for example, the relationship between depression and discrimination is thought to be moderated by self-esteem. A possible interaction would be the relationship of depression to discrimination strengthening or attenuating among persons with low self-esteem but not at higher levels of self-esteem.

Self-esteem is measured by using the Rosenberg Self Esteem Scale (RSES). The RSES is a ten-item Likert-type scale with a four-point scale ranging from ‘strongly agree’ to ‘strongly disagree’. The scale is composed of the following 10 items: 1) I feel that I am a person of worth, at least on an equal plane with others; 2) I feel that I have a number of good qualities; 3) All in all, I am inclined to feel that I am a failure; 4) I am able to do things as well as most other people; 5) I feel I do not have much to be proud of; 6) I take a positive attitude toward myself; 7) On the whole, I am satisfied with myself; 8) I wish I could have more respect for myself; 9) I certainly feel useless at times; and 10) At times I think I am no good at all. The self-esteem score is based on the average of the rating for the 10 questions (note that some of the items are reversed scored). A higher score indicates greater self-esteem. The reliability of this scale is relatively high as a commonly used scale (Rubin & Babbie, 1997). The language and cultural conversion in the use of RSES were checked by back-translation (KOWEPS, 2012).

Social support is measured by a modified Multidimensional Scale of Perceived Social Support (MSPSS). The original Multidimensional Scale of Perceived Social Support was developed by Zimet, Dahlem, Zimet, and Farley in 1988 and has been used to measure social support from three different sources: family, friends, and significant other. It was originally developed as a twelve-item Likert-type scale with a seven-point scale. The MSPSS was restructured to a ten-item Likert-type scale with a five-point scale by Heesu Choi in 1998 in order

to adapt it to a Korean context (KOWEPS, 2012). The following items are in the restructured MSPSS used in this study: 1) My family really tries to help me; 2) I get the emotional help and support I need from my family; 3) I can talk about my problems with my family; 4) My family is willing to help me make decisions; 5) There is a special person who is around when I am in need; 6) I have a special person who is a real source of comfort to me; 7) My friends really try to help me; 8) I can count on my friends when things go wrong; 9) There is a special person with whom I can share my joys and sorrows; and 10) I can talk about my problems with my friends. Each item is rated on a five-point scale (strongly disagree = 1, disagree = 2, middle = 3, agree = 4, strongly agree = 5). Asocial support score is created by calculating average scores of the 10 questions. A higher score represents greater social supports. The Cronbach's alpha reliability of the scale is good (Rubin & Babbie, 1997). The language and cultural conversion in the use of MSPSS were checked by back-translation (KOWEPS, 2012).

Use of social services is measured by whether the respondent received help from a personal assistant or a social worker during the past month. The response is coded dichotomously as "yes" or "no". A score can range from 0 to 3 points because assistance can be provided by up to three different sources (a personal assistant, a social worker, or a government officer). A higher number represents greater use of social services.

Heaney and Israel (2002) categorized four types of social supports: 1) emotional support providing empathy, love, trust, and caring; 2) instrumental support providing aid or services; 3) informational support providing helpful advice and information; and 4) appraisal support providing constructive feedback or evaluation. The MSPSS tends to focus on social interaction with family members and friends, which is closely related to emotional support. The use of social service tends to focus on the interaction with public services and so appears to be closely related to the concept of instrumental support. Both types of social supports are used in evaluating the relationship of depression among people with disabilities.

4. **Socio-demographic variables**

In order to provide basic demographic information on depression in South Korean, rates of depression were profiled across the socio-demographic variables of gender, age, education, income, economic activity status, family size, marital status, religion, and disability status (disability duration, disability types, and severity of disability). These are demographic variables that influence risk for depression and are employed as a control variable in the analysis.

Gender is coded as a dichotomous variable (male = 0, female = 1). KOWEPS does not report years of education but includes a categorical variable on level of educational attainment. Therefore, the education variable of this study is treated as an ordinal variable: ‘No education / Drop out of elementary school’ (coded as 0), ‘Elementary school graduation’ (coded as 1), ‘Middle school graduation’ (coded as 2), ‘High school graduation’ (coded as 3), ‘College graduation’ (coded as 4), ‘University graduation’ (coded as 5), and ‘Graduate school and more’ (coded as 6). For age and income variables, reported age of respondents in years and reported annual gross income of household are used. Economic activity is defined in terms of three different employment outcomes which are coded as dummy variables (economically inactive, unemployed, or employed). Economically inactive persons are defined as those who were neither "employed" nor "unemployed" during the reference period used to measure "current activity." This outcome is for those who cannot work or do not want to work since they are attending educational institutions, retired, engaged in family duties, doing military services, or in other economically inactive situations (Eurostat, 1999). Outcomes are dummy coded using two vectors.

Most studies found that those who do not have close relationships with family members or other persons tended to manifest higher depression levels. Thus, both household size and marital status were included in the descriptive summary of depression across socio-demographic variables. Marital status was categorized into five subgroups: ‘Married’ (coded as 1), ‘Separated by death’ (coded as 2), ‘Divorced’ (coded as 3), ‘Separated’ (coded as 4), and ‘Unmarried’

(coded as 5). For the comparisons, the variable was collapsed into two categories based on the presence of a spouse: 'Spouse' (coded as 1) and 'No spouse' (coded as 0).

Finally, religion was an important variable in previous studies of depression (Seok, 2003) where the level of depression among people with disabilities was lower among those who attended religious meetings. Although the KOWEPS does not provide information on the extent to which someone is religious, it does indicate a religious preference. Therefore, the religion variable is included as a control variable and coded as a dichotomous variable, where 0 represented no religious affiliation and 1 as an identified religion.

E. **Data Analysis and Statistical Procedure**

The analyses in this study include three parts: (1) a descriptive analysis that provides national estimates of the current demographics of depression among Koreans with disabilities (Research Question #1); (2) comparative analyses that summarize differences across demographics in depression, discrimination experiences, social isolation, self-esteem, social support, and social service usage among Koreans with disabilities (Research Question #2); and (3) a hierarchical multiple regression to test the fit of survey data with the revised Stress-Coping model of depression among Koreans with disabilities (Research Question #3).

Descriptive analyses (for Question #1) include basic frequencies of the occurrence of depression across the socio-demographic variables of gender, age, education level, income, economic activity status, family size, marital status, marital status, and religion, and across the disability related variables of severity of disability, duration of disability, and disability types. Since the dependent variable can be treated as a dichotomous variable (depression or no depression) by applying the cut-off point, it is possible to provide national estimates of the current demographics of depression across socio-demographic characteristics and disability status. This analysis includes the comparison of depression prevalence rate between disability population and the non-disabled population.

The comparative analyses (Question #2) compare the mean differences in depression across socio-demographic characteristics and disability status. Since the depression variable measured by CESD-11 is a continuous variable, mean differences are tested via the t-test for two socio-demographic groups and analysis of variance (ANOVA) for three or more socio-demographic groups. In addition, the predictor variables used for testing the model (discrimination experience against disabilities, social isolation, self-esteem, social support, social service) are compared and tested across demographic groupings. These analyses provide a broad picture of the key model variables -- depression, discrimination experiences, isolation, self-esteem, social support, and social services -- across the major socio-demographic groupings.

The primary analysis of the study is the third research question which asks about the role of disability status in predicting risk for depression after taking into account the effects of stressful life events such as discrimination experiences against disability and social isolation and the modifying effect of resources such as self-esteem, social support, and social service usage. Since depression measured by CESD-11 is a continuous variable, a hierarchical multiple regression is used to test the model (Frazier, Tix, & Barron, 2004; Lee, 2012). Depression status is predicted using socio-demographic characteristics, disability status, disability discrimination experience, social isolation, self-esteem, social support, social service usage, and interaction terms for disability discrimination, social isolation, and the moderating variables. When examining the moderating effects through the interaction terms, mean centering is employed in order to avoid multicollinearity problems. The values of variance inflation factors (VIF) are evaluated to examine multicollinearity (Mertler & Vannatta, 2004, p. 169). If values for VIF are less than 10, multicollinearity is not considered a problem and the variable is included in the analysis (Song, 1997).

Support for the modified Stress-Coping model of depression would be indicated if depression is not predicted by disability status after taking into account disability discrimination

experience and social isolation. Significant effects for the interaction terms would suggest the importance of resource variables (self-esteem, social support, and social service usage) in modifying the impact of discrimination and isolation on depression.

Regarding the structure of the statistical model, socio-demographic variables identified as important confounding effects in the initial descriptive analysis are entered in the regression first as control variables. Secondly, disability status variables are entered. Third, discrimination and isolation variables are entered. Fourth, interaction terms constructed as products of hypothesized causal factors with each of the moderating variables are entered (e.g. self-esteem x discrimination, self-esteem x social isolation, social support x discrimination, etc.). Thus there are 6 interaction terms for examining the moderating variables between hypothesized causal factors (discrimination experience and social isolation) and depression. Statistically significant interaction effects would support the moderating effect of self-esteem, social support, and social services.

IV. RESULTS

This chapter presents study results in three sections. The first section summarizes the socio-demographic characteristics of people with and without disabilities in South Korea, including the prevalence of depression across socio-demographic variables. The second section evaluates the main socio-demographic groups of Koreans with a disability in terms of the key model variables of depression, discrimination experience against social isolation, self-esteem, social support, and social service usage. The first section addresses Research Question 1: Is the prevalence rate of depression higher in the disability population than the non-disabled population? The second section directly addresses Research Question 2: What socio-demographic characteristics of people with disabilities are associated with reported depression in South Korea? In the third section, the predictors and moderating factors for depression among people with disabilities in South Korea are evaluated and the regression model is tested. Section 3 addresses Research Question 3: Is a social model for depression among people with disabilities in South Korea consistent with observed data drawn from the Korean Welfare Panel?

A. **Comparing Socio-demographic Characteristics of Disability and Non Disabled Population**

As shown in Table VI, the total sample size for persons with a disability in the KOWEPS was 653; the weighted population estimate was 1,652,017 persons. The sample size for non-disabled persons was 10,653 with a weighted population estimate of 37,236,605. The 1.65 million adults with a disability represent a prevalence rate of 4.44%. These estimates excluded children aged 17 and under. In subsequent presentations of results, only population estimate (PE) values are given. Percentages, means, range values, and standard deviations are based on weighted population estimates, rather than sample values.

1. Socio-demographic characteristics

Table VI summarizes the estimates of the composition of the Korean population with and without disability by gender, age, and education.

TABLE VI

POPULATION ESTIMATES BY GENDER, AGE, AND EDUCATION

		Adults with Disability ¹			Adults without Disability ¹		
		N	Population Estimate	%	n	Population Estimate	%
Gender	Male	366	1,011,920	61.3	4,677	17,952,766	48.2
	Female	287	640,097	38.7	5,976	19,283,840	51.8
Age	18-29	27	170,196	10.3	1,620	8,422,129	22.6
	30-39	43	138,433	8.4	1,796	7,588,512	20.4
	40-49	91	289,633	17.5	1,908	8,179,541	22.0
	50-59	128	424,860	25.7	1,554	6,413,919	17.2
	60-69	145	332,585	20.1	1,448	3,387,090	9.1
	70-79	176	227,640	13.8	1,685	2,327,925	6.3
	80-89	38	56,951	3.4	574	810,218	2.2
	90-99	5	11,719	.7	65	100,228	.3
	100-110	0	0	0	3	7,044	.02
	Mean		53.89			44.01	
	SE		0.01			0.00	
	Range (min-max)		18-93			18-104	
Education	No education / Drop out of elementary school	164	240,853	14.6	1,401	1,893,190	5.1
	Elementary school	181	346,354	21.0	1,679	3,341,477	9.0
	Middle school	98	275,497	16.7	1,406	4,358,194	11.7
	High school	155	502,029	30.4	3,082	11,814,470	31.7
	College	26	126,858	7.7	1,403	6,833,129	18.4
	University	24	136,566	8.3	1,505	8,049,079	21.6
	Graduate school or more	5	23,860	1.4	177	947,066	2.5
TOTAL		653	1,652,017	100.0	10,653	37,236,605	100.0

¹ Ages 18 and above

As indicated in the table, the proportion of males (61.3%) was much higher in the disability population versus the general population (48.2%). Regarding age, the majority (63.7%) of the disability population was composed of persons older than 50 years. The mean age of adults with disabilities was 53.9 (SE = 0.01) and the mean age of adults without disabilities was 44.0 (SE = 0.00), a statistically significant difference ($p < .001$). This age difference is not surprising given the higher prevalence of disability among older persons.

Only a minority of the disability population had at least a high school degree (30.4%). Just 7.7% had college level degrees, 8.3% university level degrees, and only 1.4% had degrees at the graduate school level. For Koreans without disabilities, 74.2% had a high school or higher degree. The disadvantage was very large for people with disabilities in terms of having no education or access to university education.

Table VII presents the composition of the Korean population with and without disability by economic activity status. The majority of the disability population (61.1%) was economically inactive, which includes those who cannot work or do not want to work, including students, housewives, or persons on military service. This was much higher than the 36% of the non-disabled population. People with disabilities who were employed reported relatively higher rates of temporary employment or self-employment, while people without disabilities reported relatively higher rates of regular employment.

The majority (72.1%) of households with disabled persons had a relatively low income level, earning less than \$40,000. In contrast, incomes of households in the general population were higher. The mean annual gross income of households with disabled persons was approximately 62% of general households.

TABLE VII

POPULATION ESTIMATES BY ECONOMIC ACTIVITY STATUS AND INCOME

		Adults with Disability ¹			Adults without Disability ¹		
		n	Population Estimate	%	n	Population Estimate	%
Economic activity status	Regular employee ²	37	152,517	9.2	2,091	9,993,283	26.8
	Temporary employee ³	75	276,055	16.7	2,023	7,756,459	20.8
	Self- employee	117	195,027	11.8	2,159	5,551,266	14.9
	Unemployed	7	19,613	1.2	109	516,198	1.4
	Economically inactive	417	1,008,805	61.1	4,271	13,419,399	36.0
Annual Gross Income of Households ⁴	Less than \$10,000	141	221,306	13.4	1,120	1,582,287	4.3
	\$10,000 – \$19,999	212	404,277	24.5	1,791	3,471,493	9.3
	\$20,000 – \$29,999	124	369,954	22.4	1,550	4,586,324	12.3
	\$30,000 – \$39,999	62	194,270	11.8	1,501	5,407,964	14.5
	\$40,000 – \$49,999	35	104,311	6.3	1,362	5,314,350	14.3
	\$50,000 – \$59,999	31	145,703	8.8	1,027	4,563,947	12.3
	\$60,000 – \$69,999	14	46,987	2.8	667	3,188,252	8.6
	\$70,000 – \$79,999	14	52,417	3.2	436	2,289,398	6.2
	\$80,000 – \$89,999	10	55,001	3.3	407	2,245,319	6.0
	\$90,000 – \$99,999	1	5,503	.3	236	1,408,514	3.8
	More than \$100,000	9	52,288	3.2	550	3,155,865	8.5
	Mean		\$34,082.36			\$54,614.23	
	SE		2.47			1.16	
	Range (min-max) ⁵		-\$145,700 – \$271,200			-\$166,880 – \$2,900,620	
TOTAL		653	1,652,017	100.0	10,647	37,213,712	100.0

¹ Ages 18 and above² Regular employees are workers hired on more than a 1 year contract.³ Temporary employees are workers hired daily or for a certain period, but less than 1 year.⁴ Gross income is the sum of wage and salary income, gross self-employment income, realized property income, pensions, and public and private transferred income (e.g., minimum livelihood security, cash gifts).⁵ In the case of self-employment, the annual gross income can be presented as a negative number because annual gross income is calculated by total earnings minus total costs for the last year.

Table VIII presents the Korean population by disability grade, types of disabilities, and duration. Among the disability population, about one third (31.5%) had severe disabilities (disability grade 1 and 2). Disability grade 3 (24.4%) was the largest subgroup across various disability groups. This result is not surprising given the higher benefits given to disability grades 1-3 in South Korea.

TABLE VIII

POPULATION ESTIMATES BY DISABILITY GRADE, TYPES, AND DURATION

		Adults with Disability ¹		
		N	Population Estimate	%
Disability Grade ²	6 (mild)	124	343,395	20.8
	5	86	186,643	11.3
	4	95	200,328	12.1
	3	156	402,743	24.4
	2	111	283,379	17.2
	1 (severe)	81	235,529	14.3
Disability Types	Physical disability	362	873,170	52.9
	Sensory disability	162	348,053	21.1
	Cognitive disability	86	297,110	18.0
	Health related disability	43	133,684	8.1
Disability Duration	Less than 10 years	182	483,266	29.3
	10 - 19 years	214	589,526	35.7
	20 - 29 years	88	200,822	12.2
	30 years and more	167	376,068	22.8
	Total ³	651	1,649,682	100.0
	Mean		21.20 years	
	SE		0.01	
	Range (min-max)		3 – 75 years	
TOTAL		653	1,652,017	100.0

¹ Ages 18 and above

²Disability grade 1 is the most severe disability and grade 6 refers to the mildest disability.

³Because of data missing, total sample is 651 in disability duration.

As summarized in Table VIII, among 4 types of disabilities, people with physical disabilities were the most numerous, comprising about half of the disability population. The smallest group was people with health related disabilities. The duration of disability averaged 21.2 years (SE = 0.012). The mean age among the disability population was 53.9 years.

TABLE IX

POPULATION ESTIMATES BY MARITAL STATUS, RELIGION, AND FAMILY SIZE

		Adults with Disability ¹			Adults without Disability ¹		
		n	Population Estimate	%	n	Population Estimate	%
Marital Status	Married	389	985,578	59.7	6,612	22,697,332	61.0
	Separation by death	105	155,571	9.4	1,421	2,373,500	6.4
	Divorce	45	98,920	6.0	459	1,343,892	3.6
	Separation	6	12,901	.8	69	191,855	.5
	Unmarried	107	396,688	24.0	1,900	9,850,561	26.5
	Others	1	2,359	.1	192	779,466	2.0
Religion	Religious affiliation	351	937,247	56.7	5,551	19,034,854	51.1
	No religious affiliation	302	714,769	43.3	5,102	18,201,752	48.9
Family Size	1	114	202,860	12.3	1,240	2,632,989	7.1
	2	263	555,989	33.7	2,788	6,454,804	17.3
	3	146	448,131	27.1	2,360	9,363,716	25.1
	4	76	282,282	17.1	2,874	13,529,689	36.3
	5	38	128,283	7.8	1,033	4,056,214	10.9
	6	12	20,050	1.2	290	1,014,087	2.7
	7	3	10,785	.7	50	133,066	.4
	8	1	3,636	.2	18	52,041	.1
TOTAL		653	1,652,017	100.0	10,653	37,236,605	100.0

¹ Ages 18 and above

Table IX summarizes the status of those with and without disability by marital status, religion, and family size. Approximately 6 in 10 were married and 2 in 10 unmarried in both the disabled and non-disabled groups. The proportion of those divorced (6%) in the disability population was almost double that of people without disabilities (3.6%). Separation by death for people with disabilities (9.4%) was higher than for those without disabilities (6.4%) very likely due to the higher proportion of old people was higher in the disability population. The proportion of those having a religious affiliation was higher in the disability population (56.7%) than in the non-disabled population (51.1%).

People with disabilities (12.3%) lived alone at a higher rate than people without disabilities (7.1%). The proportion of people with disabilities who lived in family size of 2 was almost double the number of people without disabilities. The majority of the disability population (60.8%) lived in a family size of two or three persons, which was smaller than the general population.

2. **Prevalence rate of depression across socio-demographic variables**

This section presents the prevalence of depression across socio-demographic subgroups for the disabled and the non-disabled population. Depression was measured by the CESD scale, a continuous variable but one that can be used to classify people by applying a cutoff value. A score above 16 points on the CESD is used to define clinically significant depression.

Table X summarizes the estimated prevalence rates. Among adults with disabilities, the rate for depression (27.1%) was almost three times higher than the rate among adults without disabilities (9.4%), consistent with other reports that people with disabilities in South Korea were prone to experiencing depression.

TABLE X

PREVALENCE RATE OF DEPRESSION						
	Adults with Disability ¹			Adults without Disability ¹		
	n	Population Estimate	%	n	Population Estimate	%
Have no depression	455	1,205,001	72.9	8,461	30,899,519	90.6
Have depression	197	447,015	27.1	1,385	3,190,524	9.4
TOTAL	653	1,652,016	100.0	9,846	34,090,044	100.0

¹ Ages 18 and above

Table XI shows estimates of the depression prevalence by gender, age, and education. For both disability and non disability populations, the prevalence of depression was higher among females. For the disability population, the rate for females was 30.9% and for males, 24.6%. In the non-disability population, it was 11.6% versus 6.8% for females and males, respectively.

In the disability population, the depression prevalence rate was the highest among the oldest age group (34.7%). Similarly older adults also had the highest rate for the non-disabled population. For every age subgroup, the disability population reported higher prevalence rate of depression than the non-disabled population.

Overall, a higher prevalence rate of depression was reported for those with lower educational achievement, though the rates were still high for university graduates with a disability (35.5%). The gap for those with university graduation was almost seven times higher in the disability population versus non-disability population.

TABLE XI**PREVALENCE RATE OF DEPRESSION BY GENDER, AGE, AND EDUCATION**

		Adults with Disability ¹		Adults without Disability ¹	
		No depression	Depression	No depression	Depression
Gender	Male	762,901	249,018	14,917,271	1,084,384
		75.4%	24.6%	93.2%	6.8%
	Female	442,100	197,997	15,982,248	2,106,140
		69.1%	30.9%	88.4%	11.6%
Age	18-39	231,514	77,115	12,833,225	816,171
		75.0%	25.0%	94.0%	6.0%
	40-64	712,325	230,853	14,488,036	1,373,058
		75.5%	24.5%	91.3%	8.7%
	65 and above	261,162	139,048	3,578,258	1,001,295
		65.3%	34.7%	78.1%	21.9%
	No education / Drop out of elementary school	144,036	96,817	1,202,911	554,399
		59.8%	40.2%	68.5%	31.5%
Education	Elementary school	233,088	113,266	2,623,313	590,827
		67.3%	32.7%	81.6%	18.4%
	Middle school	209,000	66,497	2,470,365	407,006
		75.9%	24.1%	85.9%	14.1%
	High school	394,933	107,096	10,458,218	896,631
		78.7%	21.3%	92.1%	7.9%
	College	111,966	14,892	5,986,237	296,340
		88.3%	11.7%	95.3%	4.7%
	University	88,119	48,447	7,262,393	422,082
		64.5%	35.5%	94.5%	5.5%
	Graduate school or more	23,860	0	896,083	23,239
		100.0%		97.5%	2.5%

¹ Ages 18 and above

TABLE XII**PREVALENCE RATE OF DEPRESSION BY ECONOMIC ACTIVITY STATUS AND INCOME**

		Adults with Disability ¹		Adults without Disability ¹	
		No depression	Depression	No depression	Depression
Economic Activity Status	Regular employee	139,525	12,992	9,347,897	307,876
		91.5%	8.5%	96.8%	3.2%
	Temporary employee	227,923	48,131	6,679,778	812,835
		82.6%	17.4%	89.2%	10.8%
	Self- employee	163,206	31,820	4,945,675	443,791
		83.7%	16.3%	91.8%	8.2%
	Total Employed	530,655	92,944	20,973,350	1,564,502
		85.1%	14.9%	93.1%	6.9%
	Unemployed	18,971	642	392,310	67,870
		96.7%	3.3%	85.3%	14.7%
Annual Gross Income of Household	Economically inactive	655,376	353,429	9,533,859	1,558,153
		65.0%	35.0%	86.0%	14.0%
	Less than \$10,000	103,066	118,240	920,819	599,054
		46.6%	53.4%	60.6%	39.4%
	\$10,000 – 19,999	254,231	150,046	2,517,681	693,136
		62.9%	37.1%	78.4%	21.6%
	\$20,000 – 29,999	284,200	85,755	3,607,919	540,620
		76.8%	23.2%	87.0%	13.0%
	\$30,000 – 39,999	160,988	33,282	4,627,105	401,506
		82.9%	17.1%	92.0%	8.0%
	\$40,000 – 49,999	88,290	16,021	4,487,785	284,324
		84.6%	15.4%	94.0%	6.0%
	\$50,000 – 59,999	127,053	18,650	3,967,310	251,234
		87.2%	12.8%	94.0%	6.0%
	More than \$60,000	187,174	25,022	10,754,838	420,650
		88.2%	11.8%	96.2%	3.8%

¹ Ages 18 and above

Table XII presents rates of depression across economic status. In the disability population, the prevalence rate of depression was the highest for those who were economically inactive (35%). Among people with disabilities who were employed, temporary employees had approximately doubled the rate of depression versus regular employees. For the non-disabled population, the difference in depression rate between the inactive and unemployed was approximately four times that of those regularly employed. Across all groups, the rate of depression among those persons with a disability who were economically inactive was the highest (35%) and that of the non-disabled population with regular jobs was the lowest (3.2%).

Depression was most prevalent in the lowest income group for persons with disabilities (53.4%) and least prevalent in the highest income group (11.8%). The pattern of results was similar for the non-disabled population. Generally rates were higher for persons with a disability. In the highest income group, depression rates were three times higher for the disability population than the non-disabled population.

Table XIII presents depression rates by disability grade, disability type, and duration of disability. Those with the most severe disabilities had the highest prevalence rate (43.0%) while those at the mildest level had the lowest rate (19.1%). The prevalence rate of depression was highest in the health related disability group (36.9%) and lowest in the cognitive disability population (21.1%).

TABLE XIII

PREVALENCE RATE OF DEPRESSION BY DISABILITY GRADE, TYPES, AND DURATION

		Adults with Disability [†]	
		No depression	Depression
Disability Grade	6 (mild)	277,834 80.9%	65,561 19.1%
	5	148,064 79.3%	38,579 20.7%
	4	141,516 70.6%	58,811 29.4%
	3	312,829 77.7%	89,914 22.3%
	2	190,423 67.2%	92,956 32.8%
	1 (severe)	134,335 57.0%	101,193 43.0%
Disability Types	Physical disability	650,091 74.5%	223,079 25.5%
	Sensory disability	236,155 67.9%	111,898 32.1%
	Cognitive disability	234,392 78.9%	62,718 21.1%
	Health related disability	84,363 63.1%	49,321 36.9%
Disability Duration	Less than 10 years	353,167 73.1%	130,098 26.9%
	10 - 20 years	420,326 71.3%	169,200 28.7%
	20 - 30 years	159,666 79.5%	41,156 20.5%
	30 years and more	270,844 72.0%	105,224 28.0%

[†] Ages 18 and above

TABLE XIV**PREVALENCE RATE OF DEPRESSION BY MARITAL STATUS, RELIGION, AND FAMILY SIZE**

		Adults with Disability ¹		Adults without Disability ¹	
		No depression	Depression	No depression	Depression
Marital Status	Married	769,736	215,841	20,524,823	1,609,458
		78.1%	21.9%	92.7%	7.3%
	Separation by death	90,519	65,052	1,644,056	584,804
		58.2%	41.8%	73.8%	26.2%
	Divorce	51,785	47,135	951,948	310,609
		52.4%	47.6%	75.4%	24.6%
	Separation	10,259	2,642	143,937	39,204
		79.5%	20.5%	78.6%	21.4%
	Unmarried	280,343	116,346	7,609,915	643,422
		70.7%	29.3%	92.2%	7.8%
	Others	2,359	0	24,838	3,027
		100.0%	.0%	89.1%	10.9%
Religion	No religious affiliation	485,460	229,309	14,881,690	1,633,552
		67.9%	32.1%	90.1%	9.9%
	Religious affiliation	719,541	217,706	16,017,829	1,556,973
		76.8%	23.2%	91.1%	8.9%
Family Size	1	110,080	92,780	1,973,877	653,564
		54.3%	45.7%	75.1%	24.9%
	2 -3	723,680	280,441	13,178,111	1,517,455
		72.1%	27.9%	89.7%	10.3%
	4 -5	352,154	58,411	14,756,495	928,509
		85.8%	14.2%	94.1%	5.9%
	6 and more	19,087	15,383	991,036	90,997
		55.4%	44.6%	91.6%	8.4%

¹ Ages 18 and above

Table XIV summarizes depression by marital status, religion, and family size. For those with a disability, rates of depression were highest for those who were divorced (47.6%) and where the cause of separation was death (41.8%). Again, the overall rate of depression was generally higher in the disability population than the non-disabled population.

In the disability population, those who reported no religious affiliation reported a higher rate of depression (32.1%) than those identifying with a religion (23.2%). Depression was highest for those living alone in both the disability population(45.7%) and in the non-disability population (24.9%). Rates were lowest for the family size of 4 to 5 for both disability and non disability.

B. Analysis of Model Variables

In this section, differences in the key model variables across socio-demographic groupings are summarized. Independent t-tests are conducted across dual groupings and analysis of variance (ANOVA) for variables with three or more groups. Table XV shows the averages and related summary statistics for all Koreans with a disability on depression, the independent variables of disability discrimination and isolation, and the moderating variables of self-esteem, social support, and social service.

TABLE XV**DESCRIPTIVE STATISTICS FOR MAIN RESEARCH VARIABLES**

		Minimum	Maximum	Mean	SE	SD
Dependent variable	Depression	.00	56.36	10.77	.0083	10.74
Independent variable	Disability discrimination	.00	100.00	8.53	.0121	15.55
	Social isolation	.00	4.00	0.67	.0009	1.27
Moderating variables	Self esteem	1.10	4.00	2.82	.0003	.45
	Social support	1.00	5.00	3.19	.0005	.72
	Social service	.00	3.00	.39	.0005	.64

1. **Severity of depression across disability subgroups**

Table XVI compares the severity of depression across gender, age, and levels of education within the disability population. Females reported higher depression scores ($M = 12.3$) than males ($M = 9.8$); the difference was statistically significant ($t = -2.524$, $df = 489$, $p = .012$). Similar relationships between severity of depression and age and education were observed. The relationship between age and depression in the disability population was statistically significant ($F = 4.179$, $df = 2, 650$, $p = .016$). Older ages had the highest level of depression ($M = 12.9$), followed by the young adult group and the middle aged group. Across education, those with lesser education achievement reported greater levels of depression ($F = 4.525$, $df = 6, 646$, $p < .0001$).

TABLE XVI**DEPRESSION BY GENDER, AGE, AND EDUCATION**

		Mean	SD	Min	Max	Test Statistic	P- value
Gender	Male	9.80	10.39	.00	54.55	$t = -2.524$ $df = 489$.012
	Female	12.30	11.10	.00	56.36		
Age	18-39	10.28	10.54	.00	50.91	$F = 4.179$ $df = 2, 650$.016
	40-64	10.02	10.68	.00	49.09		
	65 and above	12.90	10.73	.00	56.36		
Education	No education / Drop out of elementary school	14.74	11.85	.00	56.36	$F = 4.525$ $df = 6, 646$	< .0001
	Elementary school	11.65	10.29	.00	41.82		
	Middle school	10.77	11.43	.00	50.91		
	High school	8.98	9.49	.00	41.82		
	College	9.13	8.55	.00	34.55		
	University	11.05	12.47	.00	49.09		
	Graduate school or more	2.44	4.17	.00	12.73		

Table XVII shows the mean differences of depression across economic activity and income. Both were linked to depression severity. The disability population who were economically inactive had the highest level of depression ($M = 13.0$), about four times higher degree of unemployed ($M = 3.7$). Regarding annual gross income, the lowest income subgroup had the highest degree of depression ($M = 16.3$), about three times higher than the highest income subgroup ($M = 5.1$).

TABLE XVII**DEPRESSION BY ECONOMIC ACTIVITY STATUS AND INCOME**

		Mean	SD	Min	Max	Test Statistic	P- value
Economic activity status	Regular Employee	6.14	7.44	.00	29.09	$F = 12.440$ $df = 4, 648$	< .0001
	Temporary Employee	8.51	8.90	.00	36.36		
	Self- Employee	6.84	7.99	.00	36.36		
	Unemployed	3.72	7.27	.00	40.00		
	Economically Inactive	12.98	11.48	.00	56.36		
Annual gross income	Less than \$10,000	16.25	11.45	.00	56.36	$F = 13.217$ $df = 6, 646$	< .0001
	\$10,000 – 19,999	13.67	11.15	.00	49.09		
	\$20,000 – 29,999	10.87	10.51	.00	50.91		
	\$30,000 – 39,999	8.16	7.15	.00	32.73		
	\$40,000 – 49,999	6.22	8.66	.00	32.73		
	\$50,000 – 59,999	9.17	11.69	.00	49.09		
	\$60,000 and more	5.06	7.48	.00	27.27		

Table XVIII shows the comparison of depression severity across the disability related characteristics of disability grade, type, and duration. The most severe degree of disability (grade 1) reported the highest level of depression ($M = 15.5$), and depression decreased linearly with grade. The differences across disability grade was statistically significant ($F = 6.581$, $df = 5, 647$, $p < .0001$).

Depression across disability type was not statistically significant ($F = 0.974$, $df = 3, 649$, $p = .406$), nor was disability duration a factor in severity of depression ($F = 0.749$, $df = 3, 647$, $p = .523$).

TABLE XVIII

DEPRESSION BY DISABILITY GRADE, TYPES, AND DURATION		Mean	SD	Min	Max	Test Statistics	P-value
Disability grade	6 (mild)	7.94	8.58	.00	36.36	$F = 6.581$ $df = 5, 647$	< .0001
	5	8.90	9.32	.00	40.00		
	4	10.10	9.04	.00	40.00		
	3	10.75	10.15	.00	56.36		
	2	11.93	11.15	.00	41.82		
	1(severe)	15.54	14.07	.00	54.55		
Disability type	Physical disability	10.39	11.18	.00	56.36	$F = 0.974$ $df = 3, 649$.406
	Sensory disability	11.37	10.17	.00	52.73		
	Cognitive disability	10.26	9.47	.00	40.00		
	Health related disability	12.75	11.54	.00	41.82		
Disability duration	Less than 10 years	10.31	11.28	.00	54.55	$F = 0.749$ $df = 3, 647$.523
	10 -19 years	11.59	11.19	.00	56.36		
	20 -29 years	9.99	10.36	.00	40.00		
	30 years and more	10.48	9.32	.00	52.73		

Table XIX presents the mean differences of depression across marital status, religion, and family size in the disability population. Members of the disability population who had no spouse ($M = 12.9$) reported higher depression levels than those who had a spouse ($M = 9.3$), and the gap was significantly different ($t = 3.740$, $df = 489$, $p < .0001$). Persons with a disability with no religious affiliation ($M = 12.1$) reported higher depression level than those that did ($M = 9.7$). The mean difference was also statistically significant ($t = 2.381$, $df = 391$, $p = .005$). Family size also had significant relationships with depression ($F = 8.976$, $df = 3, 649$, $p < .0001$). Disabled people living alone reported the highest level of depression ($M = 15.2$). The depression level of the disability population whose family size was 6 and more ($M = 12.1$) was also higher than other family size groups.

TABLE XIX**DEPRESSION BY MARITAL STATUS, RELIGION, AND FAMILY SIZE**

		Mean	SD	Min	Max	Test Statistic	P-value
Marital status	No spouse	12.94	11.17	.00	56.36	$t = 3.740$	< .0001
	Spouse	9.29	10.17	.00	54.55	$df = 489$	
Religion	No religious affiliation	12.12	12.06	.00	52.73	$t = 2.381$.018
	Religious affiliation	9.73	9.47	.00	56.36	$df = 391$	
Family size	1	15.17	11.97	.00	56.36	$F = 8.976$ $df = 3, 649$	< .0001
	2 – 3	11.03	10.54	.00	54.55		
	4 -5	7.84	9.65	.00	49.09		
	6 and more	12.07	10.72	.00	27.27		

Thus, severity of depression differences were similar in profile to the prevalence differences, affected by education, economic activity status, annual gross income, disability grade, marital status, and family size. No effects were found for disability type or duration.

2. **Differences in discrimination experiences among persons with a disability**

The differences in the average number of discrimination experiences across gender, age, and education groups are presented in Table XX.

Females reported more disability discrimination experiences than males though the difference was not statistically significant ($t = 0.441$, $df = 489$, $p = .066$). There were age differences ($F = 35.608$, $df = 2, 650$, $p < .0001$) with young adults reporting discrimination at a rate nearly seven times higher than that the oldest group, perhaps reflecting the higher level of social activities among young adults. Discrimination experiences were higher for those with more education ($F = 3.101$, $df = 6, 646$, $p = .005$) with college graduates reporting almost three times the number of events than those who had no education or dropped out of elementary school.

TABLE XX**DISCRIMINATION EXPERIENCE BY GENDER, AGE, AND EDUCATION**

		Mean	SD	Min	Max	Test Statistic	P-value
Gender	Male	7.62	14.47	.00	75.00	$t = 0.441$.066
	Female	9.97	17.03	.00	100.00	$df = 489$	
Age	18-39	17.62	21.01	.00	100.00	$F = 35.608$ $df = 2, 650$	< .0001
	40-64	8.04	14.27	.00	75.00		
	65 and above	2.67	8.92	.00	50.00		
Education	No education / Drop out of elementary school	5.75	13.06	.00	66.67	$F = 3.101$ $df = 6, 646$.005
	Elementary school	6.20	13.48	.00	62.50		
	Middle school	11.33	20.64	.00	100.00		
	High school	9.03	14.99	.00	75.00		
	College	14.45	17.19	.00	57.14		
	University	6.27	10.29	.00	50.00		
	Graduate school or more	8.91	9.94	.00	20.00		

Table XXI shows the comparison of disability discrimination experience across economic activity status and annual gross income of households. Overall, economic activity was associated with disability discrimination ($F = 3.892$, $df = 4, 648$, $p = .004$), with those who were employed temporarily reporting the highest level of discrimination and the self-employed with the lowest level. The temporary employee is more likely to be in a situation vulnerable to disability discrimination, while conversely, the self-employed person would likely have less exposure to co-workers. Groups defined by annual household gross income did not differ in reported disability discrimination ($F = 1.500$, $df = 6, 646$, $p = .175$).

TABLE XXI**DISCRIMINATION EXPERIENCE BY ECONOMIC ACTIVITY STATUS AND INCOME**

		Mean	SD	Min	Max	Test Statistic	P-value
Economic activity status	Regular Employee	4.72	11.81	.00	62.50	$F = 3.892$ $df = 4, 648$.004
	Temporary Employee	11.48	17.60	.00	66.67		
	Self- Employee	3.96	8.96	.00	40.00		
	Unemployed	5.53	9.08	.00	25.00		
	Economically Inactive	9.24	16.24	.00	100.00		
Annual gross income	Less than \$10,000	8.24	16.14	.00	75.00	$F = 1.500$ $df = 6, 646$.175
	\$10,000 – 19,999	10.11	18.60	.00	100.00		
	\$20,000 – 29,999	7.92	12.69	.00	57.14		
	\$30,000 – 39,999	7.25	13.01	.00	40.00		
	\$40,000 – 49,999	8.39	17.92	.00	62.50		
	\$50,000 – 59,999	12.31	16.11	.00	57.14		
	\$60,000 and more	5.52	12.45	.00	50.00		

As shown in Table XXII, those who had the most severe disability reported the highest level of discrimination, while those who had the most mild disability reported the lowest level of discrimination ($F = 8.376$, $df = 5, 647$, $p < .0001$).

Similarly, discrimination varied across disability type ($F = 16.626$, $df = 3, 649$, $p < .0001$) and disability duration ($F = 3.002$, $df = 3, 647$, $p = .030$). Those with a cognitive disability reported the highest score of disability discrimination experience and the physical disability group the fewest.

In terms of duration, those who had a disability for 20 to 29 years reported the highest score of disability discrimination, about two times higher than those who had a disability for less than 10 years.

TABLE XXII**DISCRIMINATION EXPERIENCE BY DISABILITY GRADE, TYPES, AND DURATION**

		Mean	SD	Min	Max	Test Statistic	P- value
Disability Grade	6 (mild)	3.47	10.46	.00	62.50	$F = 8.376$ $df = 5, 647$	< .0001
	5	5.48	8.72	.00	33.33		
	4	4.70	10.77	.00	66.67		
	3	11.58	17.60	.00	66.67		
	2	11.18	18.42	.00	100.00		
	1(severe)	13.17	18.38	.00	75.00		
Disability Type	Physical disability	6.01	12.35	.00	66.67	$F = 16.626$ $df = 3, 649$	< .0001
	Sensory disability	6.46	14.25	.00	66.67		
	Cognitive disability	16.65	22.04	.00	100.00		
	Health related disability	12.30	13.12	.00	50.00		
Disability duration	Less than 10 years	6.97	14.57	.00	62.50	$F = 3.002$ $df = 3, 647$.030
	10 -19 years	8.60	15.90	.00	100.00		
	20 -29 years	13.11	17.32	.00	66.67		
	30 years and more	8.03	14.79	.00	75.00		

Disability discrimination across the demographic grouping of marital status, religion, and family size is shown in Table XXIII. Differences were statistically significant across marital status only ($t = 2.566$, $df = 430$, $p = .011$).

TABLE XXIII**DISCRIMINATION EXPERIENCE BY MARITAL STATUS, RELIGION, AND FAMILY SIZE**

		Mean	SD	Min	Max	Test Statistic	P-value
Marital status	No Spouse	11.11	18.19	.00	100.00	$t = 2.566$.011
	Spouse	6.78	13.20	.00	62.50	$df = 430$	
Religion	No religious affiliation	8.89	17.09	.00	100.00	$t = -0.110$.912
	Religious affiliation	8.26	14.26	.00	75.00	$df = 651$	
Family size	1	6.61	14.55	.00	66.67	$F = .527$ $df = 3, 649$.664
	2 - 3	8.82	16.05	.00	100.00		
	4 - 5	8.89	14.68	.00	62.50		
	More than 6	6.98	15.94	.00	50.00		

3. **Comparison of social isolation across disability groups**

Differences in social isolation across gender, age, and education among the disability population are shown in Table XXIV. Females reported more social isolation experiences than males and the difference was statistically significant ($t = -2.726$, $df = 581$, $p = .007$). Older persons ($F = 11.650$, $df = 2, 650$, $p < .0001$) and those with the least education ($F = 4.802$, $df = 6, 646$, $p < .0001$) reported the highest level of social isolation. The differences are consistent with the general observation of greater social isolation among the elderly.

TABLE XXIV**SOCIAL ISOLATION BY GENDER, AGE, AND EDUCATION**

		Mean	SD	Min	Max	Test Statistic	<i>P</i> - value
Gender	Male	.63	1.25	0	4	$t = -2.726$.007
	Female	.91	1.30	0	4	$df = 581$	
Age	18-39	.76	1.42	0	4	$F = 11.650$	< .0001
	40-64	.48	1.08	0	4	$df = 2, 650$	
	65 and above	1.05	1.47	0	4		
Education	No education / Drop out of elementary school	1.25	1.60	0	4		< .0001
	Elementary school	.51	1.11	0	4		
	Middle school	.60	1.21	0	4	$F = 4.802$	
	High school	.71	1.27	0	4	$df = 6, 646$	
	College	.39	.91	0	4		
	University	.44	1.18	0	4		
	Graduate school or more	.23	.42	0	1		

Table XXV shows the significant effect of economic activity status on social isolation ($F = 26.013$, $df = 4, 648$, $p < .0001$) with those who were economically inactive reporting the highest level of social isolation ($M = 1.1$). The degree of isolation was more than five times that of any other economic activity status group. Differences across income level were significant as well with those who had an annual household income of less than \$20,000 reporting the highest degree of social isolation ($F = 4.452$, $df = 6, 646$, $p < .0001$).

TABLE XXV**SOCIAL ISOLATION BY ECONOMIC ACTIVITY STATUS AND INCOME**

		Mean	SD	Min	Max	Test Statistic	P- value
Economic activity status	Regular employee	.03	.17	0	1	$F = 26.013$ $df = 4, 648$	$< .0001$
	Temporary employee	.02	.13	0	1		
	Self-employee	.20	.65	0	3		
	Unemployed	.24	.43	0	1		
	Economically inactive	1.05	1.48	0	4		
Annual gross income	Less than \$10,000	.73	1.25	0	4	$F = 4.452$ $df = 6, 646$	$< .0001$
	\$10,000 – 19,999	1.05	1.51	0	4		
	\$20,000 – 29,999	.47	1.13	0	4		
	\$30,000 – 39,999	.59	1.18	0	4		
	\$40,000 – 49,999	.65	1.11	0	4		
	\$50,000 – 59,999	.70	1.37	0	4		
	\$60,000 and more	.29	.86	0	4		

Table XXVI shows the significant relationships of social isolation with disability grade ($F = 25.374$, $df = 5, 647$, $p < .0001$) and disability duration ($F = 5.681$, $df = 3, 649$, $p = .001$). Although persons with a cognitive disability reported considerably higher social isolation scores than the other groups, disability type did not have a significant effect on social isolation ($F = 2.250$, $df = 3, 647$, $p = .081$).

TABLE XXVI**SOCIAL ISOLATION BY DISABILITY GRADE, TYPES, AND DURATION**

		Mean	SD	Min	Max	Test Statistic	P- value
Disability Grade	6 (mild)	.27	.80	0	4	$F = 25.374$ $df = 5, 647$	< .0001
	5	.25	.82	0	4		
	4	.39	.91	0	4		
	3	.53	1.03	0	4		
	2	.86	1.42	0	4		
	1(severe)	1.83	1.76	0	4		
Disability Type	Physical disability	.67	1.26	0	4	$F = 2.250$ $df = 3, 649$.081
	Sensory disability	.65	1.29	0	4		
	Cognitive disability	.86	1.45	0	4		
	Health related disability	.31	.65	0	3		
Disability duration	Less than 10 years	.46	1.00	0	4	$F = 5.681$ $df = 3, 647$.001
	10 -19 years	.93	1.49	0	4		
	20 -29 years	.52	1.09	0	4		
	30 years and more	.62	1.23	0	4		

Table XXVII summarizes social isolation across groups formed by marital status, religion, and family size. None of the demographic groupings had a significant effect on social isolation.

TABLE XXVII**SOCIAL ISOLATION BY MARITAL STATUS, RELIGION, AND FAMILY SIZE**

		Mean	SD	Min	Max	Test Statistic	P- value
Marital status	No spouse	.79	1.41	0	4	$t = 0.701$.484
	Spouse	.72	1.28	0	4	$df = 651$	
Religion	No religious affiliation	.81	1.39	0	4	$t = 1.055$.292
	Religious affiliation	.70	1.26	0	4	$df = 614$	
Family Size	1	.46	1.05	0	4	$F = 1.941$ $df = 3, 649$.122
	2 - 3	.75	1.30	0	4		
	4 - 5	.56	1.27	0	4		
	More than 6	.99	1.31	0	4		

4. **Self-esteem across disability groups**

Table XXVIII summarizes self-esteem by gender, age, and education. Persons with a disability across levels of age ($F = 5.072$, $df = 2, 529$, $p = .007$) and education ($F = 7.442$, $df = 6, 525$, $p < .0001$) had statistically significant differences in self-esteem. The young adults group ($M = 2.8$) showed the highest level of self-esteem, followed by the middle aged group ($M = 2.9$) and the oldest aged group ($M = 2.7$). Those with graduate education reported the highest level of self-esteem ($M = 3.3$); those with no education or who dropped out of elementary school had the lowest levels ($M = 2.6$).

TABLE XXVIII

SELF-ESTEEM BY GENDER, AGE, AND EDUCATION

		Mean	SD	Min	Max	Test Statistic	P-value
Gender	Male	2.84	.45	1.70	3.70	$t = 1.090$ $df = 530$.276
	Female	2.79	.43	1.10	4.00		
Age	18-39	2.83	.39	1.90	3.70	$F = 5.072$ $df = 2, 529$.007
	40-64	2.86	.45	1.60	3.70		
	65 and above	2.72	.45	1.10	4.00		
Education	No education / Drop out of elementary school	2.63	.51	1.30	4.00	$F = 7.442$ $df = 6, 525$	< .0001
	Elementary school	2.74	.42	1.10	3.70		
	Middle school	2.88	.39	1.90	3.60		
	High school	2.83	.47	1.70	3.70		
	College	2.86	.37	2.20	3.60		
	University	3.07	.31	1.80	3.50		
	Graduate school or more	3.26	.10	3.10	3.60		

As shown in Table XXIX, economic variables had a strong effect on self-esteem in the disability population. Both economic activity status ($F = 15.794$, $df = 4,527$, $p < .0001$) and income ($F = 16.982$, $df = 6, 525$, $p < .0001$) were highly significant.

TABLE XXIX**MEAN DIFFERENCE OF SELF-ESTEEM BY ECONOMIC ACTIVITY STATUS AND INCOME**

		Mean	SD	Min	Max	Test Statistic	P-value
Economic activity status	Regular Employee	3.07	.39	2.30	3.70	$F = 15.794$ $df = 4, 527$	< .0001
	Temporary Employee	2.93	.44	1.80	4.00		
	Self- Employee	3.00	.33	1.90	3.70		
	Unemployed	2.75	.27	2.30	3.20		
	Economically Inactive	2.70	.45	1.10	3.70		
Annual gross income	Less than \$10,000	2.51	.47	1.30	3.50	$F = 16.982$ $df = 6, 525$	< .0001
	\$10,000 – 19,999	2.71	.40	1.10	3.70		
	\$20,000 – 29,999	2.85	.44	1.70	3.70		
	\$30,000 – 39,999	2.91	.37	2.00	3.70		
	\$40,000 – 49,999	2.85	.40	2.20	4.00		
	\$50,000 – 59,999	3.08	.35	2.00	3.60		
	\$60,000 and more	3.09	.36	2.00	3.70		

As shown in Table XXX, disability grade ($F = 10.707$, $df = 5, 526$, $p < .0001$) and disability duration ($F = 5.025$, $df = 3, 527$, $p = .002$) affected self-esteem. Those with the mildest degree of disability reported the highest level of self-esteem ($M = 3.0$), while members of the disability population who had the most severe disability reported the lowest level of self-esteem ($M = 2.6$).

Disability type did not have a significant relationship with self-esteem in the disability population ($F = 2.052$, $df = 3, 528$, $p = .106$) though the cognitive disability population ($M = 2.7$) reported lower self-esteem than any other group.

TABLE XXX**SELF-ESTEEM BY DISABILITY GRADE, TYPES, AND DURATION**

		Mean	SD	Min	Max	Test Statistic	P-value
Disability Grade	6 (mild)	2.98	.37	1.80	3.70	$F = 10.707$ $df = 5, 526$	< .0001
	5	2.93	.42	1.60	3.60		
	4	2.90	.40	1.90	3.70		
	3	2.69	.47	1.30	4.00		
	2	2.71	.49	1.10	3.70		
	1(severe)	2.60	.36	1.80	3.30		
Disability Type	Physical disability	2.85	.44	1.10	3.70	$F = 2.052$ $df = 3, 528$.106
	Sensory disability	2.83	.43	1.70	3.70		
	Cognitive disability	2.69	.41	1.80	4.00		
	Health related disability	2.82	.54	1.70	3.70		
Disability duration	Less than 10 years	2.87	.42	1.70	3.70	$F = 5.025$ $df = 3, 527$.002
	10 -19 years	2.78	.47	1.10	4.00		
	20 -29 years	2.66	.46	1.60	3.70		
	30 years and more	2.89	.41	1.80	3.70		

Table XXXI shows self-esteem across marital status, religion, and family size. Very much in parallel with the depression scores, those who had a spouse reported a higher self-esteem level than those who had no spouse ($t = -5.043$, $df = 530$, $p < .0001$) and larger family size was related to self-esteem ($F = 5.750$, $df = 3, 528$, $p = .001$). Religion had no effect.

TABLE XXXI**SELF-ESTEEM BY MARITAL STATUS, RELIGION, AND FAMILY SIZE**

		Mean	SD	Min	Max	Test Statistic	P-value
Marital status	No spouse	2.71	.46	1.30	3.70	$t = -5.043$ $df = 530$	< .0001
	Spouse	2.89	.43	1.10	4.00		
Religion	No religious affiliation	2.80	.45	1.60	4.00	$t = -1.303$ $df = 530$.193
	Religious affiliation	2.84	.45	1.10	3.70		
Family size	1	2.70	.51	1.10	3.70	$F = 5.750$ $df = 3, 528$.001
	2 - 3	2.80	.44	1.60	3.70		
	4 - 5	2.96	.39	2.00	4.00		
	More than 6	2.91	.43	2.00	3.30		

5. **Social support across disability groups**

Social support across gender, age, and education in the disability population is presented in Table XXXII. Only level of education had a statistically significant relationship with social support ($F = 8.509$, $df = 6, 646$, $p < .0001$). Those with a master degree or higher reported the highest level of social support, while those who had no education or dropped out of elementary school reported the lowest level of social support.

TABLE XXXII**SOCIAL SUPPORT BY GENDER, AGE, AND EDUCATION**

		Mean	SD	Min	Max	Test Statistic	P-value
Gender	Male	3.13	.74	1.00	5.00	$t = 0.535$.593
	Female	3.09	.70	1.00	5.00	$df = 651$	
Age	18-39	3.30	.67	1.40	5.00	$F = 2.017$ $df = 2, 650$.134
	40-64	3.17	.76	1.00	4.90		
	65 and above	3.14	.67	1.10	5.00		
Education	No education / Drop out of elementary school	2.88	.71	1.00	5.00	$F = 8.509$ $df = 6, 646$	< .0001
	Elementary school	3.04	.69	1.40	5.00		
	Middle school	3.24	.74	1.60	5.00		
	High school	3.25	.66	1.00	5.00		
	College	3.35	.83	1.20	5.00		
	University	3.51	.63	1.80	4.30		
	Graduate school or more	3.90	.45	2.80	4.50		

As shown in Table XXXIII, both economic activity status ($F = 9.026$, $df = 4, 648$, $p < .0001$) and annual gross income of households ($F = 13.542$, $df = 6, 646$, $p < .0001$) was statistically associated with degree of social support. Those who were regularly employed reported the highest level of social support while those households with less than \$10,000 annual household gross income group reported the lowest degree of social support. Overall, the results show that economic status is associated with more social support.

TABLE XXXIII

SOCIAL SUPPORT BY ECONOMIC ACTIVITY STATUS AND INCOME

		Mean	SD	Min	Max	Test Statistic	P- value
Economic activity status	Regular Employee	3.65	.42	2.70	4.50	$F = 9.026$ $df = 4, 648$	< .0001
	Temporary Employee	3.07	.75	1.30	5.00		
	Self- Employee	3.35	.62	1.50	4.50		
	Unemployed	3.04	.41	2.60	3.80		
	Economically Inactive	3.12	.74	1.00	5.00		
Annual gross income	Less than \$10,000	2.84	.72	1.00	4.40	$F = 13.542$ $df = 6, 646$	< .0001
	\$10,000 – 19,999	2.98	.74	1.30	5.00		
	\$20,000 – 29,999	3.22	.68	1.40	5.00		
	\$30,000 – 39,999	3.15	.64	1.90	4.40		
	\$40,000 – 49,999	3.49	.55	1.90	4.40		
	\$50,000 – 59,999	3.53	.63	1.80	4.40		
	\$60,000 and more	3.53	.68	1.00	5.00		

All three disabilities related characteristics were significantly associated with supports: disability grade ($F = 10.380$, $df = 5, 647$, $p = .000$), disability type ($F = 15.040$, $df = 3, 649$, $p < .0001$), and disability duration ($F = 4.851$, $df = 3, 647$, $p = .002$). Those with the least severe degree of disability (disability grade 6) reported the highest level of social support. Across disability type, persons with cognitive disabilities reported the least support and those with a disability duration of less than 10 years had the most support.

TABLE XXXIV

SOCIAL SUPPORT BY DISABILITY GRADE, TYPES, AND DURATION

		Mean	SD	Min	Max	Test Statistic	P-value
Disability Grade	6 (mild)	3.45	.68	1.40	5.00	$F = 10.380$ $df = 5, 647$	< .0001
	5	3.38	.66	1.30	4.90		
	4	3.33	.70	1.10	5.00		
	3	3.04	.60	1.20	4.50		
	2	3.09	.77	1.00	4.40		
	1(severe)	2.91	.79	1.00	5.00		
Disability Type	Physical disability	3.29	.69	1.10	5.00	$F = 15.040$ $df = 3, 649$	< .0001
	Sensory disability	3.15	.74	1.00	5.00		
	Cognitive disability	2.83	.65	1.20	5.00		
	Health related disability	3.42	.79	1.00	5.00		
Disability duration	Less than 10 years	3.34	.68	1.40	4.60	$F = 4.851$ $df = 3, 647$.002
	10 -19 years	3.12	.75	1.00	5.00		
	20 -29 years	3.24	.62	1.50	5.00		
	30 years and more	3.08	.76	1.00	5.00		

Social support across the other demographic groupings of marital status, religion, and family size is shown in Table XXXV. Only marital status was statistically significant ($t = -5.158$, $df = 651$, $p < .0001$) with greater support for those with a spouse present.

TABLE XXXV**SOCIAL SUPPORT BY MARITAL STATUS, RELIGION, AND FAMILY SIZE**

		Mean	SD	Min	Max	Test Statistic	P-value
Marital status	No Spouse	2.94	.72	1.00	5.00	$t = -5.158$ $df = 651$	< .0001
	Spouse	3.24	.71	1.00	5.00		
Religion	No religious affiliation	3.08	.80	1.00	5.00	$t = -1.045$ $df = 599$.297
	Religious affiliation	3.14	.65	1.00	5.00		
Family Size	1	3.02	.79	1.00	4.40	$F = 1.194$ $df = 3, 649$.304
	2 - 3	3.18	.72	1.30	5.00		
	4 - 5	3.28	.69	1.00	5.00		
	More than 6	3.30	.71	2.50	4.40		

6. Social service usage across disability groups

Utilization of social services across gender, age, and education among the disability population is shown in Table XXXVI. No differences were found across gender, age groups, or level of education.

TABLE XXXVI**SOCIAL SERVICE USAGE BY GENDER, AGE, AND EDUCATION**

		Mean	SD	Min	Max	Test Statistic	P-value
Gender	Male	.36	.64	.00	3.00	$t = -1.274$ $df = 651$.203
	Female	.42	.64	.00	3.00		
Age	18-39	.37	.70	.00	3.00	$F = 0.456$ $df = 2, 650$.634
	40-64	.36	.67	.00	3.00		
	65 and above	.31	.52	.00	2.00		
Education	No education / Drop out of elementary school.	.43	.62	.00	3.00	$F = 1.573$ $df = 6, 646$.152
	Elementary school	.41	.66	.00	3.00		
	Middle school	.43	.71	.00	3.00		
	High school	.29	.60	.00	3.00		
	College	.24	.46	.00	2.00		
	University	.24	.78	.00	3.00		
	Graduate school or more	.21	.40	.00	1.00		

As shown in Table XXXVII social service usage differed across both economic activity status and annual gross income of households. Those who were economically inactive were the greatest users of social services ($F = 11.150$, $df = 4, 648$, $p < .0001$) and the lowest income group reported the highest degree of social service usage ($F = 7.576$, $df = 6, 646$, $p = .000$).

TABLE XXXVII

SOCIAL SERVICE BY ECONOMIC ACTIVITY STATUS AND INCOME

		Mean	SD	Min	Max	Test Statistic	P- value
Economic activity status	Regular Employee	.00	.00	.00	.00	$F = 11.150$ $df = 4, 648$	< .0001
	Temporary Employee	.23	.49	.00	2.00		
	Self- Employee	.21	.48	.00	2.00		
	Unemployed	.00	.00	.00	.00		
	Economically Inactive	.47	.72	.00	3.00		
Annual gross income	Less than \$10,000	.54	.69	.00	2.00	$F = 7.576$ $df = 6, 646$	< .0001
	\$10,000 – 19,999	.46	.60	.00	3.00		
	\$20,000 – 29,999	.40	.73	.00	3.00		
	\$30,000 – 39,999	.26	.65	.00	3.00		
	\$40,000 – 49,999	.13	.34	.00	1.00		
	\$50,000 – 59,999	.40	.79	.00	3.00		
	\$60,000 and more	.02	.13	.00	1.00		

In terms of disability related characteristics both disability grade ($F = 22.292$, $df = 5, 647$, $p < .0001$) and disability type ($F = 5.007$, $df = 3, 649$, $p = .002$) affected service use. There were no statistically significant differences across disability duration. The most severely disabled group reported the highest level of social service usage ($M = 0.8$), while group with the mildest level of disability reported the lowest level of social service usage ($M = 0.1$). The cognitive disability population ($M = 0.5$) reported the highest score of social service usage, and the health related disability population ($M = 0.2$) reported the lowest score of social service usage.

TABLE XXXVIII

SOCIAL SERVICE USAGE BY DISABILITY GRADE, TYPES, AND DURATION

		Mean	SD	Min	Max	Test Statistic	P-value
Disability Grade	6 (mild)	.05	.23	.00	1.00	$F = 22.292$ $df = 5, 647$	< .0001
	5	.16	.44	.00	2.00		
	4	.25	.48	.00	2.00		
	3	.47	.71	.00	3.00		
	2	.34	.49	.00	2.00		
	1(severe)	.84	.95	.00	3.00		
Disability Type	Physical disability	.33	.64	.00	3.00	$F = 5.007$ $df = 3, 649$.002
	Sensory disability	.30	.61	.00	3.00		
	Cognitive disability	.54	.74	.00	3.00		
	Health related disability	.19	.43	.00	2.00		
Disability duration	Less than 10 years	.33	.63	.00	3.00	$F = 0.681$ $df = 3, 647$.564
	10 -19 years	.35	.71	.00	3.00		
	20 -29 years	.29	.50	.00	2.00		
	30 years and more	.41	.61	.00	3.00		

Social service usage differed across marital status and to a lesser extent family size.

Those without a spouse reported higher social service usage than those who did ($t = 3.983$, $df = 509$, $p < .0001$). Those living alone reported the highest level of social service usage ($M = 0.5$), and declined as family size grew ($F = 2.964$, $df = 3, 649$, $p = .032$).

TABLE XXXIX**SOCIAL SERVICE USAGE BY MARITAL STATUS, RELIGION, AND FAMILY SIZE**

		Mean	SD	Min	Max	Test Statistic	P-value
Marital status	No Spouse	.52	.69	.00	3.00	$t = 3.983$	< .0001
	Spouse	.31	.59	.00	3.00	$df = 509$	
Religion	No religious affiliation	.36	.71	.00	3.00	$t = 1.274$.203
	Religious affiliation	.34	.59	.00	3.00	$df = 651$	
Family Size	1	.53	.74	.00	2.00	$F = 2.964$ $df = 3, 649$.032
	2 - 3	.35	.61	.00	3.00		
	4 - 5	.28	.66	.00	3.00		
	More than 6	.22	.41	.00	1.00		

7. **Overview of mean differences of main research variables**

Table XL summarizes the statistical comparisons of the different demographic variables on the main research variables of depression, disability discrimination experience, social isolation, self-esteem, social support, and social service usage. P-values are indicated only for illustration since the experiment-wise alpha is considerably inflated here.

TABLE XL**DEMOGRAPHIC DIFFERENCES ON THE MAIN RESEARCH VARIABLES**

	Depression	Disability Discrimination	Social Isolation	Self- Esteem	Social Support	Social Service Usage
Gender	*	-	**	-	-	-
Age	*	***	***	**	-	-
Education	***	**	***	***	***	-
Economic activity status	***	**	***	***	***	***
Annual gross income	***	-	***	***	***	***
Disability grade	***	***	***	***	***	***
Disability type	-	***	-	-	***	**
Disability duration	-	*	**	**	**	-
Marital status	***	*	-	***	***	***
Religion	*	-	-	-	-	-
Family size	***	-	-	**	-	*

*** P<.001 ** P<.01 * P<.05

Note 1: An independent groups *t*-test was used for variables with two levels (gender, marital status, and religion) and analysis of variance (ANOVA) was employed for variables with three or more levels (age, education, economic activity status, annual gross income, disability grade, disability type, disability duration, and family size).

C. **Hierarchical Multiple Regression Model of Depression among People with Disabilities**

The descriptive analyses confirmed significantly higher rates of depression for persons with a disability. Hierarchical regression analyses were employed to test the relative effects of impairment, disability discrimination experiences, and social isolation on depression, while controlling for other background variables.

The regression analyses were based on weighted population data from KOWEPS. The dependent variable for all of these analyses was the respondents' scores on the CESD-11 scale which measured the respondent's mood during the week prior to being surveyed. The analyses address the third research question which asks about the role of disability status in predicting risk

for depression after taking into account the effects of discrimination experiences and social isolation. The moderating effect of self-esteem, social support, and social services are incorporated into the model.

Results are presented in Tables XLI and XLII. Shown in Table XLI are the bivariate correlations among the variables in the regression models. Only those variables that had significant differences in the simple tests of mean differences of depression or in the observed prevalence rate of depression were included. Disability type and disability duration did not have a significant effect on depression and were excluded from the regression analyses. The full is shown in Appendix B.

TABLE XLI

CORRELATION ANALYSIS OF RESEARCH VARIABLES

	1. Depressi on	2. Severity of disabilit y	3 Disability discrimin ation	4. Social Isolation	5. Self- esteem	6. Social support	7. Social service	8. Discrimi nation x Self- esteem	9. Discrimi nation x Social support	10. Discrimi nation x Social service	11. Isolation x Self- esteem	12. Isolation x Social support	13. Isolation x Social service
1	1.000												
2	.208***	1.000											
3	.134***	.229***	1.000										
4	.406***	.340***	.085*	1.000									
5	-.460***	-.288***	-.143***	-.223***	1.000								
6	-.315***	-.258***	-.041	-.247***	.286***	1.000							
7	.265***	.343***	.108**	.173***	-.228***	-.273***	1.000						
8	-.040	-.090*	-.570***	.074*	.082*	-.108**	.004	1.000					
9	-.015	.069*	-.073*	-.074*	-.159***	.165***	-.048	-.024	1.000				
10	.100**	.060	.126**	.100**	.072*	-.053	.306***	-.123**	-.266***	1.000			
11	-.107**	-.018	.100*	-.609***	.006	.047	-.025	-.134**	.006	-.052	1.000		
12	-.168***	-.081*	-.039	-.333***	-.032	.132***	-.100**	-.016	.177***	-.057	.447***	1.000	
13	.222***	.009	.062	.163***	.044	-.083*	.316***	-.063	-.062	.143***	-.168***	-.364***	1.000

*** $P < .001$ ** $P < .01$ * $P < .05$

Table XLII summarizes the results from the hierarchical multiple regression analyses testing five separate regression models. There were no multicollinearity issues; all values for VIF were less than 10 in these 5 models. Model 1, which analyzed the relationship between socio-demographic variables and depression among people with disabilities, was statistically significant ($R^2 = .139$, $F = 9.371$, $df = 9, 522$, $p < .0001$) accounting for 13.9% of the dependent variable variance. Among the socio-demographic variables, income ($\beta = -.184$, $p < .001$), unemployment ($\beta = -.085$, $p < .05$), employment ($\beta = -.169$, $p < .001$), spouse presence ($\beta = -.121$, $p < .05$), and religion ($\beta = -.093$, $p < .05$) were significant predictors of the level of depression within the disability population.

In Model 2, severity of disability was added to Model 1. Model 2 was statistically significant ($R^2 = .153$, $F = 9.383$, $df = 10, 521$, $p < .0001$) and severity added an additional 1.4 % in predicted variance for depression; the increment was statistically significant ($\Delta R^2 = .014$, $\Delta F = 8.311$, $df = 1, 521$, $p = .004$). Thus, depression level increased significantly as the severity of disability increased after controlling for demographic variables.

Disability discrimination experiences and social isolation were added in the Model 3 regression. The addition of disability discrimination experiences and social isolation added an additional 10% to the predicted variance; the change in R^2 was significant ($\Delta R^2 = .100$, $\Delta F = 34.602$, $df = 2, 519$, $p < .0001$). Severity of disability dropped out as a predictor with the addition of disability discrimination experience ($\beta = .098$, $p < .05$) and social isolation ($\beta = .337$, $p < .001$). Those who experience discrimination or social isolation are more likely to experience higher levels of depression even after controlling for demographic factors and severity of disability.

TABLE XLII

REGRESSION ANALYSIS ON DEPRESSION AMONG DISABILITY POPULATION						
	Model 1	Model 2	Model 3	Model 4	Model 5	VIF
	β	β	β	β	β	
Gender	.059	.060	.058	.085*	.089*	1.161
Age	.074	.103	.097	.074	.089	2.050
Education	-.021	.001	.010	.082	.060	1.584
Income	-.184***	-.170**	-.164**	-.095*	-.108*	1.583
Unemployed	-.085*	-.077	-.056	-.056	-.058	1.045
Employed	-.169***	-.126**	-.033	.032	.055	1.506
Marital status	-.121*	-.121*	-.122**	-.059	-.073	1.551
Religion	-.093*	-.101*	-.059	-.059	-.020	1.116
Family size	.021	.011	-.014	-.024	-.027	1.591
Severity of disability		.128**	.023	-.068	-.069	1.529
Disability discrimination			.098*	.061	.017	1.731
Social Isolation			.337***	.293***	.384***	2.429
Self-esteem				-.326***	-.345***	1.425
Social support				-.121**	-.096*	1.376
Social service				.102**	.021	1.551
Discrimination x Self-esteem					-.015	1.625
Discrimination x Social support					.009	1.245
Discrimination x Social service					.060	1.253
Isolation x Self-esteem					.203***	2.176
Isolation x Social support					-.084*	1.531
Isolation x Social service					.160***	1.361
R	.373	.391	.502	.610	.647	
R ²	.139	.153	.252	.372	.419	
Adjusted R ²	.124	.136	.235	.354	.395	
R ² Change		.014	.100	.120	.047	
F Change		8.311	34.602	32.849	6.816	
Sig. F Change		.004	.000	.000	.000	

Note: *** $p < .001$ ** $p < .01$ * $p < .05$

Self-esteem, social support, and social service usages were added to Model 4 which added a statistically significant increment in predicated variance after taking socio-demographic variables, severity of disability, disability discrimination experiences and social isolation into

account ($\Delta R^2 = .12$, $\Delta F = 32.849$, $df = 3, 516$, $p < .0001$). Gender emerged as a significant predictor ($\beta = .085$, $p < .05$) of depression, with females more likely to be depressed than males. The model was consistent with Hypothesis #3 and Hypothesis #4. However, Hypothesis #5 was not supported, with greater social service usage associated with increased levels of depression.

In the full Model 5, the six interaction terms were added describing discrimination and isolation interacting with self-esteem, social support, and social services. The introduction of six interaction variables predicted significant additional depression score variance, after controlling for the other predictors ($\Delta R^2 = .047$, $\Delta F = 6.816$, $df = 6, 510$, $p < .0001$). Social service was no longer a significant predictor with the addition of the interactions. Among the six interaction terms, only the social isolation interactions were significant. Thus, the model was consistent with the hypothesis regarding the moderating effect of social isolation on depression among the disability population.

Figure 3 graphically illustrates the interaction of self-esteem and social isolation with depression. Social isolation predicted level of depression but the relationship was more pronounced at higher levels of self-esteem ($\beta = .203$, $p < .001$).

Figure 4 shows the interaction of social support and social isolation in predicting depression. Again, social isolation predicts depression but is significantly attenuated when greater social support is available ($\beta = -.084$, $p < .05$).

Figure 5 shows the interaction of social isolation and social service usage with depression. Depression increases more dramatically with higher levels of social isolation for high users of social services.

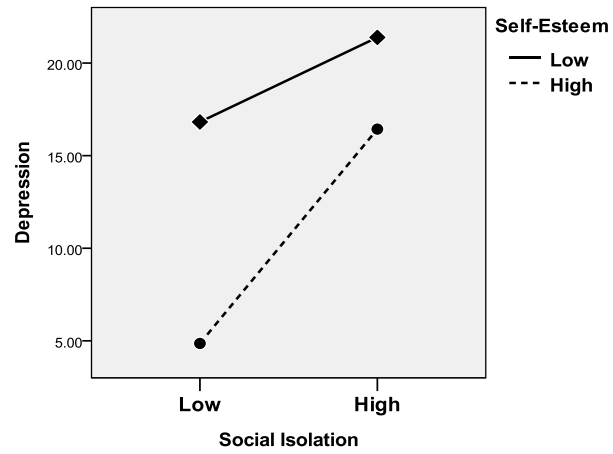


Figure 3. Moderating effect of self-esteem

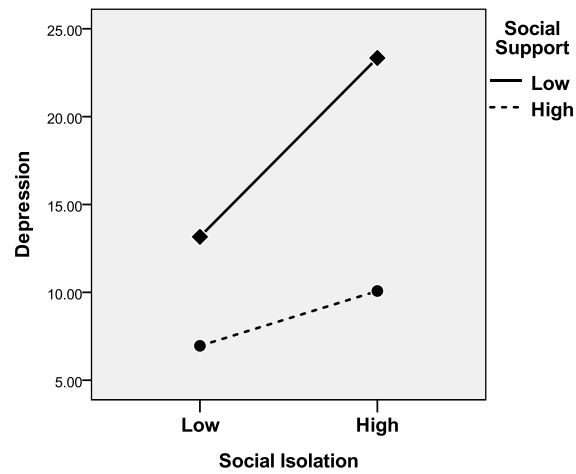


Figure 4. Moderating effect of social support

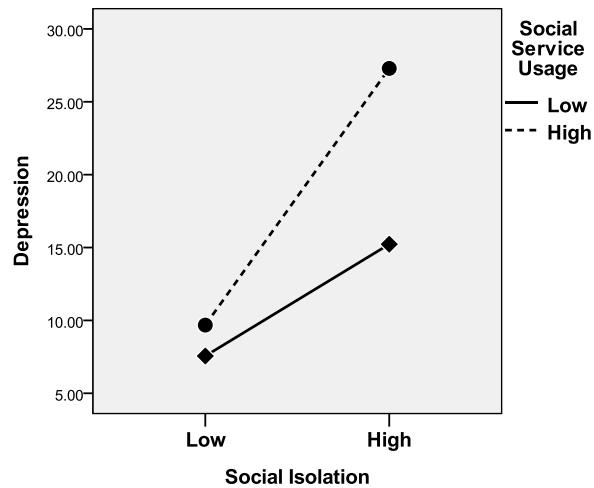


Figure 5. Moderating effect of social service usage

After controlling for social factors, the severity of disability did not have a significant relationship with depression in Models 3, 4, and 5. Instead, social factors such as disability discrimination and social isolation accounted for a significant share of the depression variance in Model 3 ($\Delta R^2 = .100$, $\Delta F = 34.602$, $df = 2$, 519 , $p < .0001$). These results suggest that the social model represents a better fit to the data than a strictly medical model for explaining depression among people with a disability. A summary of the tests of hypotheses is presented in Table XLIII. The interpretations are discussed in the next chapter.

TABLE XLIII**SUMMARY OF RESEARCH HYPHOTHESES**

Hypothesis	Result
1 Discrimination will increase risk for depression.	Partially Accepted
2 Social isolation will increase risk for depression.	Accepted
3 Higher self-esteem will reduce risk for depression.	Accepted
4 Greater social support will reduce risk for depression.	Accepted
5 Access to social services will reduce risk for depression.	Rejected
6 Higher self-esteem will modify the effects of discrimination and social isolation.	Partially Accepted
7 Greater social support will modify the effects of discrimination and social isolation.	Partially Accepted
8 Access to social services will modify the effects of discrimination and social isolation.	Partially Accepted
9 After taking into account discriminatory experiences, isolation and the moderating effect of self-esteem, social support and social services, disability status is not related to the experience of depression.	Accepted

V. DISCUSSION

The two major aims of this study were to describe the prevalence of depression within the disability population in South Korea across basic socio-demographic subgroups and to evaluate the effectiveness of a social model in explaining patterns of depression. This chapter will review the findings presented in Chapter IV, discuss the contributions and several limitations, and offer suggestions for future research in this area.

A. **Overview of Findings**

The findings in this study support in part previous depression research that examined predictors of depression among social minorities and suggest new insights into depression among persons with a disability.

1. **Analysis of model variables**

The literature on depression among social minorities has shown that socio-demographic characteristics are associated with risk for depression (Broman, Mavaddat, & Hsu, 2000; Gee, 2002; Horwitz, 1999; Hughes et al., 2001; Kahng & Kwon, 2008; Ren, Amick, & Williams, 1999; Schieman, 2002). Those characteristics include gender, age, education level, marital status (spouse presence), income, economic activity status, religion, and family size. In this study the basic demographics for these variables were estimated for the Korean disability population and the patterns of depression were consistent with previous studies focusing on other social minorities.

Disability type and disability duration were not significantly associated with depression. Only severity of disability was significant with greater degree of severity associated with higher levels of depression. Researchers have suggested that the length one lives with a disability or the type of disability should affect self-concept and thus depression (Willett, 2004). These effects were not observed in the present study; the overall depression level among the disability population was high regardless of duration or type. The lack of significant effect could be an

artifact of the survey measures. In this study, a collapsed classification of four disability types was analyzed, based on the WHO classification rather than the 15 types used in the Welfare Act for People with Disabilities in South Korea. A more detailed classification may have revealed other group differences. Korean culture also may play a role in the lack of observed differences across disability type. Body type norms are important in Korean society. Regardless of disability type, all people with disabilities could be equally at risk for depression since they did not fit the “normal” body image. Similarly for disability duration. Disability acceptance typically increases with the passage of time (Gill, 1997; Groomes, 2000; Lee & Shin, 2005). The lack of a relationship in this study may reflect the different social construction of disability among Koreans with disabilities. Positive disability acceptance may be more difficult in Korean society with a highly discriminative environment toward disabilities. Given that severely disabled people are more likely to be dependent and socially isolated in Korea (Kang, 2011), the finding of significant relationship between degree of disability and depression was predictable. The relationship between the characteristics of disability and depression throughout this study needs to be examined more deeply in future studies.

Differences in discrimination experiences were found across levels of age, education, economic activity status, disability grade, disability type, disability duration, and marital status. In contrast, gender, income, religion and family size were not significantly associated with disability discrimination. The finding of no gender differences in disability discrimination experience is interesting given current interest in the issue of dual biases against both females and disability status in recent Korean welfare studies. The lack of differences stands in contrast to previous research (c.f. Oh, 2006). Similarly the lack of an income effect was unexpected. This absence of effect for gender and income might also be a result of the dominant Korean ideologies towards people with disabilities regardless of other potentially moderating characteristics.

The disability characteristics evaluated in this study - disability grade, disability type, and disability duration - were associated with discrimination experience. Those with a severe disability reported more discrimination experiences than persons with a mild disability. Discrimination experiences varied across type of disability. Discrimination was highest among those with a cognitive disability which is consistent with other research indicating that the cognitively disabled population is the most stigmatized group across disability type (Charlton, 1998; Kim, 2008; Thomas, 2000).

The literature on social isolation has primarily focused on elderly populations (Freyne et al., 2005; Victor et al., 2000; Victor et al., 2009) and has been shown to be a consistent predictor of poor mental health among older people, who are more likely to be socially isolated than people of other ages due to retirement, health condition, and loss of friends and family members (Victor et al., 2009). The results of this study showed a parallel effect in the disability population where older persons were the most isolated of the age groups. Social isolation was affected by low education, economic inactivity and low income, and severe disabilities, relationships similar to those identified in research on the elderly.

The results of the present study also suggest the difference between social isolation and discrimination. As reviewed in Chapter II, although both discrimination and isolation represent disadvantageous experiences of social minorities, discrimination operates in the interaction between people and isolation exists as the absence of interaction with other people. The two are likely experienced differently, for example, greater isolation for the elderly and more discrimination for ethnic minorities. In the present study, these differences were reflected in the relationships observed within the disability population. Young adults with disabilities reported the highest discrimination experience, while elderly persons with disabilities reported the highest social isolation. Similarly, economically inactive people with disabilities reported the highest

score of social isolation in this study. Discrimination and isolation may operate differently across different subgroups within a social minority.

Respondents with a greater severity of disability were more likely to report high scores of social isolation but did not differ across disability type. Since Korea does not presently provide adequate levels of personal assistance services for independent living, the experience of social isolation is understandable.

Self-esteem was significantly different across subgroups formed on the basis of the demographic variables. However, no differences were observed across gender, as would be expected based on previous studies on gender differences in self-esteem (Kling, Hyde, Showers, & Buswell, 1999). This result suggests some different dynamics among people without disabilities. When considering that people with disability tend to be considered as asexual or as a “third gender” (Gong, 2005), gender may be a relatively minor factor in self-esteem.

The present study was consistent with previous disability research finding higher education levels, being economically active and high income to be associated with high self-esteem (e.g., Kahng & Mowbray, 2005). Given that positive self-concepts can be achieved from successful academic and economic achievement (Mann, Hosman, Schaalma, & Devries, 2004), these findings were not unexpected, and especially in a Korean society that highly values capitalism and academic achievement. As with most other comparisons there were effects across disability severity, with the most disadvantaged at the greater levels of severity.

The measure of social support was interesting in terms of religious status and family size. Support did not vary across religious status. This is inconsistent with other studies (Ellison & George, 1994; Jo, 2011; Krause, Ellison, Shaw, Marcum, & Boardman, 2001), which have found religious affiliations helpful in creating social supports through religious activities such as meetings and community volunteer activities. Similarly, although family is well known as an important source of social support (Bengtson, 2001; Zimet et al., 1988), the effect was not

present here and was not statistically associated with family size. Given that social support should be considered in context (Revenson et al., 1991; Rook, 1997), the quality of relationships is likely more important and religious status and family size is at best, only a crude representation of social support dynamics.

Persons who were cognitively disabled or severely disabled reported the lowest social support across subgroups by disability type or severity. Given that severely disabled people or cognitively disabled people are more likely to be socially isolated these findings are not unexpected (Charlton, 1998; Kim, 2008; Thomas, 2000).

In contrast to other studies of disability and depression, use of social services was included in this study as a moderating factor for depression. Social service usage was significantly higher for those groups we would expect to be more economically disadvantaged: those who were economically inactive, without a spouse, or lived alone. As noted in the literature review, social service usage is conceptually close to the notion of instrumental social support described in Heaney and Israel (2002). In Korea, social service tends to be limited to socially marginalized people, and used only for maintaining a minimum livelihood (Yu, 2009). For the disability population, social services take the form of medical benefits, education benefits, tax exemption, or an allowance for living expenses (Jeon, 2011b). Superficially, the result contrasts with the observed relationships of self-esteem and emotional social support being highest for those with high social economic status; these social services are more appropriately associated with marginalization and dependency within the disability population, as often noted by Disability Studies scholars (e.g., Hahn, 1985; Kang, 2011).

2. **Predictors of depression among disability population**

The literature on risk factors for depression among social minorities has consistently shown that stressful life events, including racial discrimination experiences and isolation, are associated with a high level of depression (Ajrouch et al., 2010; Araujo & Borrell,

2006; Flores et al., 2008; Freyne et al., 2005; Hawton et al., 2011; Landrine & Klonoff, 1996; Mays & Cochran, 2001; Moradi & Risco, 2006; Paradies, 2006; Taylor & Turner, 2002; Victor et al., 2000; Victor et al., 2009; Williams et al., 2003). In this study a Disability Studies perspective was adapted to a stress coping model as an explanation for depression for persons with a disability. The key research question was the role of disability status in predicting risk for depression after taking into account the effects of discrimination experiences and social isolation. The predictive role of disability status disappeared after taking those variables into account in the hierarchical regression analysis, a result consistent with a social model framework that emphasizes social and cultural context in understanding disability. In contrast, a traditional model, which has dominated previous research on disability, would emphasize the medical condition as the primary variable of interest (Boerner, 2004; Brown, 1990; Scott et al., 2007; Turner & Beiser, 1990; Turner & Noh, 1988). In this study it is not the condition but rather marginalization and its interaction with personal resources such as self-esteem, social support, and social services that drives depression. This study is also distinct in its consideration of the moderating role of social support (c.f. Beedie & Kennedy, 2002) and the predictive role of socio-demographic factors (c.f. Krause, Kemp, & Coker, 2001) on depression. The present study provides evidence that the long assumed causal relationship between disability and depression might not be a direct one, and provides support for a Disability Studies perspective that frames disability as being socially created rather than emerging from the disabled body.

Discrimination significantly increased risk for depression in Model 3 but was not a significant predictor in Models 4 and 5. Consequently the first hypothesis was only partially consistent with the data. In contrast to the previous literature on depression of other social minorities (Ajrouch et al., 2010; Araujo & Borrell, 2006; Cochran, 2001; Flores et al., 2008; Landrine & Klonoff, 1996; Moradi & Risco, 2006; Paradies, 2006; Taylor & Turner, 2002;), the regression did not find discrimination a significant predictor after taking into account self-esteem,

social support, and social service usage. The inconsistency might come from limitations in the measurement of discrimination experience, discussed in depth in the following section, or indicate that personal resources and the interactions between isolation and resources is a stronger predictor than discrimination. In other words, although a disability population experiences discrimination, depression might be attenuated by personal resources. However, this does not diminish the importance of discrimination given its influence in the other models.

Consistent with previous studies, isolation was a significant predictor of depression (e.g., Hughes et al., 2001) and remained significant in Models 4 and 5 after taking into account the effect of personal resources and interactions. Overall, isolation appeared to have a statistically stronger effect than discrimination. People with disabilities who are isolated may be more vulnerable than those who experience discrimination. Social isolation has not been emphasized in depression studies on other social minorities and should be an important consideration in understanding depression in the disability population.

The moderating effect of personal resources on social isolation and depression was not surprising. However, the observation that the relationship of isolation and depression strengthened at higher levels of self-esteem was unexpected. Perhaps persons with a disability with high self-esteem were more vulnerable to social isolation. This group was generally well educated, with high incomes and employment, and was younger. It seems reasonable that the group would have higher expectations for active participation and social interactions with others.

Similarly, the finding that depression and isolation were more highly associated at higher levels of social service usage was unanticipated. However, the characteristics of heavy users of social services usage – economically inactive with low incomes, greater disability severity, and living alone – suggests greater vulnerability for this group that can be compounded by isolation.

Thus, the depression among persons with a disability experienced because of discrimination and isolation appears to be mediated by personal resources. The finding is

suggestive in terms of resources that might be helpful to address or reduce depression. Social isolation is the obvious first issue that should be addressed through the development of additional personal resources. While “fixing the person” might contradict a Social Model perspective of depression, discrimination at the societal level represents long term challenge that will be very hard to change. In the meantime, we can intervene on personal resources within the broader perspective of the Social Model.

B. **Implications**

The findings of this study can contribute to research on the mental health status of persons with disabilities by extending our concept of risk to social factors beyond the fact of disability status. Implications for Disability Studies theory, practices, disability right movements and public policy are suggested in the following section, with special focus given to the disability population in South Korea.

1. **Implications for theory**

This study tests an adaptation of the Stress-Coping Model developed by Lazarus and Folkman (1984) using concepts from the emerging scholarship of Disability Studies. By employing the perspectives of the social model and medical model on disability, the study identified predictors of depression among South Koreans with disabilities and evaluated if the social model concepts enhance our understanding of depression within the disability population. The results of this study suggest the utility of the social model.

First, the analysis points to causes of depression in addition to, or other than the disability itself. The expression of depression among people with disabilities is complex and involves more than not being “normal.” This has implications for treatment professionals who may be inclined to frame the solution to depression in the “curing” of the primary disability. This has been the traditional approach, framed within the rehabilitation perspective on medicine and pathology: depression as a natural consequence of the disability and a personal issue that the

individual must overcome as part of the rehabilitation process. Thus, research on depression in the disability population has focused on disability status as the primary explanation of depression. However, the results of this study are more consistent with a model that posits a critical source of depression in the social structure surrounding the disability population. As Disability Studies scholars have emphasized, disability issues can be reframed as social and cultural issues, and this study demonstrated the utility of a social model framework using empirical data. Second, this effort is consistent with calls by researchers for an integrated conceptual model of depression (Noh & Posthuma, 1990; Kemp, 2006). The full research model in this study identified social isolation, self-esteem, social support, and three interaction terms as significant predictors. These findings reflect multiple different risk factors and their interaction that can provide a more comprehensive explanation for the presence of depression. Third, the attempt to integrate the perspectives of Disability Studies with theory from other academic fields contributes to broadening of the Disability Studies field. As an interdisciplinary endeavor, Disability Studies must communicate with other academic areas, and this investigation provides an example of complementary perspectives and theories from different academic disciplines into one study. The Stress-Coping theory used by social psychologists studying depression in other minority groups was readily adaptable to Disability Studies applications. Finally, the study contributes basic information on an understudied area of disability. In contrast to other social minority groups such as the elderly, racial and ethnic minorities, and immigrants, depression among people with disabilities has been largely ignored. This study adds basic but important descriptive data on depression within the disability population.

2. **Implications for practices**

Understanding the relationship of demographic characteristics and the degree of depression, discrimination experiences and isolation, as well as existing resources such as self-esteem, social support, and social service usage, provides important insights into future service

development that can address the mental health needs of people with disabilities in South Korea. Subgroups within the disability population who were at higher risk for depression were identified. Better understanding the socio-demographic characteristics of disability and depression is important because vulnerable subgroups can be identified and targeted for priority policy development and services. For example, daily home-visiting programs or phone call programs can be developed for disabled people living alone, who were identified as vulnerable to depression in this study.

The alternative perspective of this study that frames depression as a consequence of discrimination and social isolation that can be moderated by self-esteem, social support, and social services usage directly informs approaches other than medical treatment. Self-esteem improvement programs or social support building programs are possible additional avenues to pursue in addressing or reducing depression. Additionally, the indirect effect of disability suggests the importance of external change as well: focusing on social empowerment, such as community organizing, promoting critical awareness among, advocacy, and capacity-building approaches (Balcazar et al., 2012). The finding that those with high self-esteem were more vulnerable to depression when isolated indicates the potential power of interactive and organizational oriented approaches that are suggested by an empowerment approach.

The role of different social supports was suggested in the study findings. Results indicated that the effect of social isolation on depression was modified differently across types of social support. Emotional social support, in contrast to instrumental support, was uniformly important in modifying the effect of social isolation on depression. Taken together, these findings underscore the complexity of depression, and that the occurrence of depression among the disability population is the result of multiple risk factors, rather than one single factor. It is also important for mental health and social service practitioners to have an integrated perspective in

order to better understand depression among the disability population and improve services for reducing depression.

3. **Implications for disability rights movement**

One of the most important examples of resistance to disability discrimination and social isolation has been the work of disability activists and the rapid growth of the independent living (IL) movement in South Korea. Since Ed Robert started the independent living movement in the U.S. in 1969, the IL movement has grown into a service provision and advocacy system directed by people with disabilities. The philosophy and strategies of the South Korean independent living movement were adapted from Japan and the U.S. and the movement has made rapid progress in a short time because Korean advocacy activities were already occurring on a national scale. Disability rights activists had joined the labor movement in the 1970s and then turned their attention to disability rights in the 1990s before the concept of IL was introduced to Korea. For example, disability activists had organized strikes on behalf of disability rights. One of the most remarkable strikes was a 39 day hunger strike of people with disabilities in 2002, in response to the death of a wheelchair user at a subway station. In 2006, dozens of people with visual impairments attempted suicide and three died during strikes seeking job protections. Partly in response to these strikes and other forms of resistance by people with disabilities, the Koreans with Disabilities Anti-Discrimination Act (KDA) was enacted on March 8, 2007. The KDA aimed to prohibit discrimination based on disability so that people with disabilities could participate in society fully and be guaranteed equal dignity and value as human beings (Article 1 of the KDA). There were about 200 independent living centers in South Korea in 2010 (Korea Federation of Centers for Independent Living of Persons with Disabilities, 2010) and a training institution called “IL College,” which is managed by the Korean Federation of Centers for Independent Living. The IL College provides curricula on the philosophy and

practice of IL and cultivates disability right activists. Demonstrations by disability rights activists continue today on behalf of job opportunities, independent living, and environmental changes.

Although the work of disability activists has led to the rapid growth of the independent living centers and disability awareness improvement, the disability rights movement has not directed its attention to mental health issues among people with disabilities in South Korea. However, mental health status can be considered an indicator of psychological liberation (Balcazar et al., 2012; Harper, 2005; McDonald, Keys, & Balcazar, 2007; Nelson & Prilleltensky, 2005; White, 2005). This study suggests that mental health status is affected by socially disadvantageous experiences such as discrimination and social isolation. As South Korean disability activists work to eliminate discrimination towards disability and to promote the quality of life among people with disabilities, psychological wellbeing should be an equally important agenda for the Independent Living movement. Cultivating disability rights requires an awareness that psychological wellbeing is also an important goal and directly connected to the goals of the movement. This study provides some additional empirical evidence for the importance of advocacy.

4. **Implications for policy**

The Suicide Prevention Act in March 2011 marked the Korean government's recognition of the importance of depression and mental health as a national policy issue. Though the Act authorized the establishment of suicide and depression prevention centers across the nation beginning, there was no consideration of people with disabilities in the Act or in the planning of the centers. Study findings indicate that South Korean policy makers should devote more attention to social and cultural prejudices as well as providing and developing accessible services for improving mental health among the disability population. The topic of depression among people with disabilities should be included in professional training, and the social model perspective better communicated in terms of the need to further reduce barriers. For example,

personal assistance services, currently limited to severely disabled people with disabilities, should be broadened to include more people with disabilities in South Korea and facilitate participation in social activities to reduce isolation with the added benefit of contributing to mental health.

C. **Study Findings in the Context of Disability Studies**

The study's original hypothesis was that social discrimination and social isolation would be the main determinants of depression. Statistical analysis revealed that the severity of disability did not have a significant relationship with depression when taking into account social factors such as discrimination, isolation and interaction terms. This result is conceptually consistent with the perspective of the Social Model though personal resource variables such as social support, self-esteem, and social service emerged as the most important predictors in statistical terms. Are "internal resources" such as self-esteem, social support, and social services consistent with Social Model concepts? An emphasis on personal resources might suggest "quick solutions" that focus on the psychological rehabilitation of people with disabilities.

Disability discrimination experiences and social isolation can be understood as indicators of social oppression within a Disability Studies framework. As defined by James Charlton (1998), "oppression occurs when individuals are systematically subjected to political, economic, cultural, or social degradation because they belong to a certain social group. Oppression results from structures of domination and subordination and correspondingly ideologies of superiority and inferiority" (p. 8). People with disabilities are degraded politically, economically, culturally, and socially because of a dominant perspective on disability based on biological pathology (Block, Balcazar, & Keys, 2001). The clearest manifestation of oppression was apparent within the eugenics movement, where people with disabilities were targets to be eliminated as a means of improving the human race. The biological pathology model is also reflected in institutionalization and segregated education, and mass media, such as film, television, and literature portraying

people with disabilities as unable to control their life or sexuality, or being more likely to commit acts of violence. This oppression operates invisibly as a dominant ideology and thus people with disabilities will necessarily experience internalized oppression, which is created by adopting the dominant group's ideology and accepting a subordinate status as deserved, natural, and inevitable (Griffin, 1997). As a social minority group, people with disabilities who have adopted the ideology of "inferiority and superiority" and "domination and subordination" view themselves as powerless and less valuable. With a negative self-image, people with disabilities devalue themselves. Freire (2001) summarizes the psychological consequences of oppression in terms of inferiority and low self-esteem. In his masterpiece *Pedagogy of the Oppressed*, he uses the term "identification with the oppressor" to mean that the oppressed have adopted an attitude of "adhesion" to the oppressor (Freire, 2001, p. 30) and have internalized the oppressor's image of themselves to guide their interaction in the world (Freire, 2001, p. 31). He also introduced the notion that "deprecation"—a sense of shame, humiliation, self-hatred, and low self-esteem—is a characteristic of the oppressed and is the result of adopting the oppressor's opinion of them. An example of this is represented in Malcolm X's opinion about the "colonized mind of black people" where he argued that African Americans are colonized by the White culture's perspective that black represents inferiority (Charlton, 1998). Low self-esteem, low social support, and high dependency on welfare, which were examined in the current study, can be viewed as a slightly different manifestation of internalized oppression.

The oppression framework is relevant because where oppression exists, resistance and liberation also exists (Freire, 2001). Liberation in the context of this study can be seen as the transformation of oppressive social structures through collective action as well as transformation of the psychological patterns of internalized oppression (Balcazar et al., 2012). Resistance, a reaction to oppression, is at the boundary of oppression and liberation and can emerge with critical consciousness; this requires understanding the cultural and ideological foundations of

oppression and developing an alternative vision (Watts & Serrano-Garcia, 2003). Resistance is the way that individuals empower themselves and build their resources and capacities; this facilitates social and psychological well-being making it more likely that they can assert their rights (Harper, 2005; McDonald et al., 2007; Nelson & Prilleltensky, 2005). The starting point is awareness of the ideology of “inferiority and superiority” by people with disabilities and the understanding that such oppression can be resisted. In other words, consciously rejecting internalized oppression. It has long been recognized in social psychology that a person with high self-esteem is more likely engage in external attribution that is looking to non-personal, “outside” factors as causes of negative events (Gordon, 1970). Social supports may play a similar role. The relationship between social support and external attribution is suggested by the observation that collectivistic-oriented individuals attributed negative outcomes to external factors and blamed themselves less than individualistic oriented individuals (Lee, 2012). This explanation is consistent with the results of this study, that members of a disability population with high self-esteem or high social support were less vulnerable to depression overall. Thus, study findings can also be interpreted in terms of a modeling of resistance resources.

D. **Limitation and Directions for Future Studies**

There are a number of limitations of this study. First, the reliability and validity of the disability discrimination experience variable is unknown. The measurement of an abstract concept such as discrimination is always a challenge. The calculated ratio of discrimination experiences may not capture all possible discrimination domains, and does not represent the level or extent of discrimination experience. For example, the impact of one significant experience on depression might be greater than many lesser experiences. In the present study, all experiences were simply summed. Future studies must consider more sophisticated measures of disability discrimination.

Similarly, social isolation was measured by simple quantification of the number of trips outside of the home during the previous month. This is very likely a crude indicator of actual social isolation since the experience of isolation is personal, nuanced and complex (Hall-Lande, 2011). Third, survey responses necessarily involve memory bias, especially with emotionally sensitive items such as discrimination experiences. Emotionally difficult questions recalling negative life events might result in defensive reporting due to the perceived stigma of certain events or might be underestimated due to fading affect bias; negative emotions that are associated with bad events tend to dissipate over time (Bonanno & Mancini, 2008; Walker, Skowronski, & Thompson, 2003). In addition, the duration of the recall period may be an issue. One year is quite a long time to remember all incidents that might involve subtle discrimination experiences. Respondents might remember only the most obvious and emotionally negative events. Similarly, the recalled frequency of discrimination experiences is influenced by the degree of distress at the time of recall. Depressed persons are likely to exaggerate the frequency of potentially traumatic events (Lalande & Bonanno, 2011). The independent factor of perceived discrimination might be contaminated by the dependent factor of depression.

Fourth, severity of disability was treated as an indicator of the medical model, while social isolation, disability discrimination experience, and the interaction terms were interpreted as indicators of the social model. However, these are assumptions and it is possible that the core concepts of the theoretical models might not be fully captured in these variables.

Finally, since this study employed a cross-sectional design, there is no information about changes in depression over time. It is impossible to describe the temporal relationship between disability discrimination experience, social isolation and depression and the model requires the assumption of causal relationships among variables. Since the KOWEPS is a national panel data source, future research may identify predictors of depression more accurately and the effect of

discrimination experience and social isolation on depression among the South Korean disability population.

In spite of the limitations, this study provides basic demographic information on the extent of depression among South Koreans with disabilities, suggests that disability discrimination experience and social isolation rather than impairment are related to depression, and identifies moderating factors that may lessen or prevent depression. The issue of depression is largely hidden and unacknowledged among the disability population. People with disabilities may benefit from the findings of this research by understanding the process of depression and learning effective strategies for improving their mental health.

Future research needs to explore how aspects of disability and social factors are related to broader mental health issues including depression, in order to refine the conclusions drawn in this study. More sophisticated measures and longitudinal studies will be required. This focus of the research can be broadened through follow-up studies within the subgroups defined by race, gender, disability types, etc and by the examination of the relationship between depression and other potentially related factors such as suicide, life satisfaction, or quality of life. Such additional research can also reveal ways for improving mental health of the disability population and eliminating the social disadvantages they experience.

E. **Conclusion**

Although this study focused on the disability population in South Korea, the issue of depression among people with disabilities is very likely a universal issue across Asia, Europe, and the Americas. Oppression affects the psychological well-being of people with disabilities. It acts to strengthen and reproduce society's ideology of inferiority and superiority. People with disabilities, who are marginalized economically, socially, and politically, must resist disability oppression. Development and support of personal resources is a form of resistance. Even though training programs such as self-esteem improvement or social support programs suggest an

approach that “fixes the person” they can also be understood as means for enhancing resistance resources to social problems. The implications of the model can be framed in terms of depression resulting not from impairment but rather from social and internalized oppression. From a perspective taking into account concepts of internalized oppression, the personal resources in this study have social meaning and are consistent with the Social Model.

APPENDICES

APPENDIX A**UNIVERSITY OF ILLINOIS
AT CHICAGO**

Office for the Protection of Research Subjects (OPRS)
Office of the Vice Chancellor for Research (MC 672)
203 Administrative Office Building
1737 West Polk Street
Chicago, Illinois 60612-7227

Determination Notice**Research Activity Does Not Involve “Human Subjects”**

July 9, 2013

Jihye Jeon, MA

Disability and Human Development

925 W. 18th

#1R, M/C 626

Chicago, IL 60607

Phone: (312) 927-9649 / Fax: (312) 996-0885

RE:

Research Protocol # 2013-0673

“Predictors of depression among people with disabilities in South Korea: A test of social model determinants”

Sponsor(s): None

Dear Jihye Jeon:

APPENDIX A (continued)

The above proposal was reviewed on July 9, 2013 by OPRS staff/members of IRB #2. From the information you have provided, the proposal does not appear to involve "human subjects" as defined in 45 CFR 46. 102(f).

The specific definition of human subject under 45 CFR 46.102(f) is:

Human subject means a living individual about whom an investigator (whether professional or student) conducting research obtains

- (1) data through intervention or interaction with the individual, or
- (2) identifiable private information.

Intervention includes both physical procedures by which data are gathered (for example, venipuncture) and manipulations of the subject or the subject's environment that are performed for research purposes. *Interaction* includes communication or interpersonal contact between investigator and subject. *Private information* includes information about behavior that occurs in a context in which an individual can reasonably expect that no observation or recording is taking place, and information which has been provided for specific purposes by an individual and which the individual can reasonably expect will not be made public (for example, a medical record). Private information must be individually identifiable (i.e., the identity of the subject is or may readily be ascertained by the investigator or associated with the information) in order for obtaining the information to constitute research involving human subjects.

All the documents associated with this proposal will be kept on file in the OPRS and a copy of this letter is being provided to your Department Head for the department's research files.

If you have any questions or need further help, please contact the OPRS office at (312) 996-1711 or me at (312) 355-2908. Please send any correspondence about this protocol to OPRS at 203 AOB, M/C 672.

Sincerely,

Charles W. Hoehne
Assistant Director

Office for the Protection of Research Subjects

cc: Tamar Heller, Disability and Human Development, M/C 626

Glenn T. Fujiura, Disability and Human Development, M/C 626

APPENDIX B

	1. Depre ssion	2. Gend er	3. Age	4. Educa tion	5. Incom e	6. Dum my_U nempl oy	7. Dum my_E mplot	8. Spous e	9. Religi on	10. Famil y size	11. Severi ty of disabi lity	12. Disab ility discr iminati on	13. Social Isolati on	14. Self- estee m	15. Social suppo rt	16. Social servic e	17. Discr *estee m	18. Discr *supp ort	19. Discr *servi ce	20. Isolati *estee m	21. Isolati *supp ort	22. Isolati *servi ce
1	1.000																					
2	.113	1.000																				
3	.081	.009	1.000																			
4	-.156	-.153	-.423	1.000																		
5	-.265	-.054	-.124	.351	1.000																	
6	-.072	-.061	-.052	.016	-.035	1.000																
7	-.243	-.216	-.128	.115	.229	-.085	1.000															
8	-.167	-.119	.368	.053	.240	.000	.120	1.000														
9	-.110	.158	.007	.088	.071	.005	.035	.060	1.000													
10	-.157	-.018	-.289	.234	.485	.029	.139	.242	.071	1.000												
11	.208	.101	-.116	-.126	-.169	-.020	-.330	-.135	.026	.009	1.000											
12	.134	.074	-.315	.077	-.041	-.021	-.053	-.137	-.020	.046	.229	1.000										
13	.406	.065	.103	-.129	-.105	-.037	-.363	-.021	-.117	-.004	.340	.085	1.000									
14	-.460	-.053	-.072	.254	.288	-.019	.317	.191	.039	.152	-.288	-.143	-.223	1.000								
15	-.315	.014	-.056	.260	.244	-.022	.118	.161	.081	.093	-.258	-.041	-.247	.286	1.000							
16	.265	.086	-.031	-.108	-.192	-.060	-.223	-.137	-.018	-.086	.343	.108	.173	-.228	-.273	1.000						
17	-.040	-.064	.212	-.046	-.027	.028	-.009	.009	-.014	-.020	-.090	-.570	.074	.082	-.108	.004	1.000					
18	-.015	.105	-.004	-.005	-.035	.032	-.071	-.069	.050	-.011	.069	-.073	-.074	-.159	.165	-.048	-.024	1.000				
19	.100	.017	-.002	.019	-.013	-.007	-.019	.035	.007	.002	.060	.126	.100	.072	-.053	.306	-.123	-.266	1.000			
20	-.107	-.047	-.149	.080	-.003	.020	.061	-.052	-.015	.005	-.018	.100	-.609	.006	.047	-.025	-.134	.006	-.052	1.000		
21	-.168	.016	.059	-.030	-.054	.022	.077	.011	.103	-.038	-.081	-.039	-.333	-.032	.132	-.100	-.016	.177	-.057	.447	1.000	
22	.272	-.002	-.039	.080	.049	.002	-.016	.022	-.119	.049	.009	.062	.163	.044	-.083	.316	-.063	-.062	.143	-.168	-.364	1.000

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